Classic Science

PARENT COPY

ELEMENTARY LIFE SCIENCE

The lab of MR.Q

Scott McQuerry

THANK YOU SO MUCH FOR DOWNLOADING THIS FREE COPY OF CLASSIC SCIENCE: ELEMENTARY LIFE SCIENCE!!!

I HAVE BEEN WORKING VERY HARD TO BRING YOU THIS CURRICULUM. I AM CERTAIN IT WILL PROVIDE YOUR CHILD A COMPLETE BACKGROUND INTO THE VARIOUS CONCEPTS OF LIFE SCIENCE. HERE IS HOW THIS CURRICULUM HAS BEEN PREPARED FOR YOU:

> THIS IS A **36**-WEEK CURRICULUM FOR CHILDREN OF AGES **6-9**. EACH WEEK HAS BEEN BROKEN DOWN INTO THREE SEPARATE DAYS TO MAKE IT EASIER FOR YOU TO SET UP A SCHEDULE:
>
> *THE FIRST DAY OF EACH WEEK CONTAINS A READING ASSIGNMENT AND WORKSHEET REVIEW FOR YOUR CHILD.*
>
> *THE SECOND AND THIRD DAYS CONTAIN HANDS-ON ACTIVITIES TO REINFORCE EACH WEEKLY READING! DON'T WORRY ABOUT EXPENSIVE MATERIALS FOR THESE ACTIVITIES! MOST EQUIPMENT CAN BE FOUND AROUND THE HOME OR AT A LOCAL STORE.*

THE WEEKLY CURRICULUM HAS BEEN ARRANGED INTO FOUR-WEEK UNITS. YOUR CHILD WILL FIND A UNIT TEST REVIEW AT THE END OF EACH UNIT. IN THIS PARENT EDITION, YOU WILL FIND EACH TEST AT THE END OF EACH UNIT AS WELL!

IN ADDITION, YOU WILL FIND SEVERAL WEEKLY ACTIVITIES THAT ARE TITLED "ESP ACTIVITIES". THESE ARE INQUIRY-BASED ACTIVITIES THAT REQUIRE A CHILD TO SET UP AN EXPERIMENT AND COLLECT DATA. IN ESSENCE, THESE ARE MINI-SCIENCE FAIR PROJECTS. ***BEFORE YOU START TO CRINGE AT THE THOUGHT OF DOING MANY "SCIENCE FAIR PROJECTS" I HAVE PROVIDED A METHOD FOR YOU TO USE.*** IT IS CALLED THE EXPLORING SCIENTIFIC PROCEDURES (ESP) METHOD AND HAS BEEN INCLUDED IN THIS BOOK. MANY PEOPLE HAVE FOUND IT TO BE AN EASY, STEP-BY-STEP GUIDE FOR YOU AND YOUR CHILD TO APPROACH THESE INQUIRY-BASED PROJECTS! DON'T PANIC!!! THEY ARE NOT AS HARD AS YOU MAY IMAGINE. THINK OF IT THIS WAY, AT THE END OF THIS YEAR, YOUR CHILD WILL HAVE COMPLETED TEN SCIENCE FAIR PROJECTS! THIS IS TEN TIMES MORE INQUIRY-BASED PROJECTS THAN YOUR AVERAGE PUBLIC SCHOOL STUDENT…AND YOUR CHILD IS ONLY BEGINNING!

NEXT YEAR, A SECOND BOOK WILL BE AVAILABLE: ***ELEMENTARY EARTH SCIENCE***. THIS BOOK WILL FOLLOW THE SAME CLASSICAL APPROACH TO LEARNING WITH A COMPREHENSIVE LOOK AT OUR DYNAMIC PLANET! UNTIL THEN, CHECK OUT MY WEBSITE (WWW.EEQUALSMCQ.COM) FOR LINKS TO EACH OF THE WEEKLY ACTIVITIES YOU AND YOUR CHILD WILL BE EXPLORING!

I HOPE YOUR FAMILY ENJOYS THIS RESOURCE! KEEP ASKING QUESTIONS AND KEEP SEARCHING FOR THE ANSWERS!

TAKE CARE !

Scott McQuerry

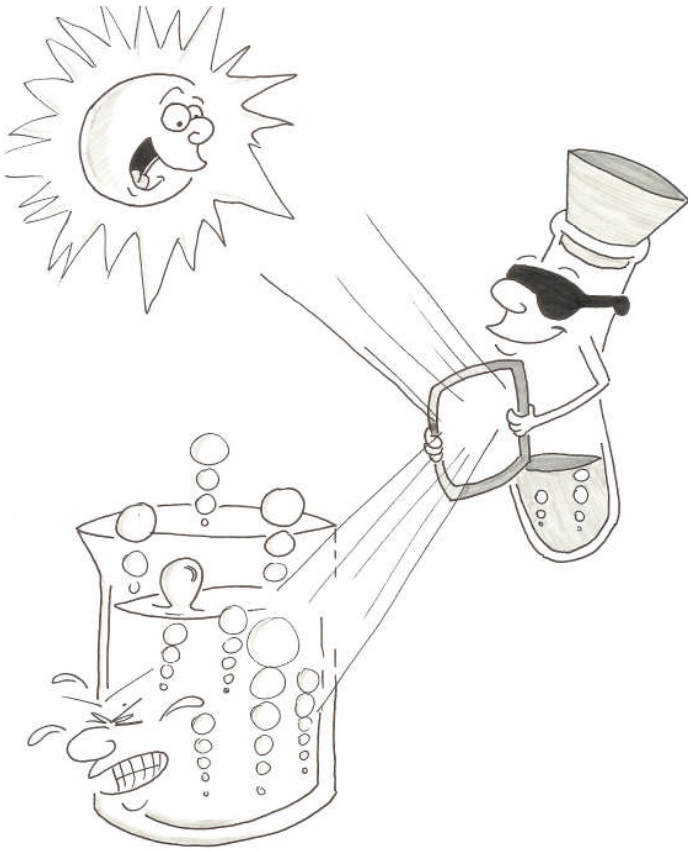
TABLE OF CONTENTS

EXPLORING SCIENTIFIC PROCEDURES

Exploring Scientific Procedures (ESP) is a method of introducing the concepts of scientific inquiry to children which include:

INDEPENDENT/DEPENDENT VARIABLES
HYPOTHESIS BUILDING
CONSTRUCTING DATA TABLES
and
GRAPHING

The materials necessary to perform this method are cheap and easy-to-find and use. Most materials can be found around the home.



This background into the method is intended to train you, the educator, on the basics of scientific inquiry. A rough timeline has been provided within this presentation to guide you through the potential administration of the method to children of various ages.

The proven success of this method has been accomplished through short, weekly activities with children over a long period of time.

ESP should be presented to children much like multiplication facts: in repetitive short bites, spread out over an extended timeframe. Children will begin to see how the independent/dependent variables, hypothesis, data tables and graphs are all related to the process of effective scientific inquiry.

WHAT ESP IS...

ESP is a method to integrate the process of scientific inquiry into your regular science curriculum

ESP encourages problem-solving strategies for children and adults

ESP is low cost !!!

ESP is a discipline that requires time and patience

ESP should be used repetitively, in short amounts, over a long period of time (similar to learning multiplication tables!!!)

WHAT ESP IS NOT...

ESP is not a script to be read
ESP is not a curriculum to be memorized, but a method towards scientific literacy
ESP does not have a standardized timeline
ESP is not exclusively for children
ESP is not a long list of definitions found within a massive textbook
(two definitions are all you need…..)

DEFINITION #1

INDEPENDENT VARIABLE

What you change in the experiment

(to make life easier for your children, you may want this "change" to be measurable – i.e. weight, mass, volume, height, etc..)

DEFINITION #2

DEPENDENT VARIABLE

The result from the change you made

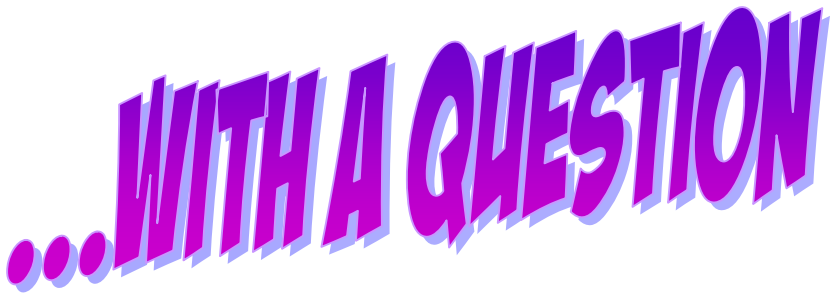
(this variable, also known as data, "depends" on your independent variable and, again, should be measurable !!!)

THE INDEPENDENT VARIABLE AND THE DEPENDENT VARIABLE ARE CLOSE RELATIVES AND CAN BE FOUND THROUGHOUT THE FOLLOWING STEPS OF SCIENTIFIC INQUIRY:

QUESTIONS
HYPOTHESIS
DATA TABLES
and
GRAPHS

All scientific experiments begin with simple questions….

It is this sense of inquiry that ESP begins its journey….



QUESTION

Does the _____ affect the _____?
(Independent Variable) *(Dependent Variable)*

Now that you've asked a QUESTION, it is time to change it into a measurable and educated guess….

HYPOTHESIS

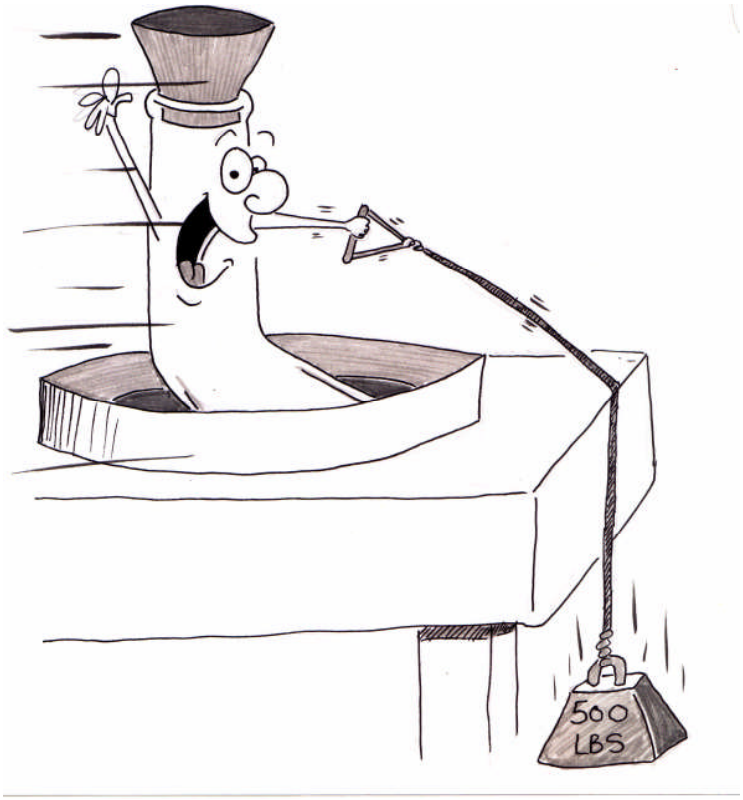
If the _____ is _____,
(Independent Variable) *(increased/decreased)*

then the _____ will _____.
(Dependent Variable) *(increase/decrease)*

ALL DATA THAT IS COLLECTED WITHIN AN EXPERIMENT MUST BE IN AN EASY FORMAT FOR FUTURE STUDY. THE FOLLOWING DATA TABLE SHOULD REMAIN THE SAME THROUGHOUT EACH OF YOUR CHILD'S EXPERIMENTS. WITH PRACTICE, THEY WILL BECOME VERY PROFICIENT IN RECORDING DATA THAT CAN BE EASILY ANALYZED.

Independent Variable	Dependent Variable			
	Trial One	Trial Two	Trial Three	Average

While analyzing the data in an experiment, you are typically looking for patterns and relationships between what you are changing (the independent variable) and your data (the dependent variable).

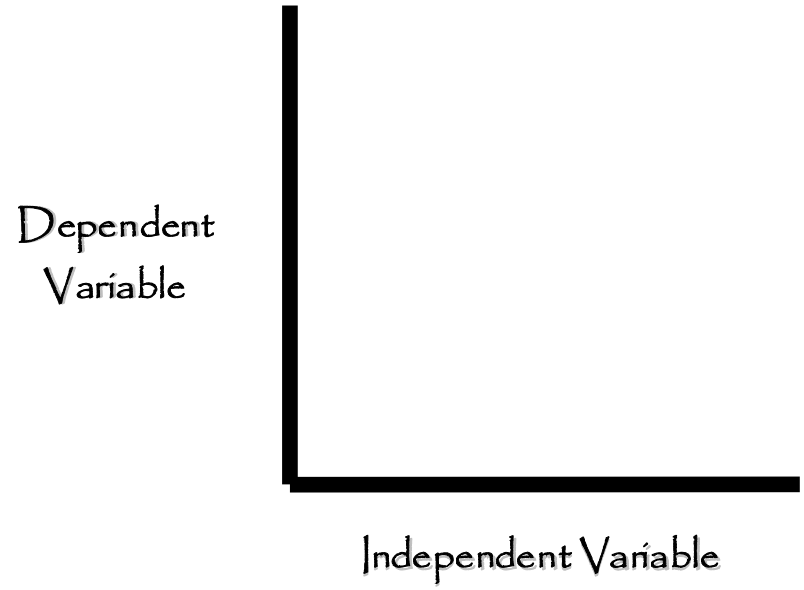


A graph can help visualize the data in a way that is easier to see any of these possible relationships.

The title of any graph should restate the hypothesis of the experiment....

....this helps the person who is reading your graph to easily identify what the data is all about!!!

Title



GRAPH TITLES

The effect of the _____
(Independent Variable)
on the _____.
(Dependent Variable)

CHILDREN MUST SEE THE INDEPENDENT VARIABLE AND THE DEPENDENT VARIABLE IN THE

QUESTIONS
HYPOTHESIS
DATA TABLES
and
GRAPHS

Let's try an example...

Question:

Does the distance a rubber band is pulled back affect the distance a rubber band can travel?

Can you identify the Independent and Dependant variables?
IV = …distance a rubber band is pulled back
DV = …distance a rubber band can travel

Look for these phrases throughout the example !!!

Hypothesis:

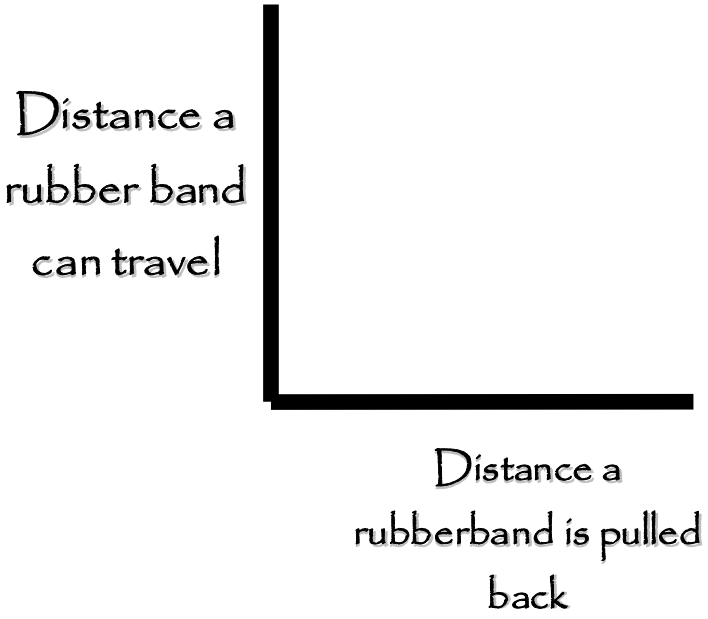
If the distance a rubber band is pulled back is increased, then the distance a rubber band can travel will decrease.

Data Table:

Distance a rubberband is pulled back	Distance a rubber band can travel			
	Trial One	Trial Two	Trial Three	Average

Graph:

The effect of the distance a rubberband is pulled back on the distance a rubberband can travel



THE PHRASES . . .

"distance a rubber band is pulled back"

and

"distance a rubber band can travel"

CAN BE SEEN THROUGHOUT THE ENTIRE EXPERIMENT!!!

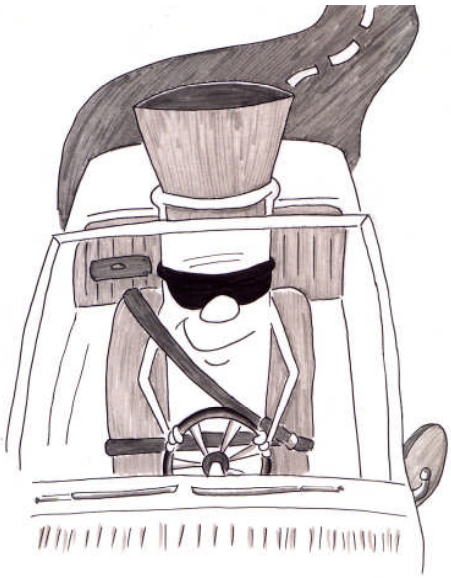
YOU NEVER CHANGE THE PHRASES...

THEREFORE, THE CHILD WILL EASILY SEE THE RELATIONSHIPS BETWEEN THE:

QUESTIONS
HYPOTHESIS
DATA TABLES
and
GRAPHS

Have your child explore one activity a week. At first, provide them with a question, a hypothesis a data table and a graph...

...after a few weeks, ask your child to start writing their own hypothesis from your question. In addition, have them set up their own data table and graph before starting the experiment. With weekly repetition, children will be able to effectively set up, run and analyze the results of a scientific experiment!!!!



MORE IMPORTANTLY, EACH EXPERIMENT CAN BE USED TO REINFORCE THE SCIENTIFIC CONCEPT YOUR CHILD IS CURRENTLY LEARNING.

For example.....

If your child is learning about how energy can be transferred from potential to kinetic, you can use the rubber band experiment to reinforce this concept....

...and while they are learning about the transfer of potential energy to kinetic energy, they are also practicing effective scientific inquiry procedures !!!

Once your child becomes more proficient at this model....

YOU CAN REALLY START HAVING FUN WITH THEM...

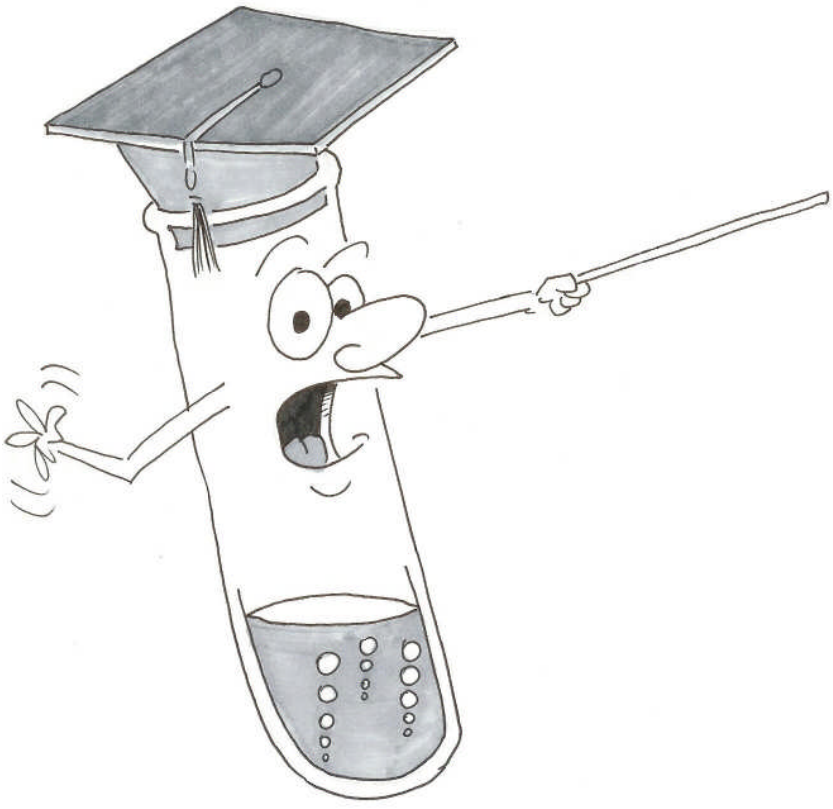
SOURCES OF ERROR

HAVE THE CHILD LIST:

All of the materials used in the experiment
(i.e. ruler, rubberband, etc.)

and

All of the possible ways the materials could have been changed (each of which is a "SOE") (i.e. size, shape, color of rubber band, angle of the launch, presence of wind, etc...



All materials in an experiment must remain **CONSTANT**

The possible changes in materials identify sources of error (SOE) that could alter the results of an experiment

Constants are very important because you only want to change ONE variable in your experiment!!!

WHY DO YOU ONLY WANT TO CHANGE ONE THING IN YOUR EXPERIMENT?

So that you can identify what variable is altering the results in your experiment…..

….if you changed two variables, how would you know which one is affecting the results???

CONSTANTS *share their importance with another factor in experiments..*

THE CONTROL

THE CONTROL IS A TRIAL WITHIN YOUR EXPERIMENT THAT IS USED TO IDENTIFY ANY UNKNOWN SOE'S THAT MAY BE AFFECTING YOUR DATA

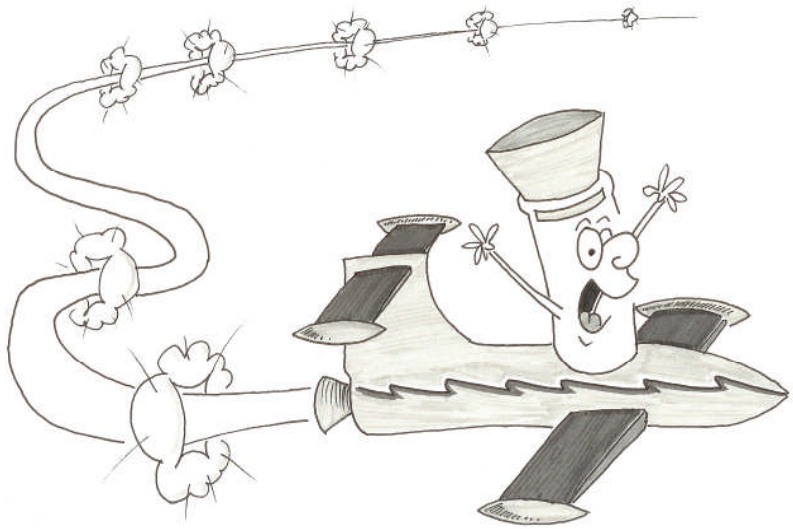
For example…

If your child wishes to see the effects of salt water on the growth rate of plants, the CONTROL in this experiment would be to use ordinary water with their plants to gauge the normal growth rate. Along with this CONTROL, the child will grow other plants with varying levels of salt water…

If all the plants die, with the exception of the CONTROL, you may assume that the salt is the culprit!!! If even the CONTROL perishes, you may have an unknown SOE in the water that needs to be identified.

THE CONTROL IS THE NORMAL EXPECTATION OF WHAT IS TO HAPPEN

Typically, you tend to already know what to expect with your CONTROL, but you run the trials anyway…just to be certain there are no hidden SOE's that could affect your results.



SO WHAT DO YOU DO WHEN YOUR CHILD IS VERY COMFORTABLE WITH SETTING UP, RUNNING AND ANALYZING THE RESULTS FROM AN EXPERIMENT???

QMS Strategy

THE QMS STANDS FOR:

QUESTION
METHOD
SOLUTION

Consider the QMS Strategy as the "challenge phase" of this method…..

Up to this time, you have been providing your child with the Question to solve in their experiments

NOW, LET'S CHANGE THE PROCEDURE A BIT . . .

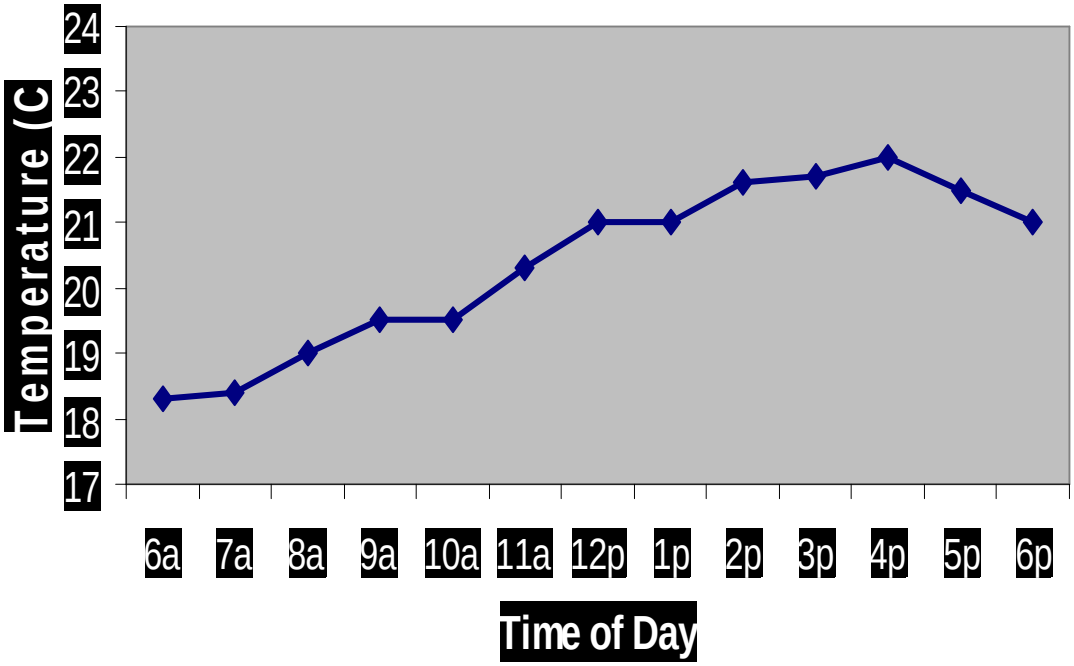
Instead of providing the question to your child, now provide the Method (a procedure) or Results (a data table or graph) for them to follow….

- FOR EXAMPLE -

By providing a completed graph to your child, or perhaps a procedure, your child can be asked to determine the experimental:

QUESTION
HYPOTHESIS
DATA TABLE
CONCLUSION

BY PROVIDING A GRAPH SUCH AS THIS:



The Independent and Dependent Variables can be identified……

…. and can be used to create a question and a hypothesis such as these:

QUESTION:

Does the time of day affect its temperature?

HYPOTHESIS:

If the time of day is increased, then the temperature will increase/decrease.

. . . AND A DATA TABLE SUCH AS THIS:

Time of day	Temperature			
	Trial One	Trial Two	Trial Three	Average
8am				
Noon				
4pm				

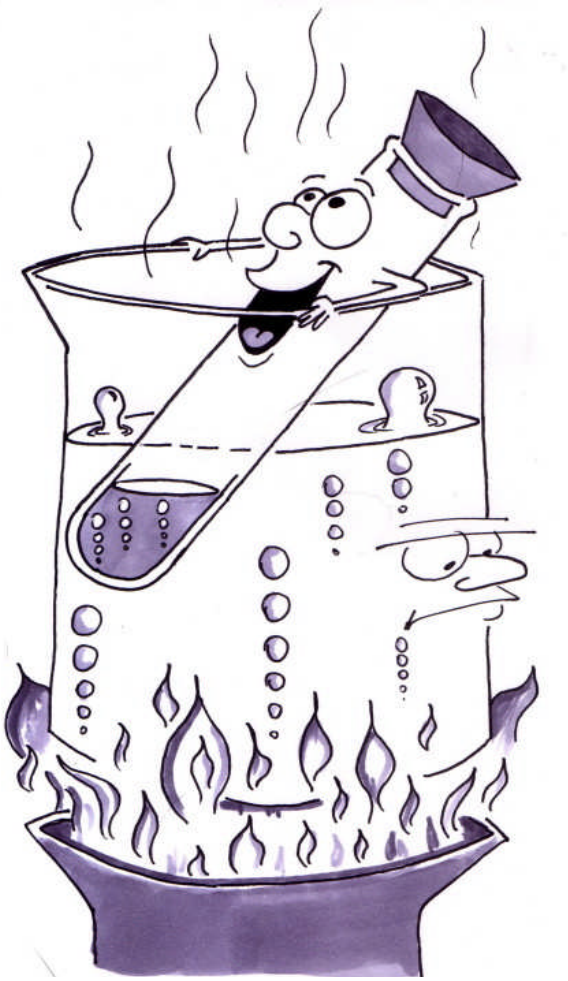
The QMS Strategy forces the child to look at an experiment from a more practical way…

AS A PROBLEM TO SOLVE!!!

DO NOT FORGET !!!

YOU REALLY CANNOT BE "WRONG" IN RUNNING A SCIENTIFIC EXPERIMENT...AS LONG AS YOU CAN DEFEND YOUR DATA.

IT DOES NOT MATTER IF YOUR DATA SUPPORTS OR DOES NOT SUPPORT THE HYPOTHESIS; EACH EXPERIMENT SHOULD SET THE STAGE FOR FURTHER EXPERIMENTS TO EXPLORE.



WEEK ONE:
LIVING AND NON-LIVING THINGS

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ORGANISMS HAVE BASIC NEEDS. FOR EXAMPLE, ANIMALS NEED AIR, WATER, AND FOOD; PLANTS REQUIRE AIR, WATER, NUTRIENTS, AND LIGHT. ORGANISMS CAN SURVIVE ONLY IN ENVIRONMENTS IN WHICH THEIR NEEDS CAN BE MET. THE WORLD HAS MANY DIFFERENT ENVIRONMENTS, AND DISTINCT ENVIRONMENTS SUPPORT THE LIFE OF DIFFERENT TYPES OF ORGANISMS.

DEFINITIONS:

ORGANISM	ANY LIVING CREATURE ON THE PLANET
BIOTIC	ALL LIVING OR DECEASED ORGANISMS ARE BIOTIC OBJECTS
ENVIRONMENT	"EVERYTHING IN THE WORLD"
REPRODUCE	TO BE ABLE TO MAKE ANOTHER ORGANISM OF THE SAME KIND
ABIOTIC	NONLIVING OBJECTS IN THE WORLD
NUTRIENTS	ANOTHER WORD FOR "FOOD"
RESOURCES	THE BASIC THINGS AN ORGANISM CAN USE EVERYDAY TO SURVIVE
POPULATION	A GROUP OF SIMILAR ORGANISMS

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT KINDS OF RESOURCES DO PLANTS AND ANIMALS NEED?

ALL PLANTS AND ANIMALS NEED AIR, WATER AND FOOD/NUTRIENTS TO SURVIVE.

WHAT IS THE DIFFERENCE BETWEEN LIVING AND NONLIVING OBJECTS?

LIVING OBJECTS CAN USE FOOD, GROW, REACT TO CHANGES IN THE ENVIRONMENT, REPRODUCE, BREATHE AND/OR MOVE. NONLIVING OBJECTS CANNOT DO ALL OF THESE THINGS!!

WHAT DO YOU THINK IS MORE IMPORTANT, LIVING OR NONLIVING THINGS?

THEY BOTH ARE EQUALLY IMPORTANT. THE AIR WE BREATHE IS A NONLIVING OBJECT, BUT WITHOUT IT, WE COULD NOT LIVE! NOT ALL OF OUR RESOURCES ARE LIVING THINGS SO THEY ARE BOTH VERY IMPORTANT!

DO YOU LIVE IN AN ENVIRONMENT?

YES. SINCE YOU AND I BOTH EXIST IN THE WORLD, WE ARE DEFINITELY LIVING WITHIN AN ENVIRONMENT!

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK ONE:

PAGE ONE:

2 – BIOTIC
6 – POPULATION
8 – RESOURCES
7 – REPRODUCE
5 – ORGANISM
3 – ENVIRONMENT
4 – NUTRIENTS
1 – ABIOTIC

PAGE TWO:

1. B
2. C
3. B
4. C
5. C
6. B

PAGE THREE:

BIOTIC OBJECTS IN THE PICTURE MAY INCLUDE:

THE FISHERMAN, BIRDS, FISH, PLANTS AND THE WORM

ABIOTIC OBJECTS INCLUDE:

THE FISHING ROD, CLOUDS, CAN, HOOK, FISHING LINE, ROCK AND THE WATER

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "TOUCHY FEELY SCIENCE IN A BOX"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

BIOTIC (LIVING) OBJECTS ARE VERY DIFFERENT FROM ***ABIOTIC*** (NONLIVING) OBJECTS.

BIOTIC OBJECTS CAN DO THE FOLLOWING:

- USE FOOD
- GROW
- REACT TO CHANGES IN YOUR ***ENVIRONMENT*** (THIS IS A BIG WORD THAT MEANS "EVERYTHING IN THE WORLD")
- ***REPRODUCE*** (TO REPRODUCE, AN ORGANISM MUST BE ABLE TO MAKE ANOTHER ORGANISM OF ITS OWN KIND)
- BREATHE
- AND MOVE

IF YOUR OBJECT DOES ANY OF THESE THINGS, YOU MAY HAVE A BIOTIC OBJECT!!!

TOUCHY FEELY SCIENCE IN A BOX

OBJECTIVE:

THE CHILD WILL BE ABLE TO IDENTIFY LIVING (BIOTIC) AND NON-LIVING (ABIOTIC) OBJECTS BY ONLY USING THEIR SENSE OF TOUCH.

MATERIALS:

ONE SHOE-BOX, OPAQUE BAG, ETC...
ONE HANDFUL OF ROCKS
ONE HANDFUL OF FRUITS, VEGETABLES, FLOWERS, ETC...
ONE HANDFUL OF METAL OBJECTS (SCREWS, BOLTS, ETC...)
ONE HANDFUL OF LEAVES

YOU CAN ADD ANYTHING YOU LIKE!!!! USE YOUR IMAGINATION!!!

ACTIVITY:

PLACE ALL OF YOUR OBJECTS INTO YOUR BOX OR BAG AND KEEP IT CLOSED.

ALLOW YOUR CHILD TO REACH IN AND FEEL ONE OBJECT.

HAVE THEM DESCRIBE WHAT THE OBJECT FEELS LIKE AND WRITE THESE DESCRIPTIONS DOWN ON THE ENCLOSED WORKSHEET.

AS EACH OBJECT IS REMOVED FROM THE BOX/BAG, WRITE DOWN THEIR NAMES ON THE WORKSHEET AND HAVE THE CHILD IDENTIFY WHETHER OR NOT THE OBJECT IS BIOTIC OR ABIOTIC BY CHECKING THE CORRECT BOX ON THEIR WORKSHEET!

THE ROCKS AND METAL OBJECTS ARE GOOD EXAMPLES OF ABIOTIC RESOURCES; THE FRUITS, VEGETABLES, FLOWERS AND LEAVES ARE ALL EXAMPLES OF BIOTIC FACTORS!!! REMEMBER, EVEN IF YOUR OBJECT WAS ONCE ALIVE (BUT IT IS NOW DEAD!) IT STILL WOULD BE CALLED A BIOTIC FACTOR! TO BE AN ABIOTIC FACTOR, YOU CANNOT HAVE EVER BEEN ALIVE AT ALL!!

IF THE CHILD IS UNSURE ABOUT AN OBJECT BEING BIOTIC OR ABIOTIC, HAVE THEM LOOK AT THE LIST OF QUESTIONS AT THE BOTTOM OF THEIR WORKSHEE

TOUCHY FEELY SCIENCE IN A BOX

DESCRIBE THE OBJECT IN YOUR HAND	WHAT IS THE NAME OF YOUR OBJECT?	IS YOUR OBJECT A BIOTIC FACTOR?	IS YOUR OBJECT AN ABIOTIC FACTOR?

Does the object:

- USE FOOD
- GROW
- REACT TO CHANGES IN YOUR ***ENVIRONMENT*** (THIS IS A BIG WORD THAT MEANS "EVERYTHING IN THE WORLD")
- ***REPRODUCE*** (TO REPRODUCE, AN ORGANISM MUST BE ABLE TO MAKE ANOTHER ORGANISM OF ITS OWN KIND)
- BREATHE
- OR MOVE ???

If your object cannot do any of these things, you probably have an abiotic object!!!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "GRAPHING LIFE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

ALL GROUPS OF SIMILAR ORGANISMS (KNOWN AS A ***POPULATION***) NEED AIR, WATER AND FOOD/***NUTRIENTS*** TO SURVIVE. THESE NEEDS ARE KNOWN AS ***RESOURCES***.

BIOTIC (LIVING) OBJECTS ARE VERY DIFFERENT FROM ***ABIOTIC*** (NONLIVING) OBJECTS.

BIOTIC OBJECTS CAN DO THE FOLLOWING:

- USE FOOD
- GROW
- REACT TO CHANGES IN YOUR ***ENVIRONMENT*** (THIS IS A BIG WORD THAT MEANS "EVERYTHING IN THE WORLD")
- ***REPRODUCE*** (TO REPRODUCE, AN ORGANISM MUST BE ABLE TO MAKE ANOTHER ORGANISM OF ITS OWN KIND)
- BREATHE
- OR MOVE

GRAPHING LIFE

OBJECTIVE:

THE CHILD WILL BE ABLE TO IDENTIFY LIVING (BIOTIC) AND NON-LIVING (ABIOTIC) OBJECTS FROM MANY DIFFERENT SOURCES.

MATERIALS:

NEWSPAPERS AND/OR MAGAZINES WITH LOTS OF PICTURES TO CUT OUT
SCISSORS
PENCIL/PEN
GLUE
PAPER

ACTIVITY:

DIVIDE THE SHEET OF PAPER IN HALF, LENGTHWISE, BY EITHER DRAWING A LINE OR FOLDING IT IN HALF. LABEL ONE HALF OF THE PAPER "BIOTIC OBJECTS" AND THE OTHER SIDE WITH "ABIOTIC OBJECTS".

HAVE THE CHILD SEARCH THROUGH NEWSPAPERS OR MAGAZINES FOR SMALL PICTURES TO CUT OUT. FOR AN EXTRA CHALLENGE, TAKE YOUR CHILD OUTSIDE TO COLLECT SMALL ITEMS FROM AROUND YOUR HOME!!

INFORM YOUR CHILD THAT THESE ITEMS WILL BE PASTED ONTO A SHEET OF PAPER THAT HAS BEEN DIVIDED IN HALF.

BEFORE THESE ITEMS ARE PASTED, HOWEVER, YOUR CHILD MUST FIRST PLACE THEM ON THE CORRECT SIDE OF THE PAPER. ASK THEM IF "THEIR ITEM IS A BIOTIC OR ABIOTIC OBJECT?"

YOU MAY NEED TO REMIND THEM THAT EVEN IF AN OBJECT WAS ONCE ALIVE (LIKE THE WOOD SURROUNDING A PENCIL, OR THE GRAIN THAT WAS USED TO MAKE A NOODLE...) IT IS STILL CONSIDERED TO BE A ***BIOTIC*** OBJECT. SINCE MOST LIVING THINGS REQUIRE THE SAME ***RESOURCES*** TO SURVIVE (FOOD/***NUTRIENTS***, WATER AND AIR) THIS WOULD BE AN EXCELLENT TIME TO REVIEW THESE BASIC NEEDS!!!

AFTER EACH OF THEIR ITEMS IS CORRECTLY IDENTIFIED, PASTE THEM ONTO THE CORRECT SIDE OF YOUR GRAPH!

IF YOUR CHILD CHOOSES A PICTURE OF A GROUP OF ORGANISMS, YOU CAN TAKE THIS OPPORTUNITY TO REMIND THEM THAT A ***POPULATION*** IS A GROUP OF SIMILAR ORGANISMS LIVING IN THE SAME AREA (LIKE A HERD OF DEER, OR A SMALL PATCH OF GRASS...)

WEEK TWO: MATERIAL AND NONMATERIAL RESOURCES

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

RESOURCES ARE THINGS THAT WE GET FROM THE LIVING AND NONLIVING ENVIRONMENT TO MEET THE NEEDS AND WANTS OF A POPULATION.

SOME RESOURCES ARE BASIC MATERIALS, SUCH AS AIR, WATER, AND SOIL; SOME ARE PRODUCED FROM BASIC RESOURCES, SUCH AS FOOD, FUEL, AND BUILDING MATERIALS; AND SOME RESOURCES ARE NONMATERIAL, SUCH AS QUIET PLACES, BEAUTY, SECURITY, AND SAFETY.

DEFINITIONS:

MATERIAL RESOURCES	RESOURCES YOU CAN TOUCH LIKE GAS, WOOD AND FOOD
NEED	SOMETHING YOU MUST HAVE IN ORDER TO STAY ALIVE LIKE AIR, WATER AND NUTRIENTS
NONMATERIAL RESOURCES	RESOURCES THAT YOU CANNOT TOUCH LIKE HAPPINESS, PEACE, FEELINGS OF SAFETY
NONRENEWABLE RESOURCES	RESOURCES THAT CAN TAKE A LONG TIME TO BE MADE AGAIN (THOUSANDS OF YEARS!); SOMETIMES THESE RESOURCES CANNOT BE MADE AGAIN AT ALL
RENEWABLE RESOURCE	A RESOURCE THAT CAN BE MADE AGAIN LIKE LIVING ORGANISMS
WANT	ANYTHING YOU FEEL LIKE HAVING THAT IS NOT A NEED

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT ARE SOME EXAMPLES OF MATERIAL AND NONMATERIAL RESOURCES?

MATERIAL RESOURCES INCLUDE ALL THINGS THAT CAN BE PHYSICALLY TOUCHED; NONMATERIAL RESOURCES, LIKE OUR FEELINGS, CANNOT BE PHYSICALLY TOUCHED.

WHAT IS THE DIFFERENCE BETWEEN A NEED AND A WANT?

A NEED IS SOMETHING THAT IS NECESSARY FOR US TO SURVIVE. A WANT IS ANYTHING YOU FEEL LIKE HAVING THAT IS NOT A NEED.

WHAT DO YOU THINK IS MORE IMPORTANT, MATERIAL OR NONMATERIAL RESOURCES?

THEY BOTH ARE EQUALLY IMPORTANT. OUR MATERIAL RESOURCES ALLOW US TO STAY ALIVE WHILE OUR NONMATERIAL RESOURCES KEEP US HEALTHY, HAPPY AND WILLING TO KEEP SURVIVING!

ARE ALL NONRENEWABLE RESOURCES UNABLE TO BE MADE AGAIN?

NO. IF THE RESOURCE CANNOT BE MADE FOR A VERY LONG TIME (WE ARE TALKING THOUSANDS OF YEARS HERE!), IT IS STILL CONSIDERED A NONRENEWABLE RESOURCE.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK TWO:

PAGE ONE:

ACROSS:

5. MATERIAL
6. NEED

DOWN:

1. RENEWABLE
2. NONMATERIAL
3. WANT
4. NONRENEWABLE

PAGE TWO:

1 - MATERIAL RESOURCES
6 - NEED
4 - NONMATERIAL RESOURCES
3 - NONRENEWABLE RESOURCES
2 - RENEWABLE RESOURCE
5 - WANT

PAGE THREE:

"DRAW A PICTURE OF YOUR HOME. BE CERTAIN TO INCLUDE EVERYTHING YOU NEED TO SURVIVE IN YOUR DRAWING. YOU MAY ALSO ADD MANY OF YOUR WANTS IN YOUR DRAWING TOO!

LABEL EVERYTHING IN YOUR PICTURE AS EITHER A NEED OR A WANT."

ANSWERS WILL VARY. THE PICTURE SHOULD CONTAIN BOTH NEEDS AND WANTS.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "BE CAREFUL WHAT YOU ASK FOR..."

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

NOT ALL MATERIAL RESOURCES ARE NEEDED FOR EVERY SITUATION WE ARE IN.

OUR NEEDS MAY, AT TIMES, COMPETE WITH OUR WANTS. HOWEVER, OUR NEEDS MUST ALWAYS BE SATISFIED FIRST BEFORE OUR WANTS.

BE CAREFUL WHAT YOU ASK FOR...

READ THE FOLLOWING STORY TO YOUR CHILD:

THIS SUMMER, YOU ARE GOING TO TAKE A TRIP TO AN ISLAND THAT IS VERY FAR AWAY. IT IS GOING TO TAKE YOU THREE DAYS TO REACH THIS ISLAND SINCE IT IS FAR INTO THE OCEAN. ONCE YOU GET THERE, YOU WILL HAVE ALL THE RESOURCES YOU NEED! **BUT**...YOUR BOAT DOES NOT HAVE ANYTHING ON IT AT ALL RIGHT NOW!

YOU NEED TO START PACKING!!!

THE ITEMS LISTED BELOW ARE THE ONLY THINGS YOU WILL BE ABLE TO TAKE WITH YOU. HOW IMPORTANT ARE THESE THINGS TO KEEP YOU ALIVE DURING YOUR LONG TRIP?

WRITE "1" BY THE MOST IMPORTANT THING YOU WILL NEED TO TAKE; WRITE "2" BY THE SECOND MOST IMPORTANT THING, AND SO ON...UNTIL YOU REACH "14". THIS ONE IS THE MOST USELESS THING YOU CAN USE ON YOUR TRIP.

THINK CAREFULLY!!
THREE DAYS IS A LONG TIME ON A BOAT!!!

GAMES	_____	SOAP	_____
CLOTHES	_____	CANDY	_____
FOOD	_____	GASOLINE	_____
WATER	_____	UMBRELLA	_____
TV	_____	BLANKET	_____
WALKIE TALKIE	_____	BOAT MOTOR	_____
A COAT	_____	MATCHES	_____

HERE IS MY BEST ATTEMPT AT PLACING THESE ITEMS IN ORDER. FEEL FREE TO ALTER THEM AS NEEDED!!!

1. **BOAT MOTOR -** WITHOUT A MOTOR, YOU ARE NOT GOING TO TRAVEL VERY FAR IN YOUR BOAT
2. **GASOLINE -** HOW DO YOU EXPECT YOUR MOTOR TO KEEP RUNNING???
3. **WATER -** THE OCEAN IS SALTWATER, SO YOU WILL NEED FRESH WATER TO SURVIVE.
4. **FOOD -** YOU SHOULD BE ABLE TO LIVE FOR THREE DAYS WITHOUT ANY FOOD. IT WOULD NOT BE VERY MUCH FUN, THOUGH. SO I WOULD SUGGEST CARRYING SOME WITH YOU!
5. **WALKIE TALKIE -** THIS COULD COME IN HANDY IF YOU NEED TO CONTACT SOMEONE FOR HELP!!!
6. **BLANKET -** EVEN THOUGH YOU WILL BE TRAVELING DURING THE SUMMER, YOU STILL MIGHT GET COLD AT NIGHT...
7. **CLOTHES -** THREE DAYS OF WEARING THE SAME CLOTHES?!?! YOU ARE GOING TO NEED TO CHANGE YOUR CLOTHES!!!
8. **SOAP -** YOUR BODY WILL NOT SMELL VERY GOOD AFTER THREE DAYS WITHOUT CLEANING UP!
9. **UMBRELLA -** IF THE WEATHER IS NOT VERY GOOD, YOU MAY NEED THIS ITEM TO STAY DRY!
10. **A COAT -** REMEMBER, IT IS SUMMERTIME. YOUR BLANKET SHOULD BE ALL YOU NEED TO STAY WARM!
11. **CANDY -** I THINK YOU CAN GO THREE DAYS WITHOUT SWEETS!!!
12. **GAMES -** GAMES MAY BE HELPFUL TO PASS THE TIME, BUT YOU CAN LIVE WITHOUT THEM!
13. **MATCHES -** WHAT ARE YOU PLANNING ON DOING? BURNING YOUR BOAT?!?! KEEP THESE AT HOME!!!
14. **TV -** COME ON!!! WHERE ARE YOU GOING TO PLUG IT IN?

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "CYCLES IN LIFE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

CYCLES EXIST IN MANY DIFFERENT AREAS OF LIFE, ESPECIALLY WITH OUR RENEWABLE RESOURCES. HOWEVER, SOME MATERIALS WE USE DO NOT HAVE A CYCLE.

IDENTIFYING RENEWABLE FROM NONRENEWABLE RESOURCES MAY HELP TO TAKE BETTER CARE OF THE MATERIALS WE USE EVERY DAY.

CYCLES IN LIFE

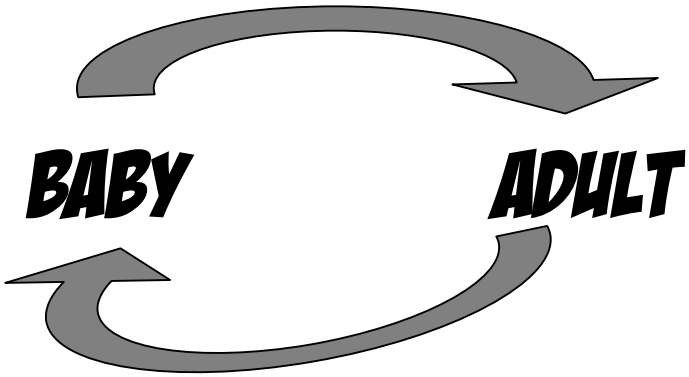
CHILDREN WILL EXPLORE SEVERAL DIFFERENT CYCLES TO IDENTIFY RENEWABLE AND NONRENEWABLE RESOURCES.

MATERIALS:

PAPER AND PENCIL

ACTIVITY:

EXPLAIN TO CHILD THAT CYCLES ARE AN IMPORTANT ASPECT OF LIFE ON EARTH. A CYCLE MAY GO THROUGH MANY DIFFERENT STEPS, BUT IT ALWAYS ARRIVES BACK AT A SAME SPOT. BECAUSE OF THIS, LIFE CAN CONTINUE ON OUR PLANET EVEN THOUGH IT MAY GO THROUGH MANY CHANGES. SHOW YOUR CHILD CARD #1. THERE ARE MANY DIFFERENT STAGES BETWEEN "BABY" AND "ADULT", BUT IT IS A TRUE CYCLE WITH NEW BIRTHS FROM ADULTS CONTINUING THE CYCLE OF LIFE.



ASK THE CHILD IF THEY CAN THINK OF ANY ENDLESS CYCLES ON THEIR OWN. EXAMPLES MAY INCLUDE:

DAY TURNS INTO NIGHT
NIGHT TURNS INTO DAY

A SEED IS USED TO MAKE A TREE
A TREE MAKES NEW SEEDS

HAVE THE CHILD DRAW A CYCLE OF A TYPICAL DAY IN THEIR LIFE.

INFORM THE CHILD THAT ONCE ANY STEP IN A CYCLE IS CHANGED, THE CYCLE DOES NOT EXIST ANYMORE. DISCUSS WHAT IS WRONG WITH THE FOLLOWING PROCESS:

OIL IS TAKEN FROM THE GROUND
OIL IS USED TO MAKE GASOLINE FOR OUR CARS
OUR CARS USE UP THEIR GASOLINE
WE FILL UP THE CARS WITH MORE GASOLINE

(THIS IS NOT A TRUE CYCLE, BECAUSE IT CANNOT GO ON FOREVER…
OIL IS A NONRENEWABLE RESOURCE.)

HAVE THE CHILD READ THROUGH THE FOLLOWING LIST OF SCENARIOS. HAVE THE CHILD DETERMINE IF EACH ONE IS A TRUE CYCLE OR NOT. IF IT IS NOT A TRUE CYCLE, HAVE THEM DRAW WHAT NEEDS TO BE DONE TO MAKE IT INTO A TRUE CYCLE!

CYCLE SCENARIOS

#1

BUY A CAR
DRIVE A CAR
WRECK A CAR
THROW THE CAR AWAY
BUY A NEW CAR

#2

WATER IN THE OCEAN HEATS UP AND TURNS TO STEAM
STEAM COOLS AND FORMS A CLOUD
THE CLOUD PROVIDES RAIN
RAIN FILLS UP THE OCEAN

#3

A SEED GROWS IN THE GROUND
A SEEDLING IS FORMED
THE SEEDLING GROWS INTO A LARGE PLANT
THE PLANTS MAKES SEEDS
THE SEEDS FALL TO THE GROUND

#4

A TREE IS CUT DOWN TO MAKE PAPER
THE PAPER IS USED TO MAKE NEWSPAPERS
THE NEWSPAPERS ARE READ BY A PERSON
THE NEWSPAPER IS THROWN OUT

#5

PLASTIC IS MADE BY A COMPANY
THE PLASTIC IS MOLDED INTO A SODA BOTTLE
THE BOTTLE IS FILLED WITH SODA AND DRANK DURING YOUR LUNCH
THE BOTTLE IS THROWN AWAY

#6

BRICKS ARE USED TO MAKE A BUILDING
THE BUILDING GETS USED AND TORN DOWN
THE BRICKS ARE BROKEN UP AND THROWN INTO THE TRASH

#7

A SODA CAN IS DRANK BY A CHILD
THE CAN IS MELTED DOWN
THE MELTED METAL IS USED TO MAKE A NEW SODA CAN

#8

FALL ENDS AND WINTER BEGINS
WINTER ENDS AND SPRING BEGINS
SPRING ENDS AND SUMMER BEGINS
SUMMER ENDS AND FALL BEGINS

Answers:

#1 *(NOT A TRUE CYCLE)*
IN ORDER TO BECOME A CYCLE, THE WRECKED CAR WOULD HAVE TO BE RECYCLED

#2 *(TRUE CYCLE)*
THIS IS THE WATER CYCLE IN ACTION!!!

#3 *(TRUE CYCLE)*
THIS IS THE LIFE CYCLE OF A PLANT!!!

#4 *(NOT A TRUE CYCLE)*
THE NEWSPAPER WOULD NEED TO BE RECYCLED IN SOME WAY TO BE A TRUE CYCLE

#5 *(NOT A TRUE CYCLE)*
THE PLASTIC WOULD NEED TO BE RECYCLED IN SOME WAY TO BE A TRUE CYCLE

#6 *(NOT A TRUE CYCLE)*
THE BRICKS WOULD NEED TO BE RECYCLED IN SOME WAY TO BE A TRUE CYCLE

#7 *(TRUE CYCLE)*
THIS IS HOW A SODA CAN IS RECYCLED!!!

#8 *(TRUE CYCLE)*
THIS IS HOW OUR SEASONS CYCLE THROUGHOUT THE YEAR

WEEK THREE: THE THREE "R's"

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

THE SUPPLY OF MANY RESOURCES IS LIMITED. IF USED, RESOURCES CAN BE EXTENDED THROUGH RECYCLING AND DECREASED USE.

THERE ARE THREE WAYS TO USE OUR RESOURCES CAREFULLY:

REDUCE – USING LESS RESOURCES
REUSE – USING YOUR RESOURCES AGAIN *WITHOUT* CHANGING THEM
RECYCLE – USING YOUR RESOURCES AGAIN *AFTER* CHANGING THEM

RECYCLING REDUCES THE AMOUNT OF TRASH AND LETS US REUSE MANY RESOURCES! MOST TRASH ENDS UP IN LARGE FIELDS, CALLED ***LANDFILLS***, WHERE IT IS DUMPED AND BURIED.

DEFINITIONS:

LANDFILL	LANDFILLS ARE LARGE FIELDS WHERE TRASH IS DUMPED AND BURIED
REDUCE	USING LESS RESOURCES
REUSE	USING YOUR RESOURCES AGAIN *WITHOUT* CHANGING THEM
RECYCLE	USING YOUR RESOURCES AGAIN *AFTER* CHANGING THEM

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT COULD YOU DO TO HELP REDUCE, REUSE OR RECYCLE RESOURCES IN YOUR HOME?

ANSWERS WILL VARY. ANY NUMBER OF EXAMPLES CAN BE MENTIONED FROM THIS QUESTION.

WHICH DO YOU THINK IS MORE IMPORTANT: REDUCING, REUSING OR RECYCLING?

ANSWERS WILL VARY. THEY ARE ALL EQUALLY IMPORTANT.

WHICH DO YOU THINK YOU CAN DO MOST EASILY: REDUCE, REUSE OR RECYCLE?

REDUCING AND REUSING SHOULD BE MUCH EASIER, ESPECIALLY TO A CHILD, THAN RECYCLING. SIMPLE ACTS AROUND THE HOUSE CAN HELP TO REDUCE OR REUSE MATERIALS.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK THREE:

PAGE ONE:

1. REUSE – *USING YOUR RESOURCES AGAIN WITHOUT CHANGING THEM*
2. RECYCLE – *USING YOUR RESOURCES AGAIN AFTER CHANGING THEM*
3. REDUCE – *USING LESS RESOURCES*
4. LANDFILL – *USING LESS RESOURCES*

PAGE TWO:

4. LANDFILLS
1. REDUCE
2. REUSE
3. RECYCLE

PAGE THREE:

"LIST FIVE WAYS TO REDUCE THE AMOUNT OF TRASH IN YOUR HOME."

ENCOURAGE YOUR CHILD TO USE THEIR OWN!!!

"LIST FIVE NEW WAYS YOU CAN REUSE THINGS IN YOUR HOME."

ANSWERS WILL VARY

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "HOMEMADE PAPER"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE RECYCLING OF SOME OBJECTS REQUIRE THEM TO BE CHANGED BY SEPARATION, CLEANING OR FILTERING. THESE ACTIONS CAN REMOVE THE RAW MATERIALS FROM THE RECYCLED OBJECT SO THAT IT CAN BE USED AGAIN.

THE RECYCLING OF NEWSPAPER INVOLVES THE "SEPARATION" OF THE ENTIRE PAPER THROUGH CUTTING, "CLEANING" OF THE INK FROM THE NEWSPAPER, AND THE "FILTERING" OF WATER OUT OF THE MIXTURE.

HOMEMADE PAPER

OBJECTIVE:

THE CHILD WILL BE ABLE TO EXPLORE HOW PAPER CAN BE RECYCLED.

MATERIALS:

OLD NEWSPAPER
BLENDER
WATER
CORNSTARCH
WINDOW SCREEN (OR STRETCHED OUT PANTYHOSE!!!)
WAX PAPER
ROLLING PIN OR LARGE SPOON
LARGE PAN
LARGE BOWL

ACTIVITY:

TEAR A PAGE OF NEWSPAPER INTO SMALL PIECES AND PLACE THEM INTO A LARGE BOWL.

ADD ENOUGH WATER TO COVER THE PAPER AND SOAK FOR 10 MINUTES.

WHILE THE PAPER IS SOAKING, MIX 1/4 CUP OF WATER WITH 1/8 CUP OF CORNSTARCH.

TAKE THE NEWSPAPER, DISCARD THE WATER AND PLACE IT INTO THE BLENDER. ADD THE CORNSTARCH AND WATER MIXTURE.

BLEND ON HIGH FOR ABOUT TWO MINUTES.

PUT THE SCREEN OVER THE PAN. (YOU MAY NEED TO TAPE IT DOWN!) POUR THE PULP ONTO THE SCREEN AND SPREAD IT OUT SO THAT IT IS FLAT AND THIN.

COVER THE PULP WITH WAX PAPER.

USE A ROLLING PIN OR A LARGE SPOON TO SQUEEZE OUT THE EXCESS WATER.

SLOWLY PEEL THE WAX PAPER OFF THE PULP.

ALLOW TO DRY COMPLETELY, ABOUT A DAY OR TWO.

SLOWLY PEEL YOUR NEW PAPER OFF THE SCREEN!!!

Explanation:

THE RECYCLING OF PAPER IS A BUSINESS THAT EXISTS IN NEARLY EVERY LARGE CITY. SOME CITIES EVEN REQUIRE THIS VALUABLE RESOURCE TO BE RECYCLED! IN THESE AREAS, WHEN YOUR TRASH IS TAKEN OUT TO BE PICKED UP, IT IS THE HOMEOWNER'S RESPONSIBILITY TO SEPARATE THEIR TRASH BEFORE IT IS REMOVED!

THE RECYCLING PROJECT YOU JUST COMPLETED IS VERY SIMILAR TO THE ACTUAL PROCEDURE IN MANY OF THE LARGE RECYCLING PLANTS. FOR AN INTERESTING TWIST, TRY PLACING DRIED FLOWERS OR OTHER SMALL ITEMS INTO YOUR PAPER PULP FOR AN INTERESTING DESIGN. YOU MAY ALSO INCLUDE A HANDFUL OF GRASS SEED INTO THE PULP. AFTER YOU WRITE ON YOUR PAPER, YOU CAN PLANT THE SHEET AND WATCH YOUR GRASS GROW!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHEN IT IS 'WRONG TO BELONG'"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

USING THE THREE R'S CAN BE DONE INSIDE AND OUTSIDE OF ONE'S HOME.

CAREFUL USE AND DISPOSAL OF ITEMS IS A LIFE SKILL THAT SHOULD BE INTRODUCED TO ALL YOUNG CHILDREN.

WHEN IT IS "WRONG TO BELONG"

STUDENTS WILL IDENTIFY OBJECTS THAT "DO NOT BELONG" IN THEIR HABITAT.

MATERIALS:

PAPER OR PLASTIC BAG

ACTIVITY:

SELECT AN AREA FOR STUDY (INDOORS OR OUTDOORS) AND TELL THE CHILD THAT HE/SHE WILL BE PARTICIPATING IN A SCAVENGER HUNT. IF IT IS POSSIBLE, CHOOSE AN AREA THAT YOUR CHILD HAS NEVER BEEN TO BEFORE!

THE CHILD IS GIVEN A BAG TO COLLECT ITEMS THAT "DO NOT BELONG" IN THE AREA YOU HAVE CHOSEN.

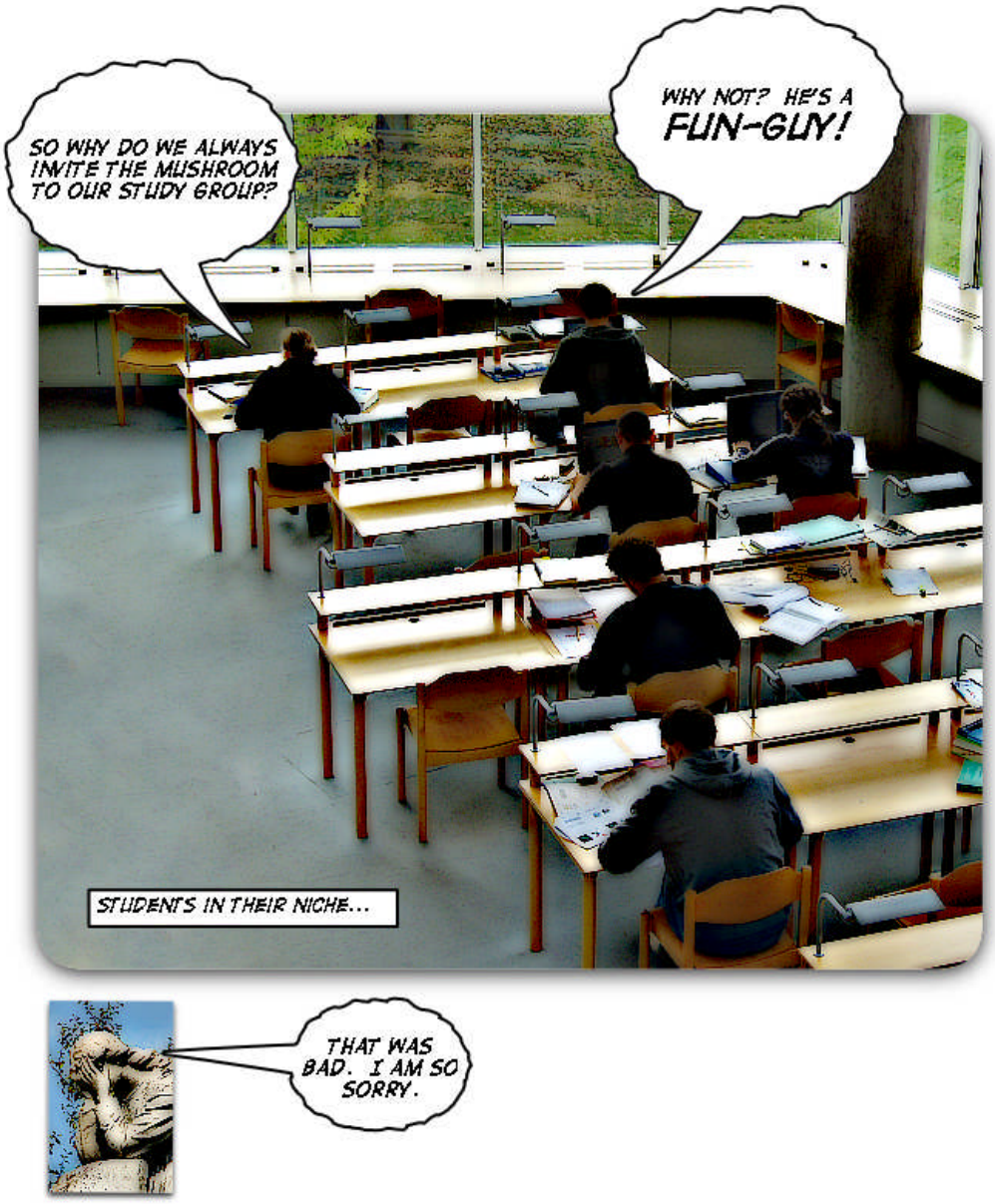
GIVE THE CHILD A SMALL AMOUNT OF TIME TO FIND AS MANY ITEMS AS POSSIBLE. COME INSIDE AND WASH YOUR HANDS!!!

DISCUSS WITH YOUR CHILD ABOUT THE ITEMS THEY FOUND. HAVE THEM GUESS AS TO HOW THEY GOT THERE.

EXPLANATION:

THIS ACTIVITY IS EXCELLENT TO REINFORCE THE CONCEPTS OF REDUCING RESOURCES, REUSING THEM AND RECYCLING. IF POSSIBLE, ASK YOUR CHILD TO DETERMINE IF IT IS POSSIBLE TO REUSE OR RECYCLE ANY OF THE ITEMS THEY HAVE FOUND.

WEEK FOUR: HABITATS AND NICHE



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ALL ORGANISMS CAUSE CHANGES IN THE ENVIRONMENT WHERE THEY LIVE. SOME OF THESE CHANGES ARE DETRIMENTAL TO THE ORGANISM OR OTHER ORGANISMS, WHEREAS OTHERS ARE BENEFICIAL.

HUMANS DEPEND ON THEIR NATURAL AND CONSTRUCTED ENVIRONMENTS. HUMANS CHANGE ENVIRONMENTS IN WAYS THAT CAN BE EITHER BENEFICIAL OR DETRIMENTAL FOR THEMSELVES AND OTHER ORGANISMS.

DEFINITIONS:

HUMANS	PEOPLE
HABITAT	THE PLACE WHERE AN ORGANISM LIVES IN THE ENVIRONMENT
NICHE	"NITCH"; WHAT AN ORGANISM DOES IN ITS HABITAT
EXTINCT	"X-TINKT"; WHEN ALL OF THE ORGANISMS OF A SIMILAR KIND (POPULATION) ARE NO LONGER ALIVE THROUGHOUT THE WORLD

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

DESCRIBE THE HABITAT YOU LIVE IN.

THE CHILD CAN PROVIDE A DESCRIPTION OF THEIR HOME, NEIGHBORHOOD OR COMMUNITY. THEY MAY MENTION ALL OF THE RESOURCES THEY RECEIVE IN THIS AREA AS WELL.

DESCRIBE YOUR NICHE.

THE CHILD MAY CHOOSE TO DESCRIBE WHAT THEY DO ON AN AVERAGE DAY. THIS IS PERFECTLY ACCEPTABLE.

HOW DO YOU THINK YOUR NICHE IS DIFFERENT FROM YOUR PARENTS NICHE? HOW IS IT THE SAME?

ANSWERS WILL VARY. THE CHILD WILL NEED TO IDENTIFY ANY SIMILARITIES AND DIFFERENCES IN HOW EVERYONE IN YOUR FAMILY ACTS WITHIN YOUR HABITAT.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK FOUR:

PAGE ONE:

1. HABITAT
2. HUMANS
3. EXTINCT
4. NICHE

PAGE TWO:

2. HUMANS
4. HABITAT
3. NICHE
1. EXTINCT

UNIT ONE REVIEW
ANSWER KEY

EVERY DAY, I WAKE UP ***WANTING*** A PIECE OF CHOCOLATE CAKE, BUT I DO NOT EAT IT! INSTEAD, I GO INTO THE KITCHEN AND MAKE SOMETHING ELSE THAT I KNOW I ***NEED***. MY HOME IS MY ***HABITAT*** AND FIXING MY BREAKFAST IS MY ***NICHE***.

WHILE FIXING MY BREAKFAST, I NEVER USE PAPER PLATES BECAUSE I WANT TO ***REDUCE*** THE AMOUNT OF TRASH I MAKE. INSTEAD, I USE A GLASS PLATE WHICH I CAN WASH AND ***REUSE*** DURING MY BREAKFAST, I DRINK A CAN OF JUICE. WHEN I AM DONE, I PLACE THE EMPTY CAN IN A SPECIAL CONTAINER SO THAT IT MAY BE ***RECYCLED***.

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHERE O' WHERE SHALL I LIVE?"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

ALL ORGANISMS DEPEND UPON THEIR HABITATS TO PROVIDE THE NECESSARY RESOURCES IN ORDER TO SURVIVE.

BECAUSE OF THIS, MOST LIVING THINGS CHOOSE TO LIVE IN A HABITAT THAT CAN MAINTAIN THEIR SURVIVAL.

WHERE O' WHERE SHALL I LIVE???

OBJECTIVE:

THE CHILD WILL BE ABLE TO UNDERSTAND HOW LIVING THINGS ESTABLISH THEIR HABITAT BASED ON THE RESOURCES THEY NEED.

MATERIALS:

PAPER
PENCILS/CRAYONS/MARKERS/PAINT

ACTIVITY:

ASK YOUR CHILD TO DRAW A PICTURE OF THEIR HOME. INSIDE THEIR PICTURES, HAVE THEM IDENTIFY AS MANY OF THE LIVING CREATURES THAT EXIST BOTH INSIDE AND OUTSIDE OF THEIR HOMES.

THE FOLLOWING QUESTIONS MAY HELP YOU GUIDE YOUR CHILD:

WHAT LIVING THINGS CAN YOU FIND INSIDE YOUR HOME?

WHAT ARE THE NON-LIVING THING IN YOUR DRAWING? (THIS INCLUDES THE AIR, WATER AND LAND AS WELL!!!)

WHAT LIVING THINGS CAN YOU FIND IN YOUR YARD? YOUR NEIGHBORHOOD?

WHEN YOUR CHILD HAS COMPLETED THEIR DRAWING, ASK THEM THE FOLLOWING QUESTIONS:

WHY DO YOU THINK THESE LIVING THINGS LIVE WHERE THEY DO?

DIRECT THEIR ANSWER TO AN UNDERSTANDING OF HOW THESE LIVING THINGS LIVE IN A HABITAT. AND, EACH OF THEIR HABITATS HAVE ALL OF THE RESOURCES THEY NEED TO SURVIVE.

HOW DOES EACH OF THESE LIVING THINGS AFFECT THE PLACE WHERE THEY LIVE?

THIS WILL BE DIFFERENT FOR EVERY CIRCUMSTANCE; HOWEVER, ALL LIVING THINGS USE UP RESOURCES IN SOME WAY.

HOW DO LAND, AIR AND WATER AFFECT WHERE THINGS LIVE?

YOUR CHILD SHOULD IDENTIFY THAT LIVING ORGANISMS TYPICALLY CHOOSE A HABITAT WHERE THEY CAN FIND THE RESOURCES THEY NEED TO SURVIVE.

NOW...HAVE YOUR CHILD IMAGINE WHAT WOULD HAPPEN IF YOU TOOK ALL OF THE LIVING THINGS IN THE DRAWING THAT ARE INSIDE OF THE HOME AND PLACED THEM OUTSIDE. NOW HAVE THEM IMAGINE TAKING ALL OF THE LIVING THINGS THAT ARE OUTSIDE AND PUTTING THEM IN YOUR HOME...

WHAT COULD POSSIBLY HAPPEN?

THE RESOURCES THAT ARE NEEDED BY PLANTS AND ANIMALS (LIKE TREES AND SQUIRRELS) MAY NOT BE FOUND INSIDE THEIR HOME. (NOT UNLESS THE TREES COULD TRAIN THE SQUIRRELS TO WATER THEM FROM TIME TO TIME...)

ORGANISMS THAT ARE USED TO LIVING INDOORS MAY HAVE A HARD TIME FINDING THE FOOD, WATER AND SHELTER THEY NEED TO SURVIVE. MAKE CERTAIN THAT YOUR CHILD UNDERSTANDS THAT IT IS RESOURCES WHICH GUIDE AN ORGANISM TO CHOOSE A HABITAT!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "LIFE IN A DROP OF WATER"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE ABILITY TO ENHANCE OUR SENSES THROUGH TECHNOLOGY HAS BEEN CRUCIAL TO THE ADVANCEMENT OF SCIENCE.

WITH EVEN THE SMALLEST OF MICROSCOPES, ONE CAN MAKE OBSERVATIONS OF A MUCH SMALLER, BUT EQUALLY IMPRESSIVE, HABITAT FOR TINY ORGANISMS.

LIFE IN A DROP OF WATER

CHILDREN WILL EXPLORE THE HUGE AMOUNTS OF LIFE IN A DROP OF WATER WITH THEIR OWN MICROSCOPE.

MATERIALS:

PAPER PUNCH (OPTIONAL)
OLD POSTCARD, INDEX CARD OR MANILA FOLDER
ALUMINUM FOIL
NEEDLE
TOOTHPICK
PETROLEUM JELLY
EYE DROPPER OR DRINKING STRAW
GLUE
TAP WATER
SCISSORS
WATER SAMPLE FROM A POND
FLASHLIGHT

ACTIVITY:

PUNCH OR CUT OUT A ¼" HOLE IN THE CENTER OF THE CARDBOARD

CUT AND GLUE A SMALL SQUARE OF ALUMINUM FOIL THAT COVERS UP THE HOLE. TRY NOT TO GET ANY GLUE OVER THE HOLE!

GENTLY POKE THE NEEDLE THROUGH THE CENTER OF THE HOLE. MAKE CERTAIN THE HOLE IS SMOOTH AND ROUND…THE ROUNDER THE BETTER!!!

WITH THE TIP OF THE TOOTHPICK, SMEAR A CIRCLE OF PETROLEUM JELLY AROUND THE HOLE IN THE FOIL. YOU WILL WANT TO PLACE A CIRCLE OF JELLY AROUND ***BOTH*** SIDES OF THE FOIL.

WITH THE EYEDROPPER OR STRAW, PLACE ONE DROP OF CLEAN WATER INTO THE PINHOLE. YOU MAY NEED TO TAP THE CARDBOARD TO MAKE CERTAIN THAT THE WATER GETS INTO THE HOLE.

TURN ON THE FLASHLIGHT AND POINT IT UPWARDS. PLACE A DROP OF POND WATER ONTO THE FLASHLIGHT.

PLACE THE PINHOLE DIRECTLY OVER THE DROP OF POND WATER AND LOOK AT THE OBJECT THROUGH THE WATER DROP.

BY MOVING THE CARDBOARD TOWARDS AND AWAY FROM THE LIGHT SOURCE, YOU SHOULD GET THE CONTENTS OF THE POND WATER INTO FOCUS ON THE WATER DROP.

YOU SHOULD BE ABLE TO SEE A LARGE AMOUNT OF MOVEMENT IN YOUR POND WATER SAMPLE! IF NOT, SWIRL YOUR SAMPLE AROUND A BIT AND TRY ANOTHER DROP!!!

Explanation:

WITH ALL LIFE, REGARDLESS OF HOW SMALL OR LARGE, THERE IS ALWAYS A STRUGGLE AND COMPETITION FOR SURVIVAL. A POND IS A HABITAT WITH A HUGE RANGE OF LIVING ORGANISMS WHICH COMPETE FOR ENERGY SUPPLIES, FOOD, SPACE, AND OTHER RESOURCES. THIS IS THEIR NICHE. WITH THE MICROSCOPE YOU CREATED, YOU SHOULD BE ABLE TO WITNESS A LARGE AMOUNT OF POND ORGANISMS GOING ABOUT THEIR NICHE IN ORDER TO SURVIVE!

UNIT ONE TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	WANT	1. THE BASIC THINGS THAT AN ORGANISM CAN US EVERYDAY
____	RECYCLE	2. ANYTHING YOU FEEL LIKE HAVING THAT IS NOT A NEED
____	MATERIAL RESOURCES	3. RESOURCES YOU CAN TOUCH LIKE GAS AND WOOD AND FOOD
____	RESOURCES	4. THE PLACE WHERE AN ORGANISM LIVES IN THE ENVIRONMENT
____	HABITAT	5. WHEN ALL OF THE ORGANISMS OF A SIMILAR KIND (POPULATION) ARE NO LONGER ALIVE THROUGHOUT THE WORLD
____	RENEWABLE RESOURCE	6. A GROUP OF SIMILAR ORGANISMS LIVING IN THE SAME AREA
____	REDUCE	7. USING YOUR RESOURCES AGAIN AFTER CHANGING THEM
____	POPULATION	8. A RESOURCE THAT CAN BE MADE AGAIN LIKE LIVING ORGANISMS
____	REUSE	9. ANY LIVING CREATURE ON THE PLANET
____	EXTINCT	10. WHAT AN ORGANISM DOES IN ITS HABITAT
____	ORGANISM	11. USING YOUR RESOURCES AGAIN WITHOUT CHANGING THEM
____	NICHE	12. USING LESS RESOURCES

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. WHICH OF THE FOLLOWING LISTS CONTAIN ONLY ABIOTIC THINGS:

A. TV, POP BOTTLES AND VEGETABLES
B. CARS, AIRPLANES AND HORSES
C. CRAYONS, MARKERS AND PENS

2. ONE WAY TO REDUCE THE AMOUNT OF TRASH IN YOUR HOME IS TO:

A. NEVER THROW ANYTHING AWAY AT ALL
B. REUSE THINGS MANY TIMES
C. THROW OUT YOUR TRASH ONLY ONE TIME A WEEK

3. AN ORGANISM'S NICHE IS:

A. THE PLACE WHERE AN ORGANISM LIVES
B. THE THINGS AN ORGANISM DOES
C. WHAT AN ORGANISM EATS

4. WHICH OF THE FOLLOWING ITEMS CAN YOU RECYCLE:

A. PAPER
B. PENCILS
C. CRAYONS

5. WHAT IS THE DIFFERENCE BETWEEN REUSING AND RECYCLING?

A. A REUSED RESOURCE MUST BE CHANGED BEFORE IT IS USED AGAIN
B. A RECYCLED RESOURCE CANNOT BE REUSED
C. A RECYCLED RESOURCE MUST BE CHANGED BEFORE IT IS USED AGAIN

6. HUMANS CAN...

A. REDUCE, REUSE AND RECYCLE THINGS FROM THE ENVIRONMENT
B. TAKE, ADD AND REPLACE THINGS FROM THE ENVIRONMENT
C. ONLY HARM THE ENVIRONMENT

WRITE A STORY ABOUT WHAT YOU DO IN ONE DAY. IN YOUR STORY YOU MUST USE THE FOLLOWING WORDS:

WANT
NEED
HABITAT
NICHE

UNIT ONE TEST ANSWER KEY

MATCHING

2 WANT
7 RECYCLE
3 MATERIAL RESOURCES
1 RESOURCES
4 HABITAT
8 RENEWABLE RESOURCE
12 REDUCE
6 POPULATION
11 REUSE
5 EXTINCT
9 ORGANISM
10 NICHE

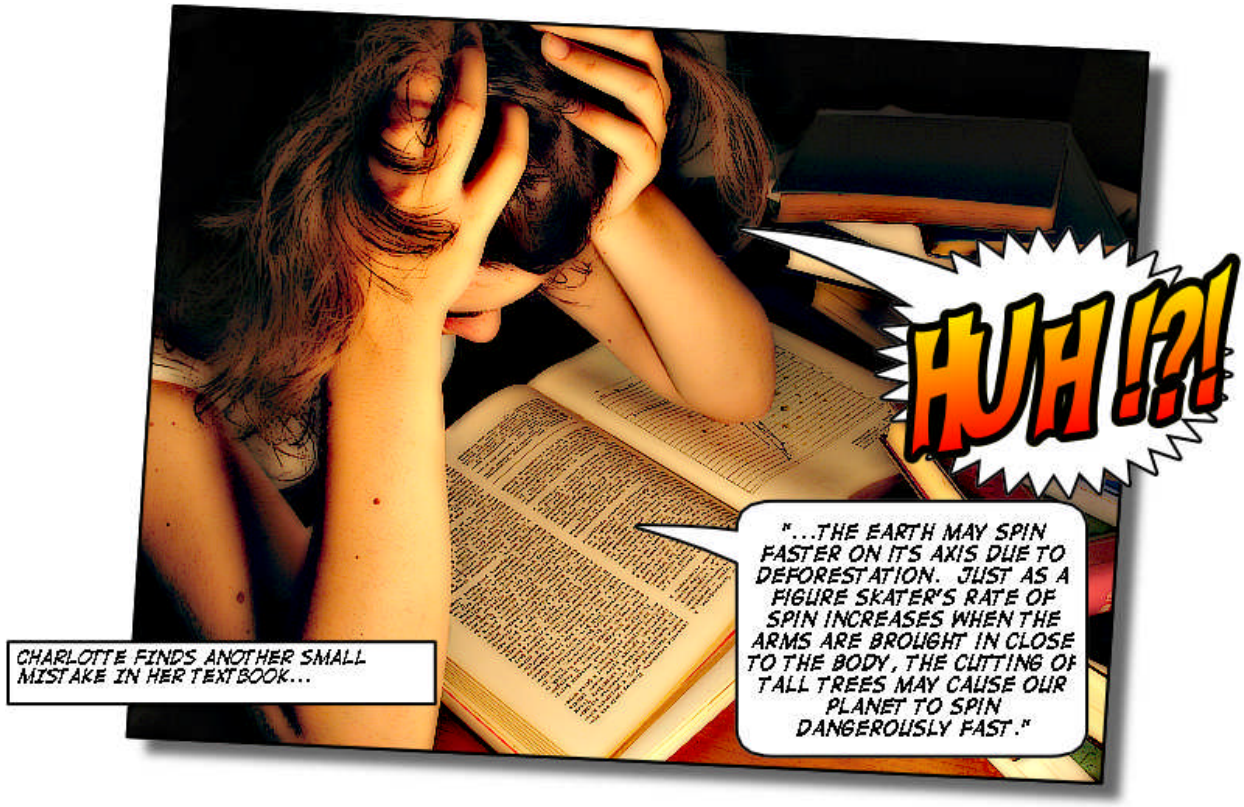
MULTIPLE CHOICE

1. C
2. B
3. B
4. A
5. C
6. B

WRITE A STORY

ANSWERS WILL VARY. HOWEVER, THE CHILD MUST USE THE WORDS WANT, NEED, HABITAT AND NICHE WITHIN THEIR DESCRIPTION OF THEIR DAILY ROUTINE.

WEEK FIVE: GRASSLANDS AND FORESTS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

AN ORGANISM'S PATTERN OF BEHAVIOR IS RELATED TO THE NATURE OF ITS ENVIRONMENT. THIS INCLUDES THE KINDS AND NUMBERS OF OTHER ORGANISMS PRESENT, THE AVAILABILITY OF FOOD AND RESOURCES, AND THE PHYSICAL CHARACTERISTICS OF THE ENVIRONMENT.

GRASSLAND BIOMES ARE EITHER HOT YEAR ROUND OR HAVE SEASONS WHICH MAY GET COLD. THEY TYPICALLY HAVE WET AND DRY SEASONS. THE SOIL IS VERY GOOD FOR SUSTAINING SMALL PLANTS AND IT CONTAINS MANY DIFFERENT ORGANISMS.

THE DECIDUOUS FOREST BIOME TYPICALLY HAVE HOT SUMMERS AND COLD WINTERS WITH ALL FOUR SEASONS PRESENT. THERE IS PLENTY OF RAIN IN THE BIOME TO SUPPORT LARGE PLANTS AND TREES AND HAS AN ABUNDANCE OF ORGANISMS.

DEFINITIONS:

BIOMES	AREAS OF THE WORLD THAT HAVE THE SAME TEMPERATURE, AMOUNT OF RAINFALL, KIND OF SOIL AND HABITATS
GRASSLAND BIOME	A BIOME THAT HAS GOOD SOIL FOR MANY DIFFERENT KINDS OF GRASSES AND FEW TREES
TROPICAL GRASSLANDS	GRASSLANDS WHICH ARE HOT ALL YEAR LONG
TEMPERATE GRASSLANDS	GRASSLANDS WHICH HAVE HOT SUMMERS AND COLD WINTERS
BURROW	TO DIG
FERTILE	HAVING PLENTY OF NUTRIENTS IN THE SOIL
DECIDUOUS FOREST BIOME	A BIOME THAT IS FILLED WITH TREES THAT LOSE THEIR LEAVES IN THE FALL AND HAVE FOUR SEPARATE SEASONS (SUMMER, FALL, WINTER AND SPRING)
HIBERNATE	TO SLEEP THROUGH THE WINTER

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT KINDS OF ANIMALS LIVE IN THE GRASSLANDS? DO YOU THINK THEY COULD SURVIVE IN A DECIDUOUS FOREST?

ANIMALS THAT LIVE IN THE GRASSLAND BIOME INCLUDE GRAZING AND BURROWING ANIMALS. MANY OF THESE ANIMALS SHOULD BE ABLE TO SURVIVE IN THE DECIDUOUS FOREST. HOWEVER, SOME ORGANISMS THAT ARE USED TO A WARM CLIMATE MAY NOT SURVIVE THE COLD SEASON OF THE FOREST.

WHAT IS THE DIFFERENCE BETWEEN THE TWO DIFFERENT GRASSLAND BIOMES?

A TROPICAL GRASSLAND REMAINS HOT ALL YEAR LONG WHILE THE TEMPERATE GRASSLANDS HAVE HOT AND COLD SEASONS.

WHAT ABIOTIC (NONLIVING) RESOURCE CAUSES THERE TO BE FEW TREES IN THE GRASSLAND BIOMES?

WATER.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK FIVE:

PAGE ONE:

(WORD SEARCH)

PAGE TWO:

5 - BIOMES
4 - GRASSLAND BIOME
3 - TROPICAL GRASSLANDS
8 - TEMPERATE GRASSLANDS
6 - BURROW
2 - FERTILE
7 - DECIDUOUS FOREST BIOME
1 - HIBERNATE

PAGE THREE:

BIOME #1 = GRASSLAND
BIOME #2 = DECIDUOUS FOREST

A GRASSLAND HAS BETWEEN 10-20 INCHES OF RAIN PER YEAR WHILE A DECIDUOUS FOREST BIOME GETS 30-60 INCHES OF RAIN PER YEAR.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "HOME SWEET HOME"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

A BURROWING ANIMAL SEEKS PROTECTION FROM THE ENVIRONMENT AND OTHER ORGANISMS BY BUILDING A HOME UNDERGROUND.

THE ENVIRONMENTAL CHANGES THAT OCCUR ON THE GRASSLAND BIOME CAN INVOLVE HOT AND COLD SEASONS. THESE SEASONS UNDOUBTEDLY CAUSE AND EFFECT ON THE ENVIRONMENTAL CONDITIONS IN AN UNDERGROUND HOME.

HOME SWEET HOME

OBJECTIVE:

THE CHILD WILL BE ABLE TO EXPLORE WHY AN ANIMAL BURROWS INTO THE GROUND.

MATERIALS:

WATER
THERMOMETER
SMALL BUCKET OF SOIL
LAMP OR SUNNY AREA
FREEZER

ACTIVITY:

PLACE THE THERMOMETER ONTO THE SOIL IN THE BUCKET. PLACE THE BUCKET IN A SUNNY AREA OR UNDER A LAMP. WRITE DOWN THE TEMPERATURE ON THE THERMOMETER.

LEAVE THE THERMOMETER ON THE SOIL FOR ONE HOUR AND WRITE DOWN THE TEMPERATURE ONCE AGAIN. YOU SHOULD NOTICE AN INCREASE IN THE TEMPERATURE.

NOW, BURY THE THERMOMETER SEVERAL INCHES INTO THE SOIL AND REPEAT THE SAME PROCEDURE.

THERE SHOULD BE A GREATER CHANGE IN TEMPERATURES FROM THE THERMOMETER THAT IS EXPOSED TO THE HEAT SOURCE.

WITH THE THERMOMETER STILL BURIED IN THE SOIL, PLACE THE BUCKET IN THE FREEZER FOR ONE HOUR. RECORD THE CHANGE IN TEMPERATURE AFTER ONE HOUR.

REMOVE THE THERMOMETER AND PLACE IT ON TOP OF THE BUCKET OF SOIL. RETURN THE BUCKET TO THE FREEZER FOR ONE HOUR AND RECORD THE TEMPERATURE ONCE AGAIN.

YOU SHOULD NOTICE A GREATER CHANGE IN TEMPERATURE IN THE THERMOMETER THAT WAS PLACED ON TOP OF THE SOIL AT THIS TIME!

Explanation:

A BURROWING ANIMAL SEEKS PROTECTION FROM THE WEATHER, A STOREHOUSE FOR FOOD AND A SECURE HOME FROM PREDATORS. THIS ACTIVITY SIMULATES HOW A BURROWING ANIMAL, SUCH AS A PRAIRIE DOG, USES A BURROW TO STAY WARM IN THE WINTER MONTHS AND COOL DURING THE SUMMER.

DATA CHART FOR "HOME SWEET HOME"

	TEMPERATURE READING ON THERMOMETER	TEMPERATURE AFTER ONE HOUR WITH THERMOMETER ON TOP OF THE SOIL	TEMPERATURE AFTER ONE HOUR OF BEING BURIED UNDER THE SOIL	TEMPERATURE AFTER ONE HOUR OF THE BURIED THERMOMETER IN THE FREEZER	TEMPERATURE AFTER ONE HOUR OF THERMOMETER ON TOP OF THE SOIL AND IN THE FREEZER
TEMPERATURE					

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "RISE AND SHINE!"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

MANY ORGANISMS, LIKE BEARS, RACCOONS AND SQUIRRELS ARE NOT TRUE HIBERNATORS AS THEY COMMONLY SEARCH FOR FOOD DURING THE WARMER DAYS OF WINTER.

TRUE HIBERNATORS, LIKE FROGS, TURTLES AND SNAKES, SLOW DOWN THEIR HEART RATE TO CONSERVE ENERGY THROUGHOUT THE ENTIRE WINTER.

RISE AND SHINE!

OBJECTIVE:

THE CHILD WILL BE ABLE TO EXPLORE HOW ANIMALS WAKE UP FROM HIBERNATION.

MATERIALS:

WATER
TWO SMALL SPONGES
RUBBERBANDS
TWO BOWLS
FREEZER

ACTIVITY:

(OPTIONAL) CUT THE SPONGES INTO THE OUTLINE OF A TURTLE OR A FROG.
WET THE SPONGES.

ROLL BOTH OF THE SPONGES UP SEPARATELY AND SECURE THEM WITH RUBBERBANDS.

PLACE THE SPONGES IN A BOWL (MAKE CERTAIN THEY ARE NOT TOUCHING!) AND PLACE IN THE FREEZER OVERNIGHT.

HAVE YOUR CHILD PREDICT WHAT WILL HAPPEN TO THE WET SPONGES.

TAKE OUT THE FROZEN SPONGES AND REMOVE THE RUBBERBANDS.

LET YOUR CHILD FEEL THE "FROG AND TURTLE." ASK YOUR CHILD IF THEIR PREDICTION WAS CORRECT OR NOT.

PUT EACH SPONGE IN A SEPARATE BOWL AND PLACE THEM IN DIFFERENT PARTS OF THE ROOM.

LET THE CHILDREN PREDICT WHAT WILL HAPPEN.

HAVE THE CHILDREN OBSERVE THE ROLLS OVER THE NEXT HALF HOUR.

DRAW THE CHILD'S ATTENTION TO THE FACT THAT THE "FROGS AND TURTLES" DID NOT THAW ALL AT ONCE. IT TAKES SOME TIME!

EXPLANATION:

THE THAWING OF THE SPONGES SIMULATES HIBERNATING ANIMALS. THESE ANIMALS, LIKE THE FROG, TURTLE, SNAKE AND THE BAT, ARE TRUE HIBERNATORS. THEY SLEEP DURING THE WINTER, SLOWING DOWN THEIR HEART RATE TO CONSERVE ENERGY (THEY DON'T REALLY FREEZE!!!). TRUE HIBERNATORS ARE NOT TO BE CONFUSED WITH ANIMALS THAT ONLY PARTIALLY HIBERNATE (YOU CAN CALL IT "NAPPING" IF YOU LIKE!). BEARS, RACCOONS, SQUIRRELS AND SKUNKS ONLY PARTIALLY HIBERNATE DURING THE WINTER THESE ANIMALS WILL WAKE UP OCCASIONALLY DURING WARM WINTER DAYS TO SEARCH FOR FOOD.

WEEK SIX:
MORE FOREST BIOMES

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

AN ORGANISM'S PATTERN OF BEHAVIOR IS RELATED TO THE NATURE OF ITS ENVIRONMENT. THIS INCLUDES THE KINDS AND NUMBERS OF OTHER ORGANISMS PRESENT, THE AVAILABILITY OF FOOD AND RESOURCES, AND THE PHYSICAL CHARACTERISTICS OF THE ENVIRONMENT.

THE CONIFEROUS FOREST BIOME IS MOSTLY COOL THROUGHOUT THE YEAR WITH PLENTY OF RAINFALL AND POOR, ROCKY SOIL. THIS BIOME CONTAINS MANY DIFFERENT KINDS OF ORGANISMS.

THE TROPICAL RAIN FOREST BIOME IS ALWAYS VERY HOT AND WET. HOWEVER, THE SOIL IN THIS BIOME IS TYPICALLY POOR AND VERY THIN. NEVERTHELESS, IT CONTAINS A LARGE VARIETY OF ORGANISMS.

DEFINITIONS:

CONIFEROUS FOREST BIOME	A BIOME THAT HAS LONG WINTERS AND IS FILLED WITH TREES KNOWN AS CONIFERS
CONIFERS	TREES WITH SHORT, WAXY NEEDLES INSTEAD OF LEAVES WHICH MAKE SEEDS THAT ARE CALLED ''CONES'' (LIKE PINECONES)
EVERGREENS	PLANTS WITH LEAVES THAT STAY GREEN THROUGHOUT THE WINTER
TROPICAL RAIN FOREST BIOME	A BIOME THAT IS ALWAYS WARM, HAS A LOT OF RAINFALL AND CONTAINS A HUGE AMOUNT OF DIFFERENT KINDS OF PLANTS AND ANIMALS

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHY DO THEY CALL CONIFERS "EVERGREENS"?

CONIFERS CONTAIN SHORT WAXY LEAVES THAT ARE NOT LOST DURING THE WINTER. THEREFORE, THESE TREES STAY GREEN ALL YEAR LONG.

IS THERE ANYTHING DIFFERENT IN THE SOIL FROM THE CONIFEROUS FOREST AND THE TROPICAL RAIN FOREST?

YES. THE SOIL IN THE CONIFEROUS FOREST AND THE TROPICAL RAIN FOREST IS VERY THIN; HOWEVER, THERE ARE MUCH MORE SMALL ROCKS FOUND INSIDE THE SOIL OF THE CONIFEROUS FOREST.

WHAT ARE THE REASONS FOR SO MANY DIFFERENT ORGANISMS IN THE TROPICAL RAIN FOREST?

THE WEATHER IN THIS BIOME IS ALWAYS WARM SO ANIMALS DO NOT HAVE TO HIBERNATE. IN ADDITION, THERE IS PLENTY OF WATER AND NUTRIENTS TO SUPPORT A LARGE NUMBER OF ORGANISMS.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK SIX:

PAGE ONE:

CONIFEROUS FOREST BIOME
CONIFERS
EVERGREENS
TROPICAL RAIN FOREST BIOME

PAGE TWO:

3 - CONIFEROUS FOREST BIOME
2 - CONIFERS
4 - EVERGREENS
1 - TROPICAL RAIN FOREST BIOME

PAGE THREE:

"MANY ANIMALS THAT LIVE IN THE TROPICAL RAIN FOREST SPEND THEIR ENTIRE LIVES IN THE TREES. SOME OF THEM NEVER EVEN TOUCH THE GROUND!

WHAT DO YOU THINK IT WOULD BE LIKE TO LIVE IN THE TREES FOR YOUR ENTIRE LIFE? WHAT WOULD YOU NEED TO BE ABLE TO DO IF YOU COULD NEVER TOUCH THE GROUND AGAIN! BE CREATIVE!!!"

ANSWERS WILL VARY.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "SOCK IT TO ME..."

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

HEAT IS TYPICALLY TRAPPED IN DARK-COLORED OBJECTS. LIGHT-COLORED OBJECTS TEND TO REFLECT SUNLIGHT AND REMAIN COOLER.

THEREFORE, DARK-COLORED ORGANISMS TEND TO MAINTAIN A WARMER BODY TEMPERATURE. BECAUSE OF THIS, THE ORGANISM MAY CHOOSE TO MOVE TOWARDS COOLER AREAS DURING THE WARMEST PARTS OF THE DAY. LIGHT-COLORED ORGANISMS HAVE THE ABILITY TO WITHSTAND THE WARMEST PARTS OF THE DAY AS THEIR BODY REFLECTS MUCH OF THE SUNLIGHT THAT STRIKES THEM.

SOCK IT TO ME...

IN THIS EXPERIMENT, THE CHILD WILL TEST HOW HEAT CAN BE TRAPPED IN DIFFERENT COLORED OBJECTS.

Materials:

BLACK SOCKS , WHITE SOCKS AND SOCKS OF DIFFERENT COLORS
THERMOMETER

ACTIVITY:

PLACE THE THERMOMETER INTO THE WHITE SOCK.

RECORD THE TEMPERATURE ON THE THERMOMETER AFTER IT HAS SET INDOORS FOR TWENTY MINUTES.

PLACE THE SOCK (WITH THE THERMOMETER INSIDE) IN A SUNNY LOCATION FOR TWENTY MINUTES AND RECORD THE TEMPERATURE.

REMOVE THE THERMOMETER AND LET IT SIT INDOORS UNTIL IT REACHES ROOM TEMPERATURE.

PLACE THE THERMOMETER INTO THE BLACK SOCK FOR TWENTY MINUTES AND THEN RECORD ITS TEMPERATURE.

PLACE THE SOCK IN A SUNNY LOCATION FOR TWENTY MINUTES AND RECORD THE TEMPERATURE.

YOU MAY REPEAT THIS EXPERIMENT WITH MANY DIFFERENT COLORS OF SOCKS.

Explanation:

FROM THIS EXPERIMENT, YOU SHOULD NOTICE THAT THE BLACK SOCK HAD A MUCH HIGHER TEMPERATURE CHANGE THAN THE WHITE SOCK. THIS IS BECAUSE AN OBJECT THAT IS BLACK ABSORBS MUCH MORE LIGHT (AND HEAT!) THAN AN OBJECT THAT IS WHITE. WHITE OBJECTS REFLECT THE SUN'S RAYS; WHILE A BLACK OBJECT ABSORBS THEM!

BUT WHAT DOES THIS HAVE TO DO WITH RAIN FORESTS???

RAIN FORESTS ARE FOUND NEAR THE EQUATOR WHERE THE TEMPERATURES ARE VERY HIGH ALL YEAR LONG. THE ANIMALS AND PLANTS THAT LIVE IN THE RAIN FORESTS ARE USED TO THESE HIGH TEMPERATURES. THEIR COLORS AFFECT HOW MUCH HEAT IS ABSORBED. BODY TEMPERATURE AFFECTS THE MOVEMENTS OF AN ANIMAL IT ITS HABITAT!

DATA TABLE FOR "SOCK IT TO ME..."

	TEMPERATURE OF SOCK BEFORE PLACING IT THE IN THE SUNLIGHT	TEMPERATURE OF SOCK AFTER PLACING IT THE IN THE SUNLIGHT
BLACK SOCK		
WHITE SOCK		

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "TOWERING TREE TOPS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE USE OF TECHNOLOGY TO OBTAIN DATA IS VITAL TO THE EXISTENCE OF SCIENCE.

THROUGH THE USE OF A HANDFUL OF HOUSEHOLD ITEMS (LIKE A CARDBOARD SQUARE, STRING, A DRINKING STRAW, A MEASURING TAPE AND A SMALL WEIGHT) A PERSON CAN EASILY IDENTIFY THE HEIGHT OF AN OBJECT. THESE ITEMS WILL BE UTILIZED TO CONSTRUCT A SIMPLE DEVICE KNOWN AS A QUADRANT. THIS TOOL HAS BEEN THE CORNERSTONE OF HIGHER MATHEMATICAL EQUATIONS, INCLUDING GEOMETRY AND TRIGONOMETRY FOR HUNDREDS OF YEARS!!!

ESP ACTIVITY: OWERING TREE TOPS

STUDENTS WILL UTILIZE A QUADRANT TO DETERMINE THE HEIGHT OF A TREE.

MATERIALS:

CARDBOARD SQUARE
DRINKING STRAW
TAPE
ONE-TWO FOOT PIECE OF STRING
SPOOL OF THREAD, ACTION FIGURE, ETC (TO BE USED AS A WEIGHT)
MEASURING TAPE

ACTIVITY:

TAPE THE STRAW ALONG ONE OF THE EDGES OF THE CARDBOARD SQUARE.

TAPE A ONE TO TWO FOOT PIECE OF STRING AT ONE OF THE CORNERS OF THE SQUARE WHERE THE STRAW HAS BEEN ATTACHED.

ALLOW THE STRING TO HANG FREELY AND ATTACH THE WEIGHT TO THE END OF THE STRING.

LOCATE THE TOP OF AN OLD TREE BY LOOKING THROUGH END OF THE STRAW THAT IS FARTHEST AWAY FROM THE STRING. THE STRING SHOULD BE ALLOWED TO SWING FREELY ALONGSIDE THE CARDBOARD SQUARE.

POSITION YOURSELF SO THAT WHEN LOOKING AT THE TOP OF THE TREE THROUGH THE STRAW, THE STRING IS ALIGNED WITH THE BOTTOM CORNER OF THE SQUARE.

MEASURE THE DISTANCE BETWEEN YOURSELF AND THE TREE.

FOR EXPERIMENTATION, REPEAT THIS PROCEDURE WITH TREES OF NOTICEABLY DIFFERENT HEIGHTS.

THE ACTUAL HEIGHT OF THE TREE CAN BE DETERMINED BY FOLLOWING THE PROCEDURE IN THE EXPLANATION SECTION OF THIS ACTIVITY.

EXPLANATION:

THE CARDBOARD SQUARE/STRAW INSTRUMENT IS A SIMPLIFIED TOOL KNOWN AS A QUADRANT. BY PLACING ONESELF IN THE POSITION FROM THE TREE AS DESCRIBED IN THE PROCEDURE, A RIGHT TRIANGLE WILL BE FORMED BY THE PERSON HOLDING THE QUADRANT, THE BASE OF THE TREE AND THE TOP OF THE TREE. SINCE YOU HAVE FORMED A RIGHT TRIANGLE, THE HEIGHT OF THE TREE IS EQUAL TO THE DISTANCE BETWEEN THE OBSERVER AND THE BASE OF THE TREE.

THE DISTANCE BETWEEN THE OBSERVER AND THE HEIGHT OF THE TREE CAN BE DETERMINED USING THE PYTHAGOREAN THEOREM ($A^2 + B^2 = C^2$) WHERE "A" IS THE DISTANCE FROM THE OBSERVER TO THE TREE AND "B" IS THE HEIGHT OF THE TREE.

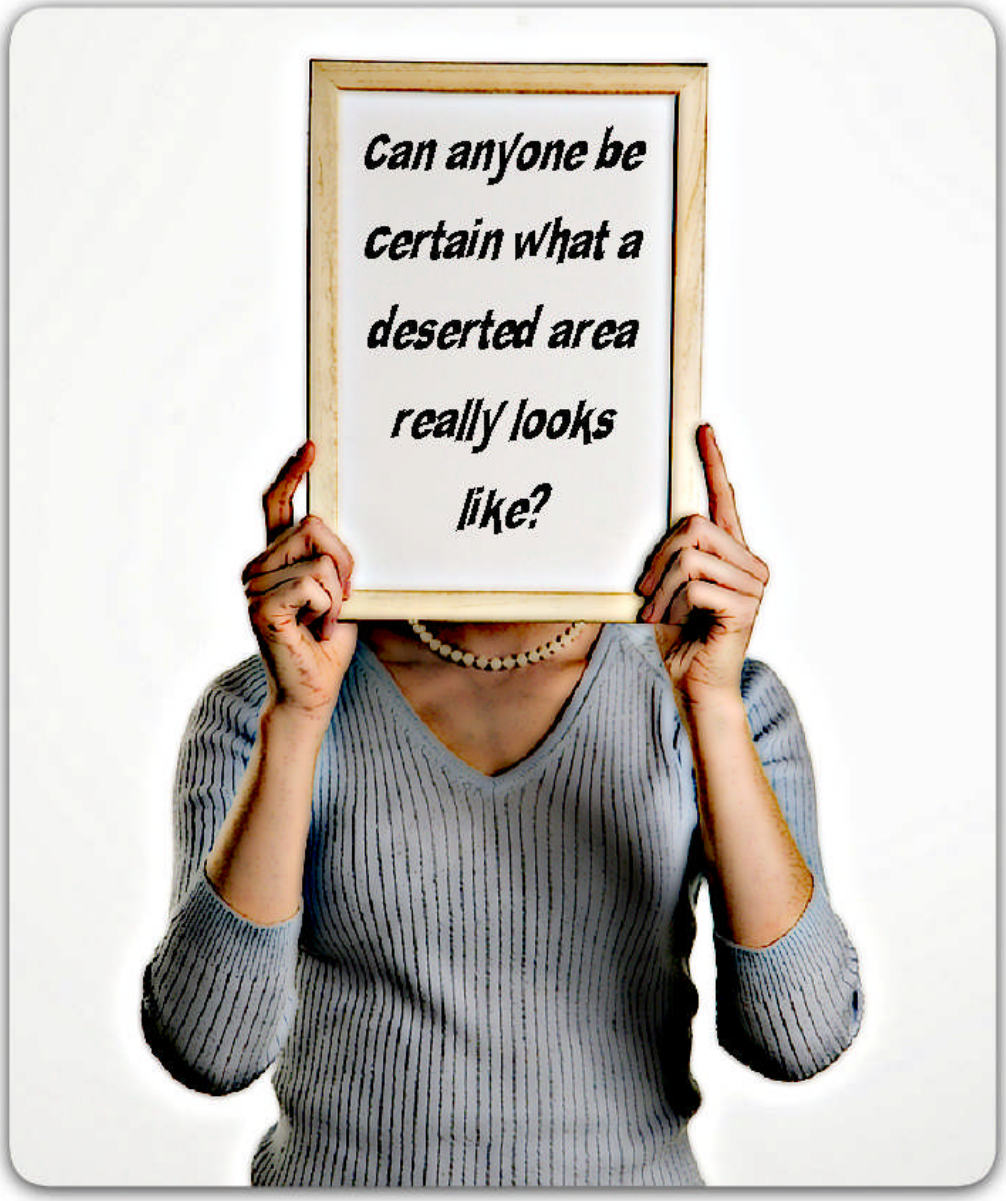
IN THE TROPICAL RAIN FOREST, MOST TREES ARE ABOUT **90** FEET TALL; HOWEVER, SOME TREES IN THIS BIOME CAN REACH OVER **250** FEET TALL!!!

INDEPENDENT VARIABLE: HEIGHT OF THE TREE
DEPENDENT VARIABLE: DISTANCE FROM THE TREE

HYPOTHESIS:

IF THE ***HEIGHT OF THE TREE*** IS (INCREASED/DECREASED), THEN THE ***DISTANCE FROM THE TREE*** WILL (INCREASE/DECREASE).

WEEK SEVEN: TUNDRAS AND DESERTS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

AN ORGANISM'S PATTERN OF BEHAVIOR IS RELATED TO THE NATURE OF ITS ENVIRONMENT. THIS INCLUDES THE KINDS AND NUMBERS OF OTHER ORGANISMS PRESENT, THE AVAILABILITY OF FOOD AND RESOURCES, AND THE PHYSICAL CHARACTERISTICS OF THE ENVIRONMENT.

THE TUNDRA BIOME IS COLD ALL YEAR LONG. THIS IS A VERY DRY BIOME WITH FROZEN SOIL (PERMAFROST) THROUGHOUT MOST OF THE YEAR. FEW ORGANISMS CAN BE FOUND HERE WHICH INCLUDE A LARGE NUMBER OF MIGRATORY ANIMALS.

THE DESERT BIOME IS HOT DURING THE DAY AND TYPICALLY COLD THROUGHOUT THE NIGHT. THIS BIOME IS DRY ALL YEAR LONG. IT HAS POOR, SANDY SOIL AND VERY FEW ORGANISMS.

DEFINITIONS:

TUNDRA BIOME	THE COLDEST BIOME ON THE PLANET; CONTAINS NO TREES AND VERY FEW DIFFERENT KINDS OF PLANTS AND ANIMALS
PERMAFROST	A LAYER OF FROZEN SOIL USUALLY FOUND IN THE TUNDRA
MIGRATION	AN ACTION BY ANIMALS IN WHICH THEY LEAVE A BIOME DURING THE WINTER MONTHS AND RETURN IN THE SPRING
ALPINE TUNDRA	A TUNDRA THAT IS FOUND ON THE TOPS OF MOUNTAINS
ARCTIC TUNDRA	A TUNDRA THAT IS FOUND AROUND THE NORTH POLE
DESERT BIOME	A BIOME THAT HAS VERY HOT DAYS AND COLD NIGHTS WITH VERY LITTLE WATER AND FEW ORGANISMS
NOCTURNAL	BEING ABLE TO SLEEP DURING THE DAY AND WAKE UP AT NIGHT

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHY WOULD IT BE GOOD TO BE ABLE TO HUNT AT NIGHT?

IT WOULD BE EASIER TO SNEAK UP ON PREY; IT WOULD BE MUCH COOLER DURING THIS TIME; MANY ORGANISMS ARE NOCTURNAL, SO THERE WOULD BE PLENTY OF PREY THAT WERE ALSO AWAKE DURING THIS TIME.

WHAT IS THE DIFFERENCE BETWEEN AN ARCTIC AND ALPINE TUNDRA?

BOTH AREAS ARE DIFFERENT KINDS OF TUNDRA; HOWEVER, ALPINE TUNDRA ARE FOUND ON THE TOPS OF MOUNTAINS WHILE ARCTIC TUNDRA IS FOUND AROUND THE NORTH POLE

WHY DO YOU THINK THERE ARE SO FEW PLANTS AND ANIMALS IN THE TUNDRA?

THE TUNDRA IS VERY COLD AND HAS A LAYER OF PERMAFROST WHICH DOES NOT ALLOW MANY PLANTS TO SURVIVE. WITHOUT MANY RESOURCES SUCH AS PLANTS, MOST ORGANISMS CAN NOT SURVIVE IN THIS BIOME.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK SEVEN:

PAGE ONE:

ACROSS:

2. ARCTIC
3. TUNDRA
6. PERMAFROST
7. NOCTURNAL

DOWN:

1. MIGRATION
4. DESERT
5. ALPINE

PAGE TWO:

4 - TUNDRA BIOME
3 - PERMAFROST
1 - MIGRATION
7 - ALPINE TUNDRA
2 - ARCTIC TUNDRA
6 - DESERT BIOME
5 - NOCTURNAL

PAGE THREE:

"COMPARE AND CONTRAST THE TUNDRA BIOME AND THE DESERT BIOME"

BOTH BIOMES HAVE COLD NIGHTS, VERY FEW PLANTS AND ANIMALS AND VERY LITTLE WATER.

DIFFERENCES BETWEEN THESE BIOMES INCLUDE TEMPERATURES DURING THE DAY AND THE ABSENCE OF PERMAFROST AND MIGRATING ORGANISMS IN THE DESERT.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "PERMA-WHAT???"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

A FROZEN LAYER OF PERMAFROST IS SUBJECT TO CHANGE DURING SEASONAL INCREASES IN TEMPERATURE.

THE NATURE OF A FROZEN LAYER OF SOIL TURNING INTO SOFT AND SPONGY GROUND DURING EVERY WARM SEASON AFFECTS THE ABILITIES OF INDIVIDUALS TO CONSTRUCT BUILDINGS IN THIS AREA.

PERMA-WHAT???

THE CHILD WILL CONSTRUCT A SMALL STRUCTURE ON A FROZEN PERMAFROST MODEL AND PREDICT/RECORD WHAT HAPPENS TO THE STRUCTURE UPON WARMING FROM SUMMER HEAT.

Materials:

ONE PLASTIC SHOEBOX
TWO CUPS OF FRESH WATER
ONE-HALF CUP OF SMALL GRAVEL STONE
ONE CUP OF GARDEN DIRT
FOUR TOOTHPICKS
ONE SOLID CUBIC PIECE OF CLAY, ABOUT 3 INCHES ON A SIDE (** SEE RECIPE ON THE NEXT PAGE FOR A CHEAP CLAY YOU CAN MAKE!)
FREEZER

Activity:

MIX SMALL GRAVEL, GARDEN DIRT AND WATER INTO THE PLASTIC SHOEBOX. FREEZE THE SHOEBOX OVERNIGHT.

WHILE THE MIXTURE IS FREEZING, CONSTRUCT A SMALL CLAY HOUSE WITH TOOTHPICKS AS CORNER SUPPORTS SO THAT STRUCTURE WILL REST ON PERMAFROST. HAVE THE CHILD PREDICT WHAT WILL HAPPEN TO THE STRUCTURE WHEN IT IS PLACED ON THE MELTING PERMAFROST.

AFTER THE "PERMAFROST" IS FROZEN, PLACE THE SMALL CLAY HOUSE ON TOOTHPICK SUPPORTS ON TOP OF PERMAFROST AND PLACE NEAR WINDOW OR OUTSIDE ON A WARM DAY TO ALLOW SURFACE OF FROZEN PERMAFROST TO BE HEATED.

HAVE THE CHILD MAKE A PREDICTION AS TO WHAT MAY HAPPEN TO THE HOUSE.

OBSERVE WHAT HAPPENS TO THE PERMAFROST AND THE HOUSE AND COMPARE RESULTS FROM OBSERVATIONS WITH THE CHILD'S PREDICTIONS.

Explanation:

ONE PROBLEM IN BUILDING LARGE/HEAVY STRUCTURES IN THE TUNDRA BIOME IS THE UNSTABLE NATURE OF PERMAFROST. PERMAFROST FREEZES SOLID IN WINTER BUT WARM SURFACE TEMPERATURES IN SUMMER MELT THE UPPER LAYER RESULTING IN A SOFT, WET, SPONGY ENVIRONMENT. FOR THOSE BUILDING STRUCTURES IN SUCH AN ENVIRONMENT, SERIOUS CONSIDERATION MUST BE GIVEN TO THE BEHAVIOR OF PERMAFROST.

SAWDUST CLAY

1 CUP SAWDUST
½ CUP FLOUR
¼ CUP WATER

MIX TOGETHER UNTIL YOU GET A SPONGY, DOUGHY CLAY. THIS MATERIAL WILL HARDEN OVERNIGHT AND CAN BE PAINTED AS WELL!!!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "PINCHING AN INCH ON A POLAR BEAR"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

ORGANISMS WHO LIVE IN COLD ENVIRONMENTS HAVE BODY STRUCTURES THAT ASSIST IN THEIR SURVIVAL.

A THICK LAYER OF "BLUBBER" CAN INSULATE AN ANIMAL FROM THE COLD ENVIRONMENT OF THE TUNDRA.

PINCHING AN INCH ON A POLAR BEAR

CHILDREN WILL MEASURE HOW A LAYER OF "BLUBBER" CAN INSULATE AN ANIMAL FROM THE COLD.

MATERIALS:
TWO LARGE BAGGIES (GALLON-SIZE WORKS WELL)
VEGETABLE SHORTENING (ENOUGH TO FILL A LARGE BAGGIE)
BUCKET OF ICE WATER
TWO SMALL SEALABLE BAGGIES (SANDWICH OR QUART-SIZE WORKS FINE)

ACTIVITY:
FILL ONE OF THE LARGE BAGGIES WITH VEGETABLE SHORTENING AND SEAL IT TIGHTLY.

SEAL THE OTHER LARGE BAGGIE.

SUBMERGE BOTH BAGS IN THE BUCKET OF ICE WATER FOR FIVE MINUTES.

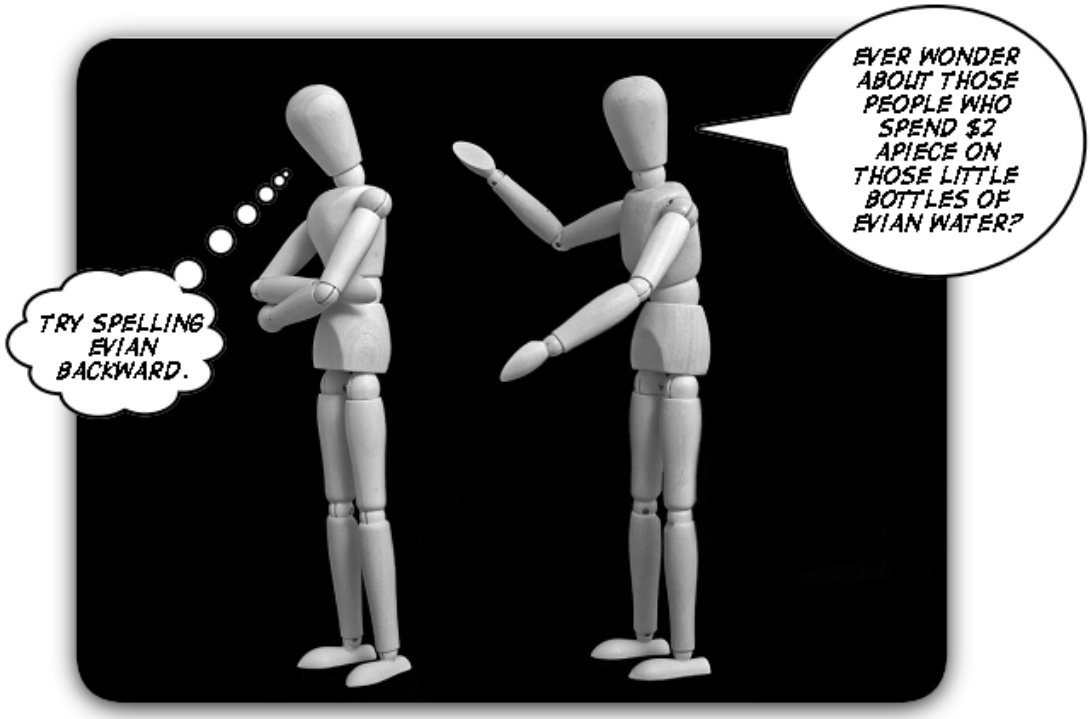
PLACE YOUR HANDS INTO THE SMALL, DRY BAGGIES.

INSERT ONE OF YOUR BAGGED HANDS INTO THE LARGE BAGGIE THAT IS FILLED WITH THE SHORTENING. THE LARGE BAG SHOULD REMAIN IN THE ICE WATER!

INSERT YOUR OTHER BAGGED HAND INTO THE LARGE BAGGIE THAT WAS NOT FILLED WITH SHORTENING. THE LARGE BAG SHOULD REMAIN IN THE ICE WATER! WHICH ONE FEELS COLDER?

EXPLANATION:
THE SHORTENING IN THE BAGGIE DOES NOT ALLOW HEAT TO ESCAPE INTO THE ICE WATER AS EASILY AS THE EMPTY BAGGIE. THEREFORE, WHEN YOU PLACE YOUR BAGGED HAND INTO THE SHORTENING, THE HEAT IN YOUR HAND DOES NOT ESCAPE (VERY WELL) INTO THE ICE WATER. THE EMPTY BAG ALLOWS YOUR HEAT TO ESCAPE VERY QUICKLY AND WILL FEEL VERY COLD!!!

WEEK EIGHT: AQUATIC BIOME



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

AN ORGANISM'S PATTERNS OF BEHAVIOR ARE RELATED TO THE NATURE OF THAT ORGANISM'S ENVIRONMENT, INCLUDING THE KINDS AND NUMBERS OF OTHER ORGANISMS PRESENT, THE AVAILABILITY OF FOOD AND RESOURCES, AND THE PHYSICAL CHARACTERISTICS OF THE ENVIRONMENT.

THE AQUATIC BIOME CONTAINS A HUGE TEMPERATURE RANGE FROM HOT TO COLD, DEPENDING UPON THE TYPE OF HABITAT (FRESHWATER, SALTWATER, ESTUARY, ETC.) NATURALLY, WATER IS IN ABUNDANCE AND VERY LITTLE SOIL EXISTS. THIS BIOME CONTAINS A MASSIVE AMOUNT OF ORGANISMS AS IT IS THE LARGEST BIOME IN THE WORLD.

DEFINITIONS:

AQUATIC BIOME	A BIOME THAT INCLUDES ALL ORGANISMS THAT LIVE WITHIN FRESH WATER OR SALT WATER
FRESHWATER	THESE HABITATS INCLUDE PONDS, STREAMS, LAKES, RIVERS AND WETLANDS; THEY ARE CALLED "FRESHWATER" BECAUSE OF THE LOW AMOUNT OF SALT IN THE WATER
LAKES	LARGE BODIES OF WATER THAT ARE SURROUNDED BY LAND
PONDS	SMALL BODIES OF WATER THAT ARE SURROUNDED BY LAND
WETLANDS	LARGE AREAS OF SHALLOW WATER; ALSO KNOWN AS SWAMPS
STREAMS	SMALL BODIES OF FRESHWATER MOVING IN ONE DIRECTION
RIVERS	LARGE BODIES OF FRESHWATER MOVING IN ONE DIRECTION
ESTUARIES	AREAS WHERE RIVERS AND STREAMS FLOW INTO SALTWATER HABITATS
MARINE	SALTWATER HABITATS
OCEANS	THE LARGEST MARINE BIOME IN THE WORLD

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHY ARE WETLANDS IMPORTANT FOR ANIMALS ?

WETLANDS PROVIDE PLENTY OF SHELTER AND FOOD FOR ORGANISMS.

WHAT IS THE DIFFERENCE BETWEEN A LAKE AND A POND?

SIZE...LAKES TEND TO BE LARGER THAN PONDS.

WHAT ARE SOME EXAMPLES OF FRESHWATER HABITATS? HOW ARE THESE DIFFERENT FROM SALTWATER HABITATS?

LAKES, PONDS, STREAMS AND RIVERS ARE ALL EXAMPLES OF FRESHWATER HABITATS. THESE AREA ARE DIFFERENT FROM SALTWATER HABITATS SINCE THEY DO NOT CONTAIN AS MUCH SALT.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK EIGHT:

PAGE ONE:

(WORD SEARCH)

PAGE TWO:

4 - AQUATIC BIOME
3 - FRESHWATER
9 - LAKES
6 - PONDS
2 - WETLANDS
1 - STREAMS
5 - RIVERS
10 – ESTUARIES
7 - MARINE
8 - OCEANS

UNIT TWO REVIEW ANSWER KEY

BIOME	TEMPERATURE	WATER	SOIL	PLANTS AND ANIMALS
GRASSLAND	HOT (AND MAYBE COLD)	WET/DRY SEASON	GOOD NUTRIENTS	MANY ORGANISMS
DECIDUOUS FOREST	HOT SUMMERS, COLD WINTERS: ALL FOUR SEASONS	PLENTY	GOOD NUTRIENTS	MANY ORGANISMS
CONIFEROUS FOREST	MOSTLY COLD	PLENTY	POOR, ROCKY SOIL	MANY ORGANISMS
TROPICAL RAIN FOREST	ALWAYS HOT	VERY WET	POOR, THIN SOIL	MANY ORGANISMS
TUNDRA	COLD	VERY DRY	POOR, FROZEN	MIGRATING BIRDS
DESERT	HOT OR COLD	VERY DRY	POOR	FEW ORGANISMS
AQUATIC	HOT TO COLD	ALWAYS WET	NO SOIL	MANY ORGANISMS

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHEN TWO HABITATS COLLIDE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

ESTUARIES ARE UNIQUE AREAS WHERE FRESHWATER HABITATS MIX WITH SALTWATER HABITATS.

MOST ESTUARIES ARE HOME FOR SPECIES THAT CANNOT LIVE ANYWHERE ELSE IN THE WORLD.

THE MIXING OF AN ESTUARY IS TYPICALLY CAUSED BY THE INCREASED WIND AND WATER CURRENTS OF THE OCEAN.

WHEN TWO HABITATS COLLIDE...

CHILDREN WILL EXPLORE THE DIFFERENCE BETWEEN FRESHWATER AND SALTWATER WHEN THESE TWO HABITATS MIX TOGETHER TO FORM AN ESTUARY!

MATERIALS:
WARM WATER
SALT
BLUE FOOD COLORING (ANY COLOR WILL WORK!)
TWO DRINKING GLASSES

ACTIVITY:

FILL A GLASS HALFWAY WITH WARM WATER AND ADD A SPOONFUL OF SALT. STIR THE MIXTURE AND WAIT UNTIL THE WATER IS STILL. LOOK FOR ANY SALT THAT REMAINS IN THE WATER. KEEP ADDING SPOONFULS OF SALT UNTIL THE WATER CANNOT DISSOLVE ANY MORE!

STIR IN ENOUGH BLUE FOOD COLORING INTO THE GLASS TO TURN THE LIQUID DARK BLUE. THIS GLASS REPRESENTS THE SALTY OCEAN WATER.

FILL A SECOND GLASS HALFWAY WITH WARM WATER. THIS GLASS REPRESENTS FRESH RIVER WATER.

NOW TELL YOUR CHILD THAT YOU WILL BE SLOWING POURING THE FRESHWATER INTO THE SALTWATER. HAVE THEM MAKE A PREDICTION AS TO WHAT MAY HAPPEN.

NOW TAKE THE GLASS WITH THE BLUE SOLUTION (OCEAN WATER) AND SLOWLY POUR IT INTO THE GLASS OF WARM WATER (RIVER WATER).

POUR IT VERY SLOWLY ONTO THE EDGE OF THE GLASS! YOU DO NOT WANT TO MIX THIS SOLUTION!!!

Explanation:

AREAS WHERE RIVERS FLOW INTO THE OCEAN ARE KNOWN AS ESTUARIES. FRESH WATER IS LESS DENSE THAN OCEAN WATER. SO, THE FRESHWATER FLOATS ON TOP OF THE DENSER OCEAN WATER. OCEAN WATER IS MORE DENSE BECAUSE IT HAS MORE "STUFF' IN IT (LIKE A WHOLE BUNCH OF SALT!!!) THAN COMPARED TO FRESH RIVER WATER. IN AN ESTUARY THERE MAY BE A SMALL ZONE BETWEEN THE FRESH AND SALT WATER, BUT THEY TEND TO REMAIN SEPARATE FROM EACH OTHER. FURTHER OUT INTO THE OCEAN, THE RIVER AND OCEAN WATER MIX TOGETHER BECAUSE OF THE INCREASED WIND AND WATER CURRENTS.

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "A PROBLEM SOLVING GAME WITH SALT WATER"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE DENSITY OF SALTWATER IS MUCH HIGHER THAN THE DENSITY OF FRESHWATER. BECAUSE OF THIS, SALTWATER SINKS TO THE BOTTOM OF A GLASS OF FRESHWATER.

THIS CHANGE IN DENSITY AFFECTS THE HABITATS OF ORGANISMS THAT LIVE IN ESTUARIES. THESE AREAS PROVIDE A HABITAT THAT SUPPORT UNIQUE SPECIES.

A PROBLEM SOLVING GAME WITH SALT WATER...

CHILDREN WILL SOLVE A PUZZLE THAT INVOLVES DIFFERENT MIXTURES OF SALT-WATER SOLUTION.

Materials:

SALT (PICKLING SALT WORKS BEST...YOU CAN FIND THIS IN THE SPICE ISLE OF MOST GROCERY STORES)
THREE (OR MORE) CUPS
WATER
CLEAR DRINKING STRAW
FOOD COLORING
SPOON

Activity:

FILL ONE OF THE CUPS WITH TAP WATER. THE AMOUNT OF WATER DOES NOT MATTER. HOWEVER, YOU WANT NO MORE THAN AN INCH OF WATER IN THE CUP! PLACE A DROP OF RED FOOD COLORING INTO THIS WATER AND MIX.

PLACE A SPOONFUL OF PICKLING SALT INTO ONE OF THE CUPS AND FILL IT WITH WATER. MIX UNTIL THE SALT DISSOLVES. ADD A DROP OF YELLOW FOOD COLORING INTO THIS MIXTURE AND STIR.

PLACE TWO SPOONFULS OF WATER INTO ANOTHER CUP, FILL IT WITH WATER AND MIX. ADD A DROP OF GREEN FOOD COLORING TO THIS MIXTURE AND STIR.

HAVE THE CHILD TAKE THEIR STRAW AND INSERT IT INTO THE RED CUP OF WATER. INSTRUCT THEM TO COVER THE TOP OF THE STRAW WITH THEIR FINGER AND REMOVE THE STRAW. THE LIQUID SHOULD STAY IN THE STRAW!

NOW, HAVE THEM SLOWLY INSERT THEIR STRAW INTO THE YELLOW WATER. THEIR FINGER SHOULD STAY ON THE TOP OF THE STRAW!!! THE RED LIQUID FROM THE FIRST CUP SHOULD STAY IN THE STRAW!!!

ONCE THEIR STRAW REACHES THE BOTTOM OF THE SECOND CUP, THEY CAN SLOWLY REMOVE THEIR FINGER AND LET AIR ENTER THE STRAW. AFTER TWO SECONDS THEY CAN RECOVER THE STRAW WITH THEIR FINGER AND SLOWLY PULL THE STRAW OUT OF THE CUP.

SINCE THE RED LIQUID IN THE FIRST CUP CONTAINS NO SALT AT ALL, IT WILL "STACK" ON TOP OF THE YELLOW LIQUID. THIS WILL FORM TWO LAYERS OF WATER IN THEIR STRAW! TRY THIS ONCE MORE WITH THE GREEN LIQUID!

Explanation:

YOU WILL WANT TO USE PICKLING SALT SINCE THIS SUBSTANCE DISSOLVES CLEARLY IN WATER. TABLE SALT TENDS TO LEAVE A CLOUDY APPEARANCE.

THE LESS DENSE AN OBJECT IS, THE MORE LIKELY IT IS TO FLOAT ON TOP OF DENSER SUBSTANCE. IN THIS CASE, THE RED LIQUID CONTAINS NO SALT AT ALL. THEREFORE, IT IS LESS DENSE THAN THE OTHER LIQUIDS. WHEN THE STRAW CONTAINING THE RED LIQUID IS PLACED INTO THE YELLOW LIQUID AND THE CHILD'S FINGER IS REMOVED, AIR PRESSURE IN THE CUP FORCES THE YELLOW LIQUID UP AND INTO TO THE STRAW. SINCE THE YELLOW LIQUID IS MORE DENSE THAN THE RED LIQUID, THE TWO FLUIDS DO NOT MIX. INSTEAD, THEY "STACK" ON TOP OF EACH OTHER. BY ADDING THE GREEN LIQUID, THE CHILD CAN SEE THREE SEPARATE LAYERS IN THEIR STRAW!

THIS ACTIVITY CAN BE MODIFIED FOR THE AGE OF THE CHILD. THREE CUPS WORK JUST FINE WITH YOUNGER CHILDREN. YOU CAN ALSO INCREASE THE NUMBER OF SALT SOLUTIONS OR CHALLENGE THE CHILD TO FIND THE RIGHT COMBINATION WITHOUT INFORMING THEM OF THE CONTENTS IN EACH CUP.

UNIT TWO TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	CONIFEROUS FOREST BIOME	1. A LAYER OF FROZEN SOIL
____	FRESHWATER	2. A BIOME THAT INCLUDES ALL ORGANISMS THAT LIVE WITHIN FRESH OR SALT WATER
____	DESERT BIOME	3. A BIOME THAT IS FILLED WITH TREES THAT LOSE THEIR LEAVES IN THE FALL AND HAS FOUR SEPARATE SEASONS
____	TUNDRA	4. AREAS WHERE RIVERS AND STREAMS FLOW INTO SALTWATER HABITATS
____	DECIDUOUS FOREST BIOME	5. TREES WITH SHORT WAXY NEEDLES AND MAKE SEEDS THAT ARE CALLED CONES
____	BIOMES	6. THIS BIOME IS ALWAYS WARM, HAS A LOT OF RAINFALL AND A HUGE AMOUNT ORGANISMS
____	CONIFERS	7. THESE HABITATS INCLUDE PONDS, STREAMS, LAKES RIVERS AND WETLANDS.
____	AQUATIC BIOME	8. A BIOME WITH FEW TREES AND GOOD SOIL FOR MANY DIFFERENT GRASSES
____	TROPICAL RAIN FOREST BIOME	9. A BIOME WITH HOT DAYS, COLD NIGHTS, VERY LITTLE WATER AND FEW ORGANISMS
____	GRASSLAND BIOME	10. A BIOME WITH LONG WINTERS AND IS FILLED WITH TREES KNOWN AS CONIFERS
____	**permafrost**	11. AREAS OF THE WORLD THAT HAVE THE SAME TEMPERATURE, AMOUNT OF RAINFALL, KIND OF SOIL AND HABITATS
____	ESTUARIES	12. THE COLDEST BIOME ON THE PLANET

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. THE DIFFERENCE BETWEEN TROPICAL AND TEMPERATE GRASSLANDS IS:

A. TEMPERATE GRASSLANDS ARE HOT ALL YEAR LONG
B. TROPICAL GRASSLANDS ARE COLD ALL YEAR LONG
C. TEMPERATE GRASSLANDS HAVE HOT AND COLD SEASONS

2. BIOMES HAVE BEEN MADE TO GROUP AREAS OF THE WORLD WITH THE SAME...

A. TEMPERATURE, RAINFALL, KIND OF SOIL AND HABITATS
B. TEMPERATURE, KINDS OF PLANTS AND ANIMALS AND SOIL
C. KINDS OF PLANTS AND ANIMALS, RAINFALL AND HABITATS

3. TREES IN A CONIFEROUS FOREST GET MOST OF THEIR WATER FROM:

A. RAIN
B. ICE
C. MELTED SNOW

4. THE COLDEST BIOME IN THE WORLD IS THE:

A. TUNDRA
B. CONIFEROUS FOREST
C. GRASSLAND

5. FRESHWATER BIOMES INCLUDE:

A. LAKES, RIVERS AND THE OCEAN
B. PONDS, LAKES AND STREAMS
C. RIVERS, PONDS AND THE OCEAN

6. HOW DO ANIMALS THAT LIVE IN THE TUNDRA KEEP WARM?

A. BY ALWAYS MOVING AND STAYING WARM
B. BY MIGRATING AND BURROWING INTO THE GROUND
C. BY SLEEPING ALL WINTER LONG

FILL IN THE BLANKS IN THE TABLE FROM THIS LIST OF WORDS:

A) FEW ORGANISMS
B) MIGRATING BIRDS
C) POOR, ROCKY SOIL
D) WET/DRY SEASON
E) HOT SUMMERS/COLD WINTERS; ALL FOUR SEASONS
F) ALWAYS WET

BIOME	TEMPERATURE	WATER	SOIL	PLANTS AND ANIMALS
GRASSLAND	HOT (AND MAYBE COLD)		GOOD NUTRIENTS	MANY ORGANISMS
DECIDUOUS FOREST		PLENTY	GOOD NUTRIENTS	MANY ORGANISMS
CONIFEROUS FOREST	MOSTLY COLD	PLENTY		MANY ORGANISMS
TROPICAL RAIN FOREST	ALWAYS HOT	VERY WET	POOR, THIN SOIL	MANY ORGANISMS
TUNDRA	COLD	VERY DRY	POOR, FROZEN	
DESERT	HOT OR COLD	VERY DRY	POOR	
AQUATIC	HOT TO COLD		NO SOIL	MANY ORGANISMS

UNIT TWO TEST: ANSWER KEY

MATCHING

10 CONIFEROUS FOREST BIOME
7 FRESHWATER
9 DESERT BIOME
12 TUNDRA
3 DECIDUOUS FOREST BIOME
11 BIOMES
5 CONIFERS
2 AQUATIC BIOME
6 TROPICAL RAIN FOREST BIOME
8 GRASSLAND BIOME
1 PERMAFROST
4 ESTUARIES

MULTIPLE CHOICE

1. C
2. A
3. C
4. A
5. B
6. B

FILL IN THE BLANKS

BIOME	TEMPERATURE	WATER	SOIL	PLANTS AND ANIMALS
GRASSLAND	HOT (AND MAYBE COLD)	WET/DRY SEASON	GOOD NUTRIENTS	MANY ORGANISMS
DECIDUOUS FOREST	HOT SUMMERS, COLD WINTERS: ALL FOUR SEASONS	PLENTY	GOOD NUTRIENTS	MANY ORGANISMS
CONIFEROUS FOREST	MOSTLY COLD	PLENTY	POOR, ROCKY SOIL	MANY ORGANISMS
TROPICAL RAIN FOREST	ALWAYS HOT	VERY WET	POOR, THIN SOIL	MANY ORGANISMS
TUNDRA	COLD	VERY DRY	POOR, FROZEN	MIGRATING BIRDS
DESERT	HOT OR COLD	VERY DRY	POOR	FEW ORGANISMS
AQUATIC	HOT TO COLD	ALWAYS WET	NO SOIL	MANY ORGANISMS

WEEK NINE: SPECIES AND OFFSPRING

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

PLANTS AND ANIMALS CLOSELY RESEMBLE THEIR PARENTS.

MANY CHARACTERISTICS OF AN ORGANISM ARE INHERITED FROM THE PARENTS OF THE ORGANISM, BUT OTHER CHARACTERISTICS RESULT FROM AN INDIVIDUAL'S INTERACTIONS WITH THE ENVIRONMENT. INHERITED CHARACTERISTICS INCLUDE THE COLOR OF FLOWERS AND THE NUMBER OF LIMBS OF AN ANIMAL. OTHER FEATURES, SUCH AS THE ABILITY TO RIDE A BICYCLE, ARE LEARNED THROUGH INTERACTIONS WITH THE ENVIRONMENT AND CANNOT BE PASSED ON TO THE NEXT GENERATION.

DEFINITIONS:

INHERITED TRAITS	"IN-HAIR-A-TED"; A FEATURE (LIKE EYE COLOR, HEIGHT, HAIR COLOR...) THAT YOU GET FROM YOUR PARENTS
OFFSPRING	A PARENT'S BABY
SPECIES	A GROUP OF SIMILAR AND RELATED ORGANISMS THAT MAY OR MAY NOT BE LIVING IN THE SAME AREA

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

ARE ALL TRAITS INHERITED FROM YOUR PARENTS?

NO. SOME TRAITS CAN BE LEARNED, LIKE RIDING A BIKE OR READING.

WHAT ARE SOME LEARNED TRAITS?

RIDING A BIKE, BRUSHING YOUR TEETH, DRAWING A PICTURE, ETC.

INHERITED TRAITS COME FROM HOW MANY DIFFERENT PARENTS?

TWO; A MOTHER AND A FATHER.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK NINE:

PAGE ONE:

"WHAT IS THE DIFFERENCE BETWEEN A 'SPECIES' AND A 'POPULATION'?"

ALL ORGANISMS OF THE SAME SPECIES MAY OR MAY NOT LIVE IN THE SAME AREA. IF THEY DO, THEY ARE KNOWN AS A POPULATION.

PAGE TWO:

2- INHERITED TRAITS
3 – OFFSPRING
1 – SPECIES

PAGE THREE:

1. B
2. A
3. C
4. B
5. A
6. B

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHERE DID I GET THAT?!?!?"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

NO TWO PEOPLE ARE THE SAME. EVEN IDENTICAL TWINS HAVE DIFFERENCES IN THE TRAITS THEY INHERIT FROM THEIR PARENTS.

MANY TRAITS WE INHERIT FROM OUR PARENTS CAN GO OVERLOOKED IF YOU DO NOT KNOW WHAT TO LOOK FOR.

MANY OF THESE TRAITS HAVE BEEN DOCUMENTED THROUGHOUT THE GENERAL POPULATION.

WHERE DID I GET THAT?!?!?

CHILDREN WILL DETERMINE THE SIMILARITIES AND DIFFERENCES BETWEEN THEMSELVES AND THEIR PARENTS.

Materials:

INVENTORY WORKSHEET (SEE ATTACHED)

Activity:

REVIEW THE DEFINITIONS OF INHERITED TRAITS, OFFSPRING AND SPECIES WITH THE CHILD:

INHERITED TRAITS	FEATURES (LIKE EYE COLOR, HEIGHT, HAIR COLOR) THAT YOU GET FROM YOUR PARENTS
OFFSPRING	A PARENT'S BABY
SPECIES	A GROUP OF SIMILAR AND RELATED ORGANISMS THAT MAY OR MAY NOT BE LIVING IN THE SAME AREA

REMIND THE CHILD THAT THE BODY FEATURES THEY HAVE COMES FROM BOTH OF THEIR PARENTS. DURING THIS ACTIVITY, THE CHILD WILL BE EXPLORING HOW SIMILAR/DIFFERENT THEY ARE FROM THEIR PARENTS.

GIVE THEM A COPY OF THE "INVENTORY WORKSHEET" AND GUIDE THEM THROUGH THEIR COLLECTION OF INFORMATION.

IF POSSIBLE, HAVE THE CHILD COMPARE HIMSELF/HERSELF WITH OTHER SIBLINGS, PARENTS, GRANDPARENTS, FRIENDS, ETC

HAVE THE CHILD PREDICT IF THEY BELIEVE THE MAJORITY OF PEOPLE IN THE WORLD SHARE THEIR TRAITS. EXPLAIN TO THEM THE "FREQUENCY CHART" BELOW AND SEE IF THEIR PREDICTIONS ARE CORRECT OR NOT!

Explanation:
A FREQUENCY CHART IS TYPICALLY USED TO IDENTIFY A GENERAL NUMBER OF PEOPLE WHO SHARE A PARTICULAR TRAIT. THE CHART BELOW IDENTIFIES THE PERCENTAGES OF THE TRAITS FROM THE "INVENTORY WORKSHEET" FOR THE GENERAL POPULATION.

FREQUENCY CHART

TRAITS	FREQUENCY FORM 1	FREQUENCY FORM 2
Gender	MALE – APPROXIMATELY 50%	FEMALE – APPROXIMATELY 50%
Earlobes	UNATTACHED (FREE) – MORE FREQUENT	ATTACHED – LESS FREQUENT
Thumb extension	STRAIGHT THUMB – 75%	"HITCHHIKERS THUMB" – 25%
Tongue rolling	CAN ROLL TONGUE – 65%	CANNOT ROLL TONGUE – 35%
Cheek dimples	DIMPLES – MORE FREQUENTS	NO DIMPLES – LESS FREQUENT
Handedness	RIGHT HANDED – MORE FREQUENT	LEFT HANDED – LESS FREQUENT
Hair curl	CURLY HAIR – MORE FREQUENT	STRAIGHT HAIR – LESS FREQUENT
Hair line	WIDOW'S PEAK – MORE FREQUENT	NO WIDOW'S PEAK – LESS FREQUENT

INVENTORY WORKSHEET

CHECK THE BOX THAT TELLS THE TRAITS YOU HAVE...

TRAITS	*Me*	*Mom*	DAD	BROTHER	SISTER	GRANDMA	GRANDPA
Male							
Female							
Straight thumb							
"hitchhikers thumb" ***							
Can roll tongue							
Cannot roll tongue							
Dimples							
No dimples							
Right handed							
Left handed							
Curly hair							
Straight hair							
Widow's peak							
No widow's peak							

*** A "HITCHHIKER'S THUMB" IS ONE THAT CAN BEND BACKWARDS TOWARDS YOUR WRIST. IF YOUR THUMB CAN ONLY POINT STRAIGHT UP, YOU DO NOT HAVE A "HITCHHIKER'S THUMB".

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "UP UP AND AWAY !!"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

INHERITABLE TRAITS IN ANIMALS INCLUDE THE STRUCTURAL ABILITIES FROM THE PARENTS. SOME OF THESE TRAITS ARE LEARNED WHILE OTHERS ARE INHERITED.

THROUGH ITS DEVELOPMENT, A BIRD'S WING BECOMES AN IMPRESSIVE MECHANISM FOR FLIGHT.

THE SAME PHYSICAL LAWS THAT APPLY TO A BIRD'S WING APPLY TO AIRPLANE WINGS, HANG-GLIDERS, PARACHUTES AND EVEN THE SIMPLISTIC MODEL CONSTRUCTED FOR THIS ACTIVITY.

ESP ACTIVITY: UP UP AND AWAY !!

THE FLIGHT OF A BIRD CAN BE EXAMINED THROUGH THE USE OF THIS PAPER WING.

MATERIALS:

4" X 6" INDEX CARD (OR A PIECE OF HEAVYWEIGHT PAPER)
TAPE
SHARPENED PENCIL, PEN, NAIL (TO BE USED TO POKE A HOLE)
TWO INCH PIECE OF DRINKING STRAW
APPROXIMATELY THREE FEET OF FISHING LINE
HAIR DRYER
MEASURING TAPE

ACTIVITY:

FOLD THE INDEX CARD IN TWO, LENGTHWISE, AND LEAVE AN OVERLAP OF THE SIDES OF ABOUT 1/2 INCH.

BY PUSHING AND TAPING THE OVERLAPPING ENDS TOGETHER, ONE SIDE OF THE PAPER WILL REMAIN RELATIVELY FLAT WHILE THE OTHER IS MORE CURVED.

USE THE PENCIL, PEN OR NAIL TO PUNCH ONE HOLE ON THE TOP AND ANOTHER ON THE BOTTOM OF THE AIRFOIL. THE HOLES SHOULD BE DIRECTLY IN THE MIDDLE.

INSERT THE DRINKING STRAW THROUGH THE HOLES AND THREAD THE FISHING LINE THROUGH THE STRAW.

PULL THE FISHING LINE TIGHT AND ATTACH ONE END TO THE TOP OF A TABLE AND THE OTHER TO THE FLOOR. THE STRING MUST BE HANGING STRAIGHT!

LIFT THE AIRFOIL UP ONE FOOT FROM THE GROUND, POSITION THE HAIR DRYER AND EQUAL DISTANCE AWAY AND TURN IT ON. THE AIRFOIL SHOULD REMAIN IN PLACE!

MEASURE THE DISTANCE THE AIRFOIL IS LIFTED ON THE FISHING LINE (THIS MAY REQUIRE SOME ADDITIONAL HELP!)

FOR EXPERIMENTATION, MOVE THE HAIR DRYER A FARTHER DISTANCE AWAY FROM THE AIRFOIL AND MEASURE ITS LIFT.

Explanation:

ALTHOUGH THERE ARE MANY DIFFERENT SPECIES OF BIRDS IN THE WORLD, EVERY GENERATION INHERITS ITS TRAITS FROM ITS PARENTS. THE SHAPE AND FUNCTION OF A BIRD'S WINGS ARE NO EXCEPTION. SOME ARE BUILT FOR FLYING, OTHERS FOR GLIDING, AND SOME ARE NOT BUILT TO FLY AT AL!!!

NEVERTHELESS, THIS ACTIVITY LOOKS AT THE SHAPE OF A BIRDS WING, BODY AND FEATHERS THAT ALLOW MOST SPECIES TO FLY THROUGH THE AIR. AIRPLANE WINGS ARE VERY SIMILAR, WITH A CURVED TOP AND A FLATTENED BODY UNDERNEATH. WITH BOTH WINGS HAVING THE SAME GENERAL SHAPE, THIS ALLOWS THE BODY OF THE BIRD TO ACHIEVE LIFT THROUGH THE AIR. THE HAIR DRYER SIMULATES THE WIND CURRENTS IN THE ATMOSPHERE. WITHOUT THESE CURRENTS, THE BIRD (AND THE AIRFOIL) WILL NOT HAVE THE NECESSARY ENERGY TO LIFT ITSELF FROM THE GROUND.

Independent variable: DISTANCE OF THE HAIRDRYER FROM THE AIRFOIL
dependent variable: HEIGHT OF THE AIRFOIL
hypothesis:

IF THE DISTANCE OF THE HAIRDRYER FROM THE AIRFOIL IS (INCREASED/DECREASED), THEN THE HEIGHT OF THE AIRFOIL WILL (INCREASE/DECREASE).

WEEK TEN: PLANT STRUCTURE

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

PLANTS AND ANIMALS HAVE LIFE CYCLES THAT INCLUDE BEING BORN, DEVELOPING INTO ADULTS, REPRODUCING, AND EVENTUALLY DYING. THE DETAILS OF THIS LIFE CYCLE ARE DIFFERENT FOR DIFFERENT ORGANISMS.

IN PLANTS, THE LIFE CYCLE BEGINS WITH A SEED THAT GERMINATES INTO A SEEDLING. THE SEEDLING EVENTUALLY GROWS INTO AN ADULT PLANT WHICH CAN GROW FLOWERS IN ORDER TO PRODUCE FRUITS WHICH CONTAIN NEW SEEDS. THESE SEEDS BEGIN THE LIFE CYCLE ONCE AGAIN.

DEFINITIONS:

ROOTS	THE PARTS OF A PLANT UNDER THE GROUND THAT SUPPORT THE PLANT AND SOAK UP ITS WATER AND NUTRIENTS FROM THE SOIL
LEAVES	THIS PART OF A PLANT USE THE NUTRIENTS FROM THE ROOTS AND SUNLIGHT TO MAKE FOOD FOR THE PLANT
PHOTOSYNTHESIS	A WAY FOR PLANTS TO USE SUNLIGHT, NUTRIENTS AND WATER TO MAKE THEIR OWN FOOD
STEMS	PARTS OF A PLANT THAT CARRY ALL OF THE WATER AND NUTRIENTS FROM THE ROOTS TO THE LEAVES; THEY ALSO HELP THE PLANT STAY UPRIGHT
FLOWERS	PARTS OF THE PLANT THAT MAKE ALL OF THE SEEDS
FRUITS	THE PARTS OF THE PLANT THAT HOLD THE SEEDS
LIFE CYCLES	A PATTERN FOR ALL ORGANISMS THAT INCLUDE BEING BORN, GROWING INTO ADULTS, REPRODUCING AND DYING
GERMINATE	TO BEGIN PLANT GROWTH
SEEDLING	A YOUNG, SMALL PLANT

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHICH PART OF THE PLANT IS RESPONSIBLE FOR CARRYING WATER TO THE LEAVES AND FLOWERS?

THE STEM.

WHAT IS A YOUNG PLANT CALLED?

A SEEDLING

IN ORDER FOR A PLANT TO GO THROUGH PHOTOSYNTHESIS AND MAKE ITS OWN FOOD, WHAT THINGS DOES IT HAVE TO USE?

SUNLIGHT, WATER AND NUTRIENTS.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK TEN:

PAGE ONE:

ROOTS
LEAVES
PHOTOSYNTHESIS
STEMS
FLOWERS
FRUITS
LIFE CYCLES
GERMINATE
SEEDLING

PAGE TWO:

5 - ROOTS
3 - LEAVES
8 - PHOTOSYNTHESIS
9 - STEMS
6 - FLOWERS
4 - FRUITS
1 - LIFE CYCLES
2 – GERMINATE
7 - SEEDLING

PAGE THREE:

"DRAW A PICTURE OF A PLANT. LABEL THE FOLLOWING PARTS ON YOUR PICTURE: ROOTS, LEAVES, STEM, FLOWER, FRUITS"

ANSWERS WILL VARY

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE 'TROPICAL SWAMP RADISH OF THE DESERT'"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

ALL SEEDS NEED WARMTH AND WATER IN ORDER TO SPROUT INTO A SEEDLING.

THE ENVIRONMENT OF A PLANT DETERMINES HOW FAST ITS SEEDS CAN GERMINATE. SEASONAL VARIATIONS AND ANNUAL CLIMATE AFFECT NOT ONLY THE GROWTH RATE OF A SEEDLING, BUT ALSO ITS SIZE, SHAPE AND FUNCTIONS.

SEVERAL DIFFERENT GROWING CONDITIONS CAN BE CREATED TO MODEL THE GROWTH RATE OF PLANTS IN DIFFERENT ENVIRONMENTAL SETTINGS.

THE "TROPICAL SWAMP RADISH OF THE DESERT"

CHILDREN WILL ATTEMPT TO SPROUT RADISH SEEDS IN FOUR DIFFERENT ENVIRONMENTS.

MATERIALS:

A PAPER TOWEL
SCISSORS
ONE BABY FOOD JAR AND LID (OR OTHER SIMILAR CONTAINER)
PLASTIC WRAP
12 RADISH SEEDS

ACTIVITY:

FOLD A PAPER TOWEL IN HALF THREE TIMES IN ORDER TO MAKE A LONG STRIP.

CUT OFF TWO PIECES LONG ENOUGH TO TOUCH THE BOTTOM OF A BABY FOOD JAR AND DRAPE LESS THAN HALFWAY DOWN THE SIDE.

FILL THE JAR LESS THAN HALF FULL OF WATER. THE OUTSIDE ENDS MUST STAY ABOVE THE WATERLINE SO THAT THE WATER IN THE JAR WILL NOT SIPHON OUT!!! CUT A 1 INCH SQUARE OF PLASTIC WRAP.

STICK THE PLASTIC WRAP ONTO ONE OF THE MOIST TOWEL ENDS. MAKE CERTAIN YOU KEEP THE PLASTIC WRAP EVEN WITH THE END OF THE PAPER TOWEL. IF IT HANGS LOWER THAN THE WATER LEVEL, IT WILL SIPHON WATER OUT OF THE JAR!!!

REST THE LID UPSIDE DOWN ON TOP OF THE JAR.

PUT THREE RADISH SEEDS IN THE FOLLOWING "ENVIRONMENTS":

UNDER THE PLASTIC WRAP (TROPICAL AREA)
UNDER WATER (SWAMP)
ON THE LID (DESERT)
ON THE OTHER MOIST TOWEL END

PLACE YOUR JAR IN A WARM, SUNNY SPOT. HAVE THE STUDENTS PREDICT WHICH SEEDS WILL SPROUT FIRST, LAST OR NOT AT ALL!!!

Explanation:

RADISH SEEDS NEED WARMTH, WATER AND AIR IN ORDER TO SPROUT INTO A SEEDLING. THE SEEDS PLACED IN THE TROPICAL AREA (UNDER THE PLASTIC WRAP) WILL HAVE A WET, MOIST AREA IN WHICH TO GROW. THIS IS BECAUSE THE PLASTIC WRAP KEEPS THE HEAT AND MOISTURE TRAPPED AGAINST THE SEEDS. THE SEEDS IN THIS AREA HAVE PLENTY OF AIR IN WHICH TO SURVIVE!

THE SEEDS UNDER THE WATER MAY SPROUT, BUT THERE IS NOT A LOT OF AIR THAT THE SEEDS CAN USE UNDER THE WATER.

THE SEEDS PLACED IN THE DESERT (ON THE LID) WILL NOT SPROUT. THERE IS NO WATER REACHING THE SEEDS AT ALL!

THE SEEDS PLACED ON THE OTHER MOIST TOWEL END MAY NOT GROW AS WELL. IF YOU TOUCH THIS PART OF THE PAPER TOWEL, YOU MAY FEEL THAT IT IS VERY COOL. THE RADISH SEEDS HAVE PLENTY OF WATER AND AIR IN THIS AREA, BUT IT IS FAR TOO COOL FOR THEM TO SPROUT.

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "POPCORN PHOTOSYNTHESIS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

DURING THE PROCESS OF PHOTOSYNTHESIS, ENERGY IS UTILIZED BY A PLANT TO CONVERT INERT CHEMICALS INTO A USEABLE FORM OF FOOD.

THE ENERGY NEEDED BY PLANTS TO UNDERGO PHOTOSYNTHESIS COMES FROM THE SUN OR AN ARTIFICIAL LIGHT SOURCE.

ESP ACTIVITY: POPCORN PHOTOSYNTHESIS

A TRADITIONAL SNACK WILL BE USED TO STUDY THE PROCESS OF PHOTOSYNTHESIS.

MATERIALS:
POPCORN
OIL/BUTTER (OPTIONAL)
POPCORN POPPER/PAN

ACTIVITY
COUNT TEN KERNELS AND PLACE THEM INTO THE POPCORN POPPER.

TURN ON POPCORN POPPER AND WAIT UNTIL FIRST KERNEL POPS.

LEAVE POPCORN POPPER ON FOR TEN SECONDS AFTER THE FIRST KERNEL POPS, TURN POPPER OFF AND RECORD THE NUMBER OF POPPED KERNELS.

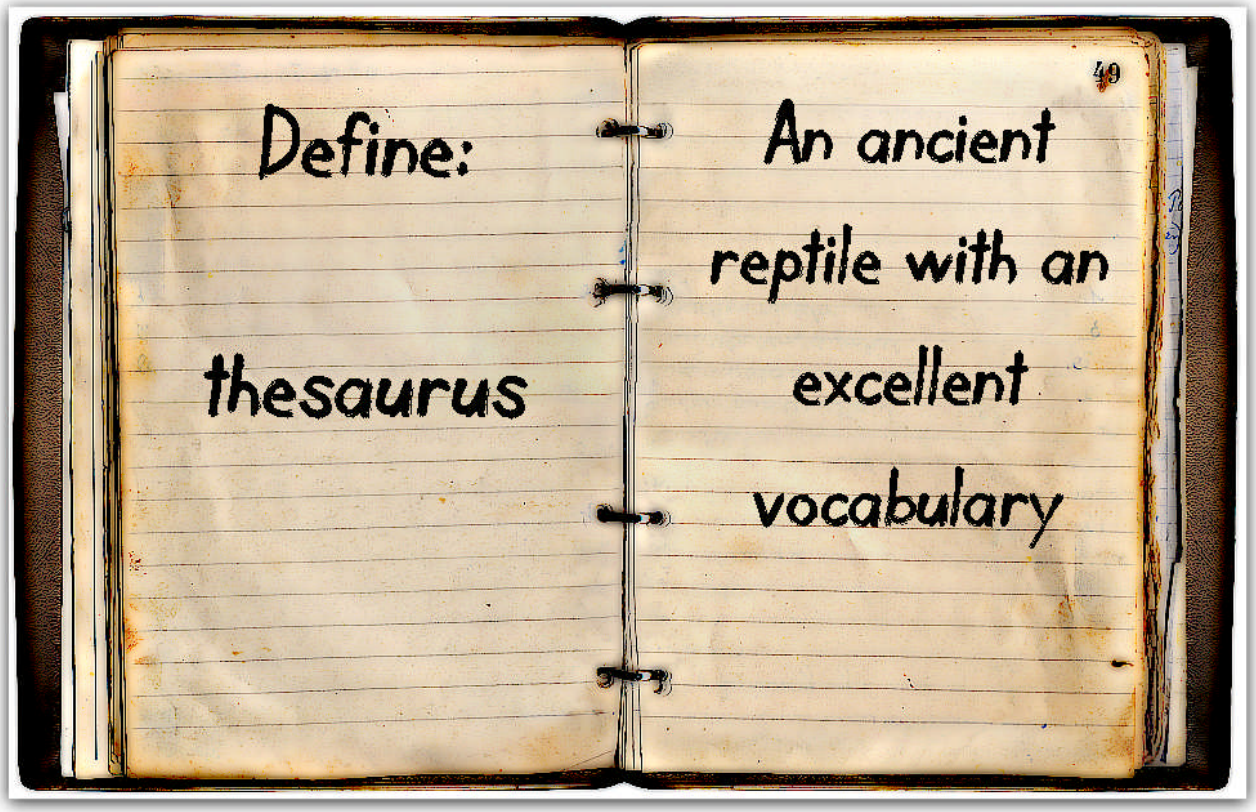
REMOVE ALL KERNELS FROM THE POPPER AND REPLACE WITH 10 NEW KERNELS.

REPEAT THIS PROCEDURE; HOWEVER, INCREASE THE POPPING TIME TO 20 SECOND INTERVALS AND 30 SECOND INTERVALS FOR EXPERIMENTATION.

EXPLANATION:
DURING THE PROCESS OF PHOTOSYNTHESIS, ENERGY IS UTILIZED BY A PLANT TO CONVERT INERT CHEMICALS INTO A USEABLE FORM OF FOOD. THIS TYPE OF REACTION IS ANALOGOUS TO THE POPPING OF CORN. NATURALLY, THE PROCESS OF PHOTOSYNTHESIS IS MUCH MORE COMPLICATED, BUT THE GENERAL SYNTHESIS OF AN INEDIBLE FOOD SOURCE INTO A TASTY TREAT IS APPARENT.

INDEPENDENT VARIABLE: EXPOSURE TO HEAT
DEPENDENT VARIABLE: AMOUNT OF POPPED KERNELS
HYPOTHESIS:
IF THE EXPOSURE TO HEAT IS (INCREASED/DECREASED), THEN AMOUNT OF POPPED KERNELS WILL (INCREASE/DECREASE).

WEEK ELEVEN: REPTILES AND AMPHIBIANS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

PLANTS AND ANIMALS HAVE LIFE CYCLES THAT INCLUDE BEING BORN, DEVELOPING INTO ADULTS, REPRODUCING, AND EVENTUALLY DYING. THE DETAILS OF THIS LIFE CYCLE ARE DIFFERENT FOR DIFFERENT ORGANISMS.

REPTILES, AMPHIBIANS AND FISH ALL HAVE UNIQUE LIFE CYCLES, NOT ONLY AMONG THEMSELVES, BUT ALSO WITHIN THEIR INDIVIDUAL SPECIES. MOST REPTILES LAY EGGS THAT CONTAIN YOUNG WHICH LOOK LIKE SMALLER VERSIONS OF THE ADULTS. MANY AMPHIBIANS LAY EGGS TOO; HOWEVER, THEIR YOUNG DO NO ALWAYS LOOK LIKE THEIR PARENT UNTIL THEY BEGIN TO GROW. FROGS ARE A GOOD EXAMPLE OF THIS SINCE TADPOLES DO NOT LOOK LIKE ADULT FROGS AT ALL! MANY FISH ARE HATCHED FROM EGGS AS WELL. LIKE REPTILES, THESE SMALL FISH TEND TO LOOK VERY MUCH LIKE THEIR PARENTS.

DEFINITIONS:

REPTILES	A COLD-BLOODED ANIMAL WITH ROUGH, DRY SKIN THAT IS COVERED IN SCALES; TURTLES, SNAKES AND ALLIGATORS ARE REPTILES
AMPHIBIANS	"AM-FIB-EE-ANZ"; COLD-BLOODED VERTEBRATES WITH SMOOTH WET SKIN
FISH	COLD-BLOODED VERTEBRATES THAT LIVE INSIDE THE AQUATIC BIOME
SCALES	THIN, FLAT AND HARD PLATES ON THE SKIN OF A REPTILE
COLD-BLOODED	AN ANIMAL WHOSE BODY STAYS ABOUT THE SAME TEMPERATURE AS THEIR HABITAT
VERTEBRATES	AN ANIMAL WHICH HAS A BACKBONE
TADPOLE	A YOUNG FROG
GILLS	SPECIAL BODY PARTS ON FISH THAT ALLOW THEM TO BREATHE AIR FROM THE WATER

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

HOW IS THE SKIN DIFFERENT BETWEEN A REPTILE AND AMPHIBIAN?

REPTILES HAVE ROUGH, DRY SKIN THAT ARE COVERED IN SCALES. AMPHIBIANS TYPICALLY HAVE SMOOTH, WET SKIN.

WHAT DO YOU HAVE TO HAVE TO BE A VERTEBRATE? ARE YOU A VERTEBRATE?

A BACKBONE; ALL HUMANS ARE VERTEBRATES

ARE THE LIFE CYCLES FOR ALL REPTILES THE SAME?

NO. EACH SPECIES MAY HAVE SPECIAL CHARACTERISTICS IN THEIR LIFE CYCLE. THERE MAY BE SEVERAL SPECIES WITH THE SAME LIFE CYCLE, BUT YOU CANNOT SAY THAT ALL REPTILES HAVE THE SAME CYCLE.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK ELEVEN:

PAGE ONE:

1. SCALES
2. REPTILES
3. TADPOLES
4. FISH
5. GILLS
6. COLD-BLOODED
7. VERTEBRATES
8. AMPHIBIANS

PAGE TWO:

5 - REPTILES
8 - AMPHIBIANS
1 - FISH
3 - SCALES
7 - COLD-BLOODED
2 - VERTEBRATES
6 - TADPOLE
4 - GILLS

PAGE THREE:

"COMPARE AND CONTRAST THE REPTILES AND AMPHIBIANS:"

BOTH OF THESE ORGANISMS ARE FOUND IN THE ANIMAL KINGDOM, ARE VERTEBRATES AND ARE COLD-BLOODED.

REPTILES HAVE DRY SCALY SKIN WHILE AMPHIBIANS HAVE SMOOTH, WET SKIN. UNLIKE REPTILES, AMPHIBIANS DO NOT ALWAYS LOOK LIKE THEIR PARENTS RIGHT AFTER THEY ARE BORN.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "COOL UNDER PRESSURE..."

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE ENVIRONMENT WHERE AN ORGANISM LIVES AND THE DAILY CHANGES IN TEMPERATURE, HAS AN EFFECT ON THE MOVEMENT OF MOST ORGANISMS.

COLD-BLOODED ORGANISMS CAN BE FOUND SUNNING THEMSELVES DURING THE WARMTH OF THE DAY. WHEN IT BECOMES TOO WARM, YOU CAN FIND THEM IN OR NEAR WATER OR POSSIBLY IN A SHADED AREA.

COOL UNDER PRESSURE...

CHILDREN WILL IDENTIFY AREAS IN THEIR HOME WHERE A COLD-BLOODED ORGANISM MAY LIVE.

Materials:

THERMOMETER
TEMPERATURE CHART (SEE ATTACHED)

Activity:

INFORM YOUR CHILD THAT HE/SHE IS GOING TO PRETEND THEY ARE A COLD-BLOODED REPTILE. BEING COLD-BLOODED MEANS THAT THE TEMPERATURE AROUND THEM MUST STAY WITHIN A CERTAIN RANGE OR THEY MAY GET HURT! THIS MEANS THEY NEED TO FIND ONE OR MORE LOCATIONS IN THEIR HOME WHERE THEY CAN LIVE FOR MOST OF THE TIME. THEY MAY ALSO NEED TO FIND PLACES WHERE THEY CAN WARM UP OR COOL DOWN IF THEIR AREA CHANGES TEMPERATURE!!!

THE TEMPERATURE RANGE THEY MUST LIVE WITHIN IS BETWEEN 75-85°F. IF ASKED, DO NOT TELL THEM HOW HOT/COLD THIS TEMPERATURE REALLY IS! THEY WILL RUN AN EXPERIMENT TO FIND THIS OUT!!!

HAVE YOUR CHILD PLACE THE THERMOMETER IN DIFFERENT PLACES AROUND YOUR HOME (I.E. ON A WINDOWSILL, IN A CLOSET, IN THE REFRIGERATOR. RECORD THE TEMPERATURE IN EACH OF THESE LOCATIONS AFTER 5, 10 AND 20 MINUTES.

YOUR CHILD SHOULD FIND SEVERAL PLACES IN YOUR HOME THAT ARE BELOW AND ABOVE 75-85°F. ASK THEM WHAT AREA IN THEIR HOME WOULD BE THE BEST FOR THEM TO SURVIVE? THEN ASK THEM WHAT THEY WOULD DO IF THE TEMPERATURE GOT TOO HOT OR TOO COLD...WHAT WOULD THEY DO?

Explanation:

THIS ACTIVITY IS VERY SIMILAR TO COLD-BLOODED ANIMALS WHO EXPERIENCE A CHANGE IN THEIR HABITAT'S TEMPERATURE. THESE ANIMALS TEND TO FIND PLACES TO COOL OFF OR WARM UP WHEN THE AIR TEMPERATURE CHANGES. SNAKES, FOR EXAMPLE, CAN BE FOUND SUNNING THEMSELVES ON COOL MORNINGS. REPTILES MAY FIND A SHADY AREA OR BURROW INTO SOFT MUD TO COOL THEMSELVES OFF IF THEY GET TOO HOT!

TEMPERATURE CHART

	5 MINUTES	10 MINUTES	20 MINUTES
LOCATIONS			
LOCATION #1			
LOCATION #2			
LOCATION #3			
LOCATION #4			
LOCATION #5			
LOCATION #6			
LOCATION #7			
LOCATION #8			
LOCATION #9			
LOCATION #10			

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "HEARING WITHOUT EARS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

WITHOUT EARS, MOST REPTILES, AMPHIBIANS AND FISH MUST RELY ON OTHER PARTS OF THE BODY TO SENSE SOUNDS.

MOST REPTILES, AMPHIBIANS AND FISH CAN DETECT SOUND WAVES WHEN THEY COME INTO CONTACT WITH THEIR BODIES.

EACH SOUND WAVE HAS ITS OWN SPECIAL CHARACTERISTIC THAT ALLOWS ORGANISMS TO HEAR DIFFERENT KINDS OF SOUNDS.

HEARING WITHOUT EARS

THE CHILD WILL DEMONSTRATE HOW SOME ANIMALS "HEAR" SOUND.

MATERIALS:

BALLOON AND RUBBER BAND
SOUP OR JUICE CAN WITH ENDS REMOVED
1/4-INCH SQUARE OF SMOOTH ALUMINUM FOIL OR A TINY MIRROR
GLUE STICK OR RUBBER CEMENT
FLASHLIGHT WITH NARROW BEAM (LASER POINTERS WORK GREAT!)
RADIO OR TAPE PLAYER

ACTIVITY:

CUT OFF THE NECK OF THE BALLOON AND STRETCH THE BALLOON TIGHTLY OVER ONE END OF THE CAN. SECURE THE BALLOON TO THE CAN WITH A RUBBER BAND.

GLUE THE FOIL OR MIRROR SLIGHTLY OFF CENTER, BEING CAREFUL NOT TO GET GLUE ON THE SHINY SIDE.

HOLD THE OPEN END OF THE CAN NEXT TO THE SPEAKER OF THE SOUND SPEAKER.

TURN ON SOME MUSIC, AND HAVE YOUR CHILD POINT THE FLASHLIGHT AT THE MIRROR SO THAT THE LIGHT REFLECTS ONTO A WALL.

AS THE MUSIC PLAYS, ASK THE CHILD TO NOTICE WHAT HAPPENS TO THE REFLECTED LIGHT?

TO MAKE THE REFLECTED LIGHT "DANCE", YOU MAY NEED TO INCREASE THE VOLUME OF THE MUSIC OR ALTER THE TYPE OF MUSIC.

EXPLANATION:

SNAKES AND SEVERAL OTHER KINDS OF AMPHIBIANS DO NOT HAVE EARS. THESE ANIMALS "FEEL" SOUND BY SENSING THE VIBRATIONS THROUGH THEIR SKIN. SOME FISH CAN DO THIS AS WELL! THE INSTRUMENT YOU CREATE IN THIS ACTIVITY MAY TAKE A LITTLE TIME TO FINE TUNE, BUT ONCE YOU GET IT TO WORK YOUR CHILD WILL NEVER FORGET THAT SOUND CAUSES VIBRATIONS! IF YOU HAVE ACCESS TO A CHEAP LASER POINTER, THIS WORKS THE BEST!

WEEK TWELVE: LIFE CYCLES OF BIRDS, MAMMALS AND INSECTS

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

PLANTS AND ANIMALS HAVE LIFE CYCLES THAT INCLUDE BEING BORN, DEVELOPING INTO ADULTS, REPRODUCING, AND EVENTUALLY DYING. THE DETAILS OF THIS LIFE CYCLE ARE DIFFERENT FOR DIFFERENT ORGANISMS.

WARM-BLOODED ORGANISMS, LIKE BIRDS AND MAMMALS, HAVE UNIQUE LIFE CYCLES. MOST BIRDS LAY EGGS WHICH HATCH AND GROW INTO AN ADULT BIRD. MOST MAMMALS DO NOT HATCH FROM EGGS AS THE ANIMAL GROWS INSIDE THE MOTHER'S BODY AND ARE BORN LIVE. THE MOTHER PRODUCES MILK TO FEED THE BABY AND USUALLY PROTECTS AND TRAINS THE BABY UNTIL IT IS AN ADULT.

THE LIFE CYCLES OF INSECTS CHANGE FROM SPECIES TO SPECIES; HOWEVER MOST INSECTS GO THROUGH A SIMILAR CYCLE BEGINNING WITH AN EGG, DEVELOPING INTO A LARVA WHICH GOES THROUGH A LARGE CHANGE AS PUPA BEFORE BECOMING AN ADULT.

DEFINITIONS:

BIRDS	WARM-BLOODED VERTEBRATE ANIMALS WHICH ARE COVERED IN FEATHERS
INSECTS	SMALL ORGANISMS WITH SIX-LEGS AND AN EXOSKELETON
MAMMALS	WARM-BLOODED VERTEBRATES WITH FUR OR HAIR; A FEMALE MAMMAL MAKES MILK TO FEED HER YOUNG
WARM-BLOODED	AN ORGANISM WHOSE BODY TEMPERATURE STAYS THE SAME, EVEN IF ITS HABITAT IS VERY COLD
LARVA	THE SECOND STAGE OF GROWTH IN AN INSECT'S LIFE CYCLE; FOR A MOTH, THIS WOULD BE THE CATERPILLAR
PUPA	THE THIRD STAGE OF GROWTH IN AN INSECT'S LIFE CYCLE; FOR A MOTH, THIS WOULD BE THE COCOON
ENDOSKELETON	HAVING YOUR SKELETON INSIDE YOUR BODY
EXOSKELETON	HAVING YOUR SKELETON OUTSIDE YOUR BODY
COCOON	THE NAME FOR THE PUPA OF A MOTH

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

HOW MANY LEGS DO YOU FIND ON AN INSECT? ARE SPIDERS INSECTS?

TRUE INSECTS HAVE SIX LEGS; SPIDERS HAVE EIGHT LEGS SO THEY ARE NOT CONSIDERED TO BE INSECTS.

WHERE WOULD YOU FIND THE SKELETON FOR AN INSECT?

INSECTS HAVE AN EXOSKELETON, THEIR SKELETONS ARE FOUND ON THE OUTSIDE OF THEIR BODIES.

NAME ONE THING THAT CAN HELP A WARM-BLOODED ANIMAL STAY WARM (BLANKETS AND COATS ARE NOT ACCEPTABLE ANSWERS!!!)

WARM-BLOODED ANIMALS MUST EAT TO KEEP THEIR BODY TEMPERATURES WARM. IF YOU ARE A BIRD, YOUR FEATHERS WILL HELP TO KEEP YOUR WARMTH FROM ESCAPING YOUR BODY.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK TWELVE:

PAGE ONE:

1. WARM-BLOODED - AN ORGANISM WHOSE BODY TEMPERATURE STAYS THE SAME EVEN IF ITS HABITAT IS VERY COLD
2. PUPA - THE THIRD STAGE OF GROWTH IN AN INSECT'S LIFE CYCLE
3. LARVA - THE SECOND STAGE OF GROWTH IN AN INSECT'S LIFE CYCLE
4. INSECTS - SMALL ORGANISMS WITH SIX-LEGS AND AN EXOSKELETON
5. BIRDS - WARM-BLOODED VERTEBRATE ANIMALS WHICH ARE COVERED IN FEATHERS
6. COCOON - THE NAME FOR THE PUPA OF A MOTH
7. MAMMALS - WARM-BLOODED VERTEBRATES WITH FUR OR HAIR

PAGE TWO:

1 - BIRDS
4 - INSECTS
2 - MAMMALS
7 - WARM-BLOODED
3 – LARVA
5 - PUPA
6 - COCOON

UNIT THREE REVIEW
ANSWER KEY

LABEL THE NUMBERS WITH THE CORRECT PARTS OF THE PLANT.

1. LEAVES
2. ROOTS
3. FRUIT
4. STEMS

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

2 - BIRDS
4 - FISH
1 - MAMMALS
3 - REPTILES
6 - INSECTS
5 - AMPHIBIANS

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "METAMORPHOSIS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE LIFE CYCLE OF A BUTTERFLY CONTAINS FOUR SEPARATE STAGES: EGG, LARVA, PUPA AND ADULT.

WITH CAREFUL OBSERVATION, THESE STAGES OF DEVELOPMENT CAN BE WITNESSED DIRECTLY.

METAMORPHOSIS

THE CHILD WILL CONSTRUCT A MODEL SHOWING ALL FOUR STAGES OF A BUTTERFLY LIFE CYCLE.

Materials:

FOUR STRIPS OF PAPER (2" X 8 ½")
ONE STRIP OF PAPER (2" X 11")
GLUE OR TAPE

Activity:

YOU WILL NEED TO INFORM YOUR CHILD OF THE FOUR STAGES OF A BUTTERFLY'S LIFE CYCLE:

EGG STAGE
LARVA/CATERPILLAR
PUPA/CHRYSALIS
ADULT/BUTTERFLY

YOUR CHILD WILL NEED TO MAKE FOUR "LOOPS" OUT OF THE SMALL PIECES OF PAPER TO ACT AS THE "EGGS".	
THE EGGS WILL THEN BE GLUED OR TAPED ONTO THE LONGER STRIP TO FORM THE "CATERPILLAR".	
THE ENDS OF THE CATERPILLAR WILL BE BROUGHT TOGETHER TO MODEL THE "CHRYSALIS" STAGE OF THE BUTTERFLY'S DEVELOPMENT (THIS IS KNOWN AS A COCOON IF IT WERE A MOTH!!!)	
FINALLY, OPEN UP THE ENDS OF THE CHRYSALIS IN THE OPPOSITE DIRECTION AND YOU WILL FIND THAT THE FOUR SMALL LOOPS WILL APPEAR TO BE THE WINGS OF A BUTTERFLY!	

Explanation:

IN THE EGG STAGE, THE EARLY DEVELOPMENT OF THE CATERPILLAR TAKES PLACE.

THE CATERPILLAR IS THE PRIMARY EATING AND GROWTH STAGE OF THE INSECT. THIS IS ALSO KNOWN AS THE LARVA STAGE.

THE PUPA OR CHRYSALIS IS THE RESTING OR TRANSFORMATION STAGE, AND WITHIN IT THE MARVELOUS TRANSFORMATION FROM CATERPILLAR TO ADULT BUTTERFLY TAKES PLACE.

THE ADULT BUTTERFLY EMERGES FROM THE CHRYSALIS.

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "STUCK IN YOUR HOME"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE ENDS OF A SPIDER'S LEGS CONTAIN OIL THAT KEEPS THE SPIDER FROM STICKING TO ITS OWN WEB.

IT IS POSSIBLE FOR A SPIDER TO GET STUCK IN ITS OWN WEB; HOWEVER, THIS DOES NOT OCCUR VERY OFTEN.

ESP ACTIVITY: STUCK IN YOUR HOME

THE MOVEMENT OF A SPIDER ON ITS WEB IS EXAMINED WITH THIS EXPERIMENT.

Materials:

MASKING TAPE
MARBLE
BOOK, BOARD OR OTHER OBJECT TO BE USED AS A RAMP
COOKING SPRAY
MEASURING TAPE

Activity:

CREATE A RAMP BY WHICH A MARBLE WILL BE ROLLED DOWN ITS SURFACE.

FROM THE BASE OF THE RAMP, PLACE A TWO-THREE FOOT LONG PIECE OF TAPE, STICKY SIDE UP. YOU WILL WANT TO SECURE THE ENDS OF THIS TAPE WITH ADDITIONAL TAPE SO THAT IT WILL NOT MOVE WHEN THE MARBLE COMES IN CONTACT WITH IT. THE MARBLE WILL LEAVE THE SURFACE OF THE RAMP AND IMMEDIATELY ROLL ACROSS THE SURFACE OF THE TAPE, LENGTHWISE. THINK OF THE TAPE AS AN EXTENSION OF THE RAMP!!!

PLACE THE MARBLE A THE TOP OF THE RAMP AND RELEASE. RECORD THE DISTANCE THE MARBLE TRAVELED ON THE TAPE UNTIL IT STOPPED.

(THIS MAY TAKE A FEW TRIALS UNTIL THE MARBLE GETS STUCK. YOU MAY HAVE TO ALTER THE HEIGHT OF THE RAMP TO ACHIEVE THESE RESULTS!)

COAT THE MARBLE WITH COOKING SPRAY, PLACE IT AT THE TOP OF THE RAMP AND RELEASE.

FOR EXPERIMENTATION, INCREASE OR DECREASE THE HEIGHT OF THE RAMP.

Explanation:

THIS EXPERIMENT IS ANALOGOUS TO THE MOVEMENT OF A SPIDER ON ITS WEB. ALTHOUGH SPIDERS CAN, IN FACT, GET CAUGHT IN THEIR OWN WEBS, IT IS NOT OFTEN OBSERVED. THE ENDS OF A SPIDER'S LEG CONTAIN AN OIL THAT DOES NOT ADHERE TO THE CHEMICALS IN ITS WEB. THEREFORE, THE SPIDER CAN WALK FREELY AROUND THE WEB WITHOUT GETTING CAUGHT. BY COATING THE MARBLE WITH COOKING SPRAY (AN OIL), THE MARBLE SHOULD NOT HAVE ADHERED TO THE TAPE AS EASILY AS IT DID WHEN IT WAS "OIL FREE".

INDEPENDENT VARIABLE: HEIGHT OF THE RAMP

DEPENDENT VARIABLE: DISTANCE OF THE MARBLE

HYPOTHESIS:

IF THE HEIGHT OF THE RAMP IS (INCREASED/DECREASED), THEN THE DISTANCE OF THE MARBLE WILL (INCREASE/DECREASE).

UNIT THREE TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	GERMINATE	1. A PATTERN FOR ALL ORGANISMS THAT INCLUDES BEING BORN THEN GROWING INTO ADULTS, REPRODUCING AND DYING
____	VERTEBRATES	2. A FEATURE THAT YOU GET FROM YOUR PARENTS
____	LIFE CYCLES	3. WARM-BLOODED VERTEBRATES WITH FUR OR HAIR
____	INHERITED TRAITS	4. A GROUP OF SIMILAR AND RELATED ORGANISMS THAT MAY OR MAY NOT BE LIVING IN THE SAME AREA
____	PHOTOSYNTHESIS	5. AN ANIMAL WHOSE BODY STAYS THE SAME TEMPERATURE AS THEIR HABITAT
____	OFFSPRING	6. AN ORGANISM WHOSE BODY TEMPERATURE STAYS THE SAME EVEN IF ITS HABITAT IS VERY COLD
____	WARM-BLOODED	7. TO BEGIN PLANT GROWTH
____	BIRDS	8. A WAY FOR PLANTS TO MAKE THEIR OWN FOOD
____	FISH	9. WARM-BLOODED VERTEBRATE ANIMALS WHICH ARE COVERED IN FEATHERS
____	MAMMALS	10. AN ANIMAL WHICH HAS A BACKBONE
____	SPECIES	11. COLD-BLOODED VERTEBRATES THAT LIVE INSIDE THE AQUATIC BIOME
____	COLD-BLOODED	12. A PARENT'S BABY

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. WHICH OF THESE SENTENCES IS TRUE:

A. A POPULATION IS A SPECIES THAT LIVES IN ONE PLACE
B. A SPECIES IS A POPULATION THAT LIVES IN ONE PLACE
C. POPULATIONS AND SPECIES BOTH MEAN THE SAME THING

2. WHICH OF THESE LISTS INCLUDE ONLY INHERITED TRAITS:

A. CURLY HAIR AND DRAWING A PICTURE
B. HAIR, SKIN AND EYE COLOR
C. ROLLING YOUR TONGUE AND RIDING A BIKE

3. WHAT PART OF A PLANT REMAINS IN THE GROUND?

A. ROOTS
B. STEMS
C. LEAVES

4. WHAT PART OF A PLANT GOES THROUGH PHOTOSYNTHESIS?

A. ROOTS
B. STEMS
C. LEAVES

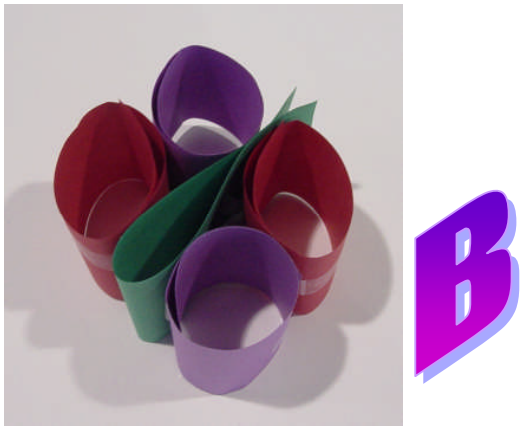
5. REPTILES AND AMPHIBIANS BOTH...

A. ARE COLD-BLOODED
B. HAVE WET, SMOOTH SKIN
C. HAVE THE SAME LIFE CYCLE

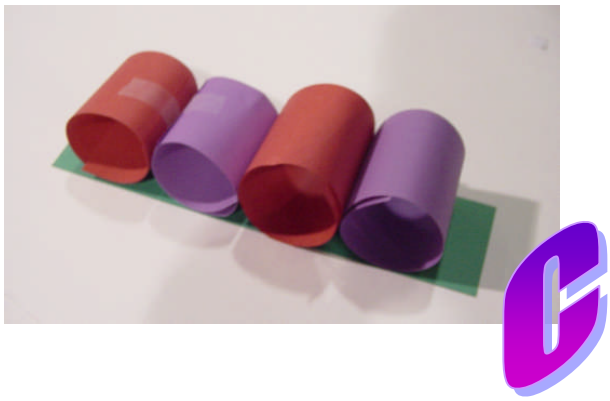
6. THE LARGEST GROUP OF ANIMALS IN THE WORLD ARE:

A. MAMMALS
B. PLANTS
C. INSECTS

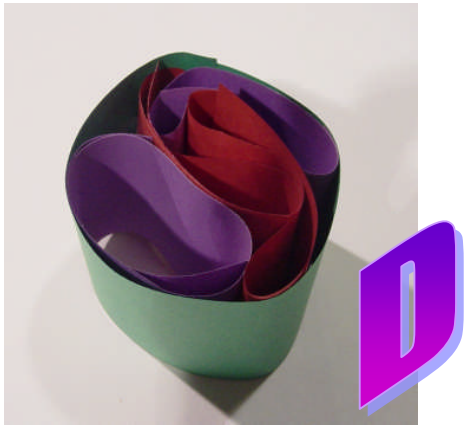
_____



_____



_____



_____

WHAT IS THE CORRECT ORDER OF THESE PICTURES?

1._____ → 2._____ → 3._____ → 4._____

LABEL THE CORRECT STAGES IN THE LIFE CYCLE OF A BUTTERFLY:

EGGS
CATERPILLAR
CHRYSALIS
BUTTERFLY

UNIT THREE TEST ANSWER KEY

MATCHING

7 GERMINATE
10 VERTEBRATES
1 LIFE CYCLES
2 INHERITED TRAITS
8 PHOTOSYNTHESIS
12 OFFSPRING
6 WARM-BLOODED
9 BIRDS
11 FISH
3 MAMMALS
4 SPECIES
5 COLD-BLOODED

MULTIPLE CHOICE

1. A
2. B
3. A
4. C
5. A
6. C

CORRECT ORDER OF BUTTERFLY LIFE CYCLE

1. EGGS (A)
2. CATERPILLAR (C)
3. CHRYSALIS (D)
4. BUTTERFLY (B)

WEEK THIRTEEN: CLASSIFYING ANIMALS

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

PLACING ORGANISMS INTO GROUPS IS A PROCESS CALLED TAXONOMY AND IS VERY HELPFUL IN THE STUDY OF EVERY SPECIES ON EARTH. TAXONOMY GIVES SCIENTISTS A WAY TO COMMUNICATE TO EACH OTHER ABOUT SPECIFIC ORGANISMS IN THE WORLD. THE LARGEST GROUPS THAT ORGANISMS ARE PLACED INTO ARE CALLED KINGDOMS.

THE ANIMAL KINGDOM CAN BE SEPARATED INTO TWO GROUPS: ANIMALS WITH BACKBONES (VERTEBRATES) AND THOSE WITHOUT BACKBONES (INVERTEBRATES).

DEFINITIONS:

BIODIVERSITY	"BIO-DI-VURS-ITY"; ALL OF THE DIFFERENT KINDS OF LIFE THAT EXIST ON THE WORLD
TAXONOMY	THE WAY SCIENTISTS PLACE ALL OF THE DIFFERENT ORGANISMS INTO GROUPS
KINGDOMS	SIX DIFFERENT GROUPS THAT SCIENTISTS HAVE PLACED ALL LIVING ORGANISMS INTO
ANIMAL KINGDOM	MOST ORGANISMS IN THIS KINGDOM CAN MOVE ON THEIR OWN AND ARE HETEROTROPHIC
CELLS	THE SMALLEST PART OF A LIVING ORGANISM
CLASSIFY	TO GROUP THINGS
HETEROTROPHIC	ORGANISMS THAT CANNOT MAKE THEIR OWN FOOD
VERTEBRATES	ANIMALS THAT CONTAIN A BACKBONE AND HAVE SKELETON INSIDE THEIR BODIES
INVERTEBRATES	ANIMALS THAT DO NOT HAVE A BACKBONE
PRIMATES	VERTEBRATE ANIMALS LIKE THE MONKEY, BABOON, CHIMPANZEE AND GORILLA WHICH HAVE VERY STRONG HANDS AND FINGERS BECAUSE OF THE USE OF THUMBS
MARSUPIALS	"MAR-SOOP-EE-ALZ"; VERTEBRATE ANIMALS LIKE THE KANGAROO OR KOALA THAT HAVE A POUCH ON THEIR BODY FOR CARRYING THEIR CHILDREN
RODENT	VERTEBRATE ANIMALS LIKE RATS, MICE AND SQUIRRELS WHO HAVE SHARP FRONT TEETH USED FOR GNAWING
CETACEANS	"SEE-TAH-SEE-ANZ"; THESE WARM-BLOODED VERTEBRATES (SUCH AS WHALES AND DOLPHINS) BREATHE AIR ABOVE THE WATER
CRUSTACEANS	"KRUS-TASE-SHUN"; CRUSTACEANS ARE ANIMALS LIKE LOBSTERS OR CRABS THAT HAVE AN EXOSKELETON AND PINCHERS
ARTHROPODS	THE LARGEST GROUP OF INVERTEBRATES THAT INCLUDE SPIDERS, INSECTS AND CRUSTACEANS

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT IS THE LARGEST GROUPS THAT SCIENTISTS HAVE PLACED ORGANISMS INTO?

THE SIX KINGDOMS ARE THE LARGEST GROUPS THAT ARE USED TO CLASSIFY ORGANISMS.

WHY IS THE TAXONOMY OF LIVING ORGANISMS ALWAYS CHANGING?

AS NEW INFORMATION IS DISCOVERED ABOUT ORGANISMS, THE WAY SCIENTISTS PLACE THEM INTO GROUPS CHANGES AS WELL.

ARE HUMANS HETEROTROPHIC?

YES. HUMANS CANNOT MAKE THEIR OWN FOOD. WE HAVE TO EAT TO SURVIVE.

NAME TWO EXAMPLES OF VERTEBRATES AND INVERTEBRATES.

VERTEBRATES INCLUDE ANIMALS SUCH AS WHALES, DOLPHINS, HUMANS, MONKEYS, ETC. INVERTEBRATES INCLUDE LOBSTERS, CRABS, INSECTS AND SPIDERS.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK THIRTEEN:

PAGE ONE:

ACROSS:

4. BIODIVERSITY
7. KINGDOMS
9. VERTEBRATES
11. ARTHROPODS
12. CLASSIFY

DOWN:

1. TAXONOMY
2. RODENTS
3. PRIMATES
5. CRUSTACEANS
6. MARSUPIALS
8. CELLS
10. ANIMAL
12. CETACEANS
13. INVERTEBRATE

PAGE TWO:

12 - BIODIVERSITY
13 - TAXONOMY
1 - KINGDOMS
5 - ANIMAL KINGDOM
3 - CELLS
7 – CLASSIFY
2 - VERTEBRATES
9 - INVERTEBRATES
6 - PRIMATES
8 - MARSUPIALS
11 - RODENT
10 – CETACEANS
4 - CRUSTACEANS
14 - ARTHROPODS

PAGE THREE:

1. B
2. C
3. B
4. A
5. B
6. A

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "KINGDOM OF DONUTS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE PROCESS OF CLASSIFICATION IS A PART OF OUR HUMAN INTUITION. AS YOUNG CHILDREN, WE ARE CONSTANTLY ORGANIZING, SORTING AND CLASSIFYING EVERYTHING IN OUR WORLD.

TAXONOMY PLAYS A VITAL ROLE IN SCIENCE AS IT GIVES SCIENTISTS AROUND THE WORLD WITH A COMMON LANGUAGE TO IDENTIFY INDIVIDUAL SPECIES. WITHOUT TAXONOMY, THERE COULD BE DOZENS OF WAYS TO EXPLAIN ANY SPECIES.

KINGDOM OF DONUTS

CHILDREN WILL CLASSIFY A GROUP OF DIFFERENT KINDS OF DONUTS.

MATERIALS:

SEVERAL DIFFERENT KINDS OF DONUTS (BEANS, BUTTONS, PENS, ETC. ALL WORK JUST AS GOOD!!!)
SEALABLE BAGGIES
CLASSIFICATION WORKSHEET/BLANK CLASSIFICATION CHART (SEE ATTACHED)
PAPER/PENCIL

ACTIVITY:

PLACE EACH DONUT INTO ITS OWN BAGGIE.

ASK THE CHILD WHAT KINDS OF WAYS THEY CAN DESCRIBE THE DONUTS (I.E. THEIR COLOR, SHAPE, SIZE, FROSTING, ETC.) LIST ALL OF THESE THINGS ON THE CLASSIFICATION WORKSHEET.

PICK ONE OF THE DESCRIPTIONS AND PLACE THE DONUTS INTO TWO PILES:

"DONUTS WITH THE TRAIT" AND "DONUTS WITHOUT THE TRAIT"

YOU WANT TO KEEP DIVIDING THE PILES UNTIL YOU HAVE PLACED EACH DONUT INTO ITS OWN INDIVIDUAL PILE. EACH TIME YOU HAVE TO DIVIDE THE PILES, YOU WILL USE ONE OF THE TRAITS YOU PLACED ON THE CLASSIFICATION WORKSHEET. AS YOU PLACE YOUR DONUTS INTO SEPARATE GROUPS, WRITE DOWN EACH DIVISION ON THE BLANK CLASSIFICATION CHART.

FOR EXAMPLE...

LET'S SAY YOU HAVE THE FOLLOWING DONUTS IN BAGGIES...

GLAZED DONUT, TWIST, BEARCLAW, APPLE FRITTER AND A DONUT HOLE

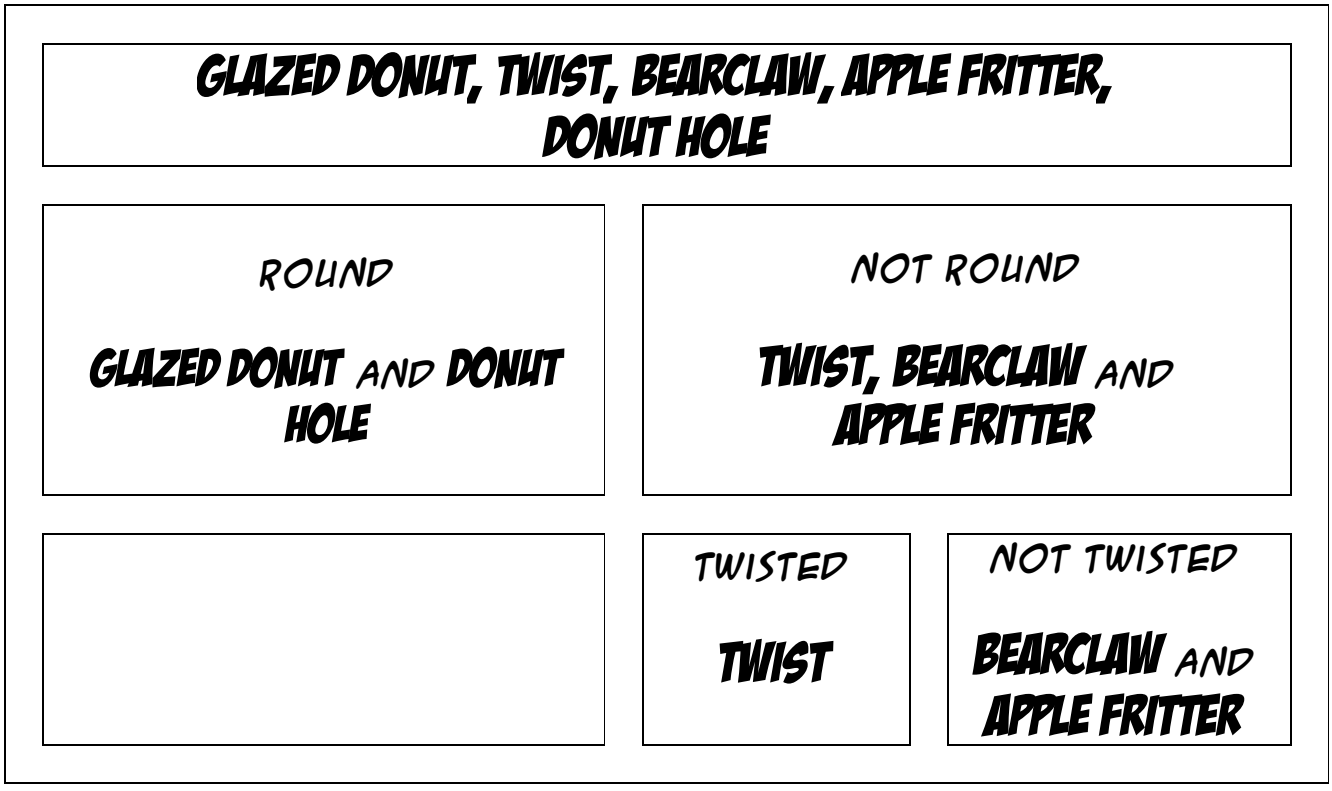
...AND YOU CHOOSE THE TRAIT OF BEING "ROUND"

YOU WOULD PLACE THE **GLAZED DONUT** AND **DONUT HOLE** IN ONE PILE (NAMED "ROUND") AND THE **TWIST**, **BEARCLAW** AND **APPLE FRITTER** IN ANOTHER PILE (NAMED "NOT ROUND").

NOW YOU NEED TO DIVIDE BOTH OF YOUR PILES INTO SMALLER PILES. SO, TAKE A LOOK AT THE LIST OF TRAITS FROM YOUR CLASSIFICATION WORKSHEET. LET'S SAY YOU DESCRIBED THE DONUTS AS "TWISTED". YOU COULD DIVIDE PILE 1B INTO TWO MORE PILES:

YOU WOULD PLACE THE **TWIST** INTO ONE PILE (NAMED "TWISTED") AND THE **BEARCLAW** AND **APPLE FRITTER** CAN BE PLACED INTO ANOTHER PILE (NAMED "NOT TWISTED").

SO YOUR CLASSIFICATION CHART WOULD BEGIN TO LOOK LIKE THIS:



THIS EXAMPLE IS NOT YET COMPLETE! YOU WOULD STILL HAVE TO DIVIDE THE "ROUND" DONUTS AND THE "NOT ROUND/NOT TWISTED" DONUTS!!!

Explanation:

THE CLASSIFICATION TABLE YOU HAVE CREATED WITH YOUR DONUTS IS VERY SIMILAR TO THE WAY SCIENTISTS CLASSIFY LIVING ORGANISMS. THE INTERESTING PART ABOUT THIS WAY OF CLASSIFYING IS...THERE IS MORE THAN ONE WAY OF DOING IT CORRECTLY!!! THAT IS WHY IT IS SO IMPORTANT FOR SCIENTISTS TO SPEAK WITH ONE ANOTHER ABOUT HOW THEY CLASSIFY NEW ORGANISMS!

TO TEST YOUR CLASSIFICATION CHART, GIVE IT TO A PERSON THAT HAS NOT BEEN WORKING ON YOUR DONUT PROJECT. ONLY GIVE THEM THE TRAITS YOUR CHILD HAS USED TO CLASSIFY THE DONUTS. SEE IF THIS NEW PERSON CAN FIGURE OUT WHICH DONUT THE CLASSIFICATION CHART IS DESCRIBING!

CLASSIFICATION WORKSHEET

WAYS TO DESCRIBE THE DONUTS:	

BLANK CLASSIFICATION CHART

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "I'M ALL THUMBS!!!"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

PEOPLE'S THUMBS ARE CALLED "OPPOSABLE" BECAUSE THE THUMB CAN BE MOVED AROUND TO TOUCH THEIR OTHER FINGERS. NOT ALL ORGANISMS HAVE THIS PARTICULAR TRAIT.

THE ABILITY TO ROTATE ONE'S THUMB HELPS TO GRAB AND THROW THINGS WHICH MAY BE VERY HELPFUL FOR AN ORGANISM'S SURVIVAL.

I'M ALL THUMBS!!!

CHILDREN WILL EXPLORE THE IMPORTANCE OF THEIR OPPOSABLE THUMB.

Materials:

TRANSPARENT OR MASKING TAPE
PENCIL AND PAPER
CLOTHING WITH BUTTONS AND ZIPPERS
SOCK
SHOE WITH LACES
COIN
BALLOON
TOOTHBRUSH
HAIRBRUSH OR COMB
SEALABLE PLASTIC BAG
JAR WITH A LID

Activity:

HAVE A HELPER LIGHTLY TAPE YOUR THUMBS TO THE SIDES OF YOUR HANDS. DO NOT TAPE THEM TOO TIGHT, YOU SHOULD BE ABLE TO MOVE YOUR FOUR FINGERS EASILY!!!

TRY EACH ONE OF THE ACTIVITIES BELOW. MAKE SURE NOT TO USE YOUR THUMBS AT ALL AS YOU DO THE ACTIVITIES.

DECIDE IF THE ACTIVITY TOOK LONGER OR WAS MORE DIFFICULT TO DO WITHOUT YOUR THUMBS, WAS ABOUT THE SAME TO DO WITHOUT YOUR THUMBS, OR IF YOU COULDN'T DO IT AT ALL WITHOUT YOUR THUMBS. RECORD YOUR DECISIONS ON THE DATA CHART.

ACTIVITIES TO TRY WITHOUT YOUR THUMB

WRITE YOUR NAME WITH A PENCIL
PUT ON A SOCK AND SHOE
OPEN A DOOR USING A KNOB
BRUSH OR COMB YOUR HAIR
BUTTON A BUTTON
TIE A SHOELACE
BLOW UP A BALLOON AND TIE IT
SEAL A PLASTIC BAG
PULL UP A ZIPPER
PICK A COIN UP OFF A FLAT SURFACE
BRUSH YOUR TEETH
OPEN A JAR

Explanation:

PEOPLE'S THUMBS ARE CALLED OPPOSABLE BECAUSE THE THUMB CAN BE MOVED AROUND TO TOUCH THEIR OTHER FINGERS. MOST PRIMATES AND SOME OTHER ANIMALS HAVE OPPOSABLE THUMBS. HUMANS CAN MOVE THEIR THUMB FARTHER ACROSS THEIR HAND THAN ANY OTHER PRIMATE. HAVING OPPOSABLE THUMBS HELPS IN GRASPING THINGS MORE EASILY, PICKING UP SMALL OBJECTS, AND EATING WITH ONE HAND.

I'M ALL THUMBS!!! DATA CHART

ACTIVITY	TOOK LONGER OR WAS MORE DIFFICULT WITHOUT THUMBS	ABOUT THE SAME WITHOUT THUMBS	COULDN'T DO THIS ACTIVITY WITHOUT THUMBS
WRITE YOUR NAME WITH A PENCIL			
PUT ON A SOCK AND SHOE			
OPEN A DOOR USING A KNOB			
BRUSH OR COMB YOUR HAIR			
BUTTON A BUTTON			
TIE A SHOELACE			
BLOW UP A BALLOON AND TIE IT			
SEAL A PLASTIC BAG			
PULL UP A ZIPPER			
PICK A COIN UP OFF A FLAT SURFACE			
BRUSH YOUR TEETH			
OPEN A JAR			

WEEK 14: CLASSIFYING PLANTS

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

THE PLANT KINGDOM CONTAINS ORGANISMS THAT CAN BE DIVIDED INTO TWO SEPARATE GROUPS: NONVASCULAR PLANTS (LIKE MOSSES) THAT ABSORB WATER THROUGH THEIR ENTIRE BODY IN ORDER TO SURVIVE. VASCULAR PLANTS (LIKE TREES) USE A SYSTEM OF ROOTS, STEMS AND LEAVES TO TRANSPORT WATER THROUGHOUT ITS ENTIRE BODY.

ALL PLANTS HAVE THEIR OWN LIFE CYCLES. SOME PRODUCE SEEDS THROUGH FLOWERS WHILE OTHER PLANTS USE OTHER MECHANISMS FOR REPRODUCTION.

DEFINITIONS:

PLANT KINGDOM	A GROUP OF ORGANISMS THAT ARE AUTOTROPHIC AND HAVE SOME FORM OF LEAF, STEM AND ROOT
AUTOTROPHIC	BEING ABLE TO MAKE YOUR OWN FOOD
NONVASCULAR PLANTS	PLANTS WITHOUT BODY PARTS TO MOVE WATER FROM THEIR ROOTS TO THE STEM AND TO THE LEAVES
MOSS	ONE KIND OF NONVASCULAR PLANT THAT CAN ABSORB WATER, LIKE A SPONGE, WITH ITS ENTIRE BODY
VASCULAR PLANTS	PLANTS WITH SPECIAL BODY PARTS THAT MOVE WATER FROM THEIR ROOTS TO THE STEM AND TO THE LEAVES
NON-FLOWERING PLANTS	VASCULAR PLANTS THAT DO NOT MAKE FLOWERS
FLOWERING PLANTS	VASCULAR PLANTS THAT MAKE FLOWERS
FERNS	NONFLOWERING VASCULAR PLANTS WHICH NEVER PRODUCE FLOWERS
CONIFERS	NONFLOWERING VASCULAR PLANTS WHICH NEVER PRODUCE FLOWERS BUT DO PRODUCE SEEDS
RHIZOMES	"RI-ZOMES"; SPECIAL AREAS ON A PLANT'S ROOT THAT CAN GROW A NEW PLANT

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

SINCE A MOSS DOES NOT HAVE A STEM, HOW DOES IT GET THE WATER IT NEEDS TO SURVIVE?

MOSSES ABSORB WATER, LIKE A SPONGE, THROUGHOUT ITS ENTIRE BODY.

WHAT MAKES A PLANT "AUTOTROPHIC"?

BEING ABLE TO MAKE ONE'S FOOD MAKES AN ORGANISM AUTOTROPHIC.

WHICH KINDS OF PLANTS ARE USUALLY MUCH LARGER...VASCULAR OR NON-VASCULAR PLANTS?

VASCULAR PLANTS ARE TYPICALLY MUCH LARGER. TREES ARE VASCULAR PLANTS!!!

WITHOUT A FLOWER, YOU CANNOT HAVE A SEED. SO HOW DO NON-FLOWERING PLANTS COMPLETE THEIR LIFE CYCLE?

NOT ALL PLANTS BEGIN THEIR LIFE FROM A SEED. SOME PLANTS CREATE RHIZOMES WHICH ARE SPECIAL PLACES ON A PLANT'S ROOT THAT CAN GROW NEW PLANTS. OTHER PLANTS, LIKE SOME FERNS, DROP THEIR LEAVES ONTO THE GROUND. FROM THESE LEAVES, NEW PLANTS CAN GROW!

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 14:

PAGE ONE:

(WORD SEARCH)

PAGE TWO:

10 - PLANT KINGDOM
9 - AUTOTROPHIC
1 - NONVASCULAR PLANTS
6 - MOSS
4 - VASCULAR PLANTS
8 - NON-FLOWERING PLANTS
5 - FLOWERING PLANTS
3 - FERNS
7 - CONIFERS
2 - RHIZOMES

PAGE THREE:

"IMAGINE YOU ARE A DROP OF WATER. WRITE A STORY THAT SAYS HOW YOU GET INTO A PLANT AND TRAVEL TO ITS FRUIT. WHAT DO YOU SEE ALONG THE WAY?"

ANSWERS WILL VARY.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "COLORFUL CARNATIONS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

WATER TRAVELS THROUGH A VASCULAR PLANT FROM THE ROOTS TO THE STEM AND INTO THE LEAVES AND FLOWERS.

WITHOUT ROOTS, MANY PLANTS CAN STILL GET THE WATER THEY NEED, SO LONG AS THEIR STEMS ARE SUBMERGED IN WATER.

IF YOU HAVE TO CLIP THE ROOTS OFF OF A PLANT, OR TRIM THE STEMS, IT IS BEST TO DO THIS UNDERWATER. IF THIS IS NOT DONE UNDERWATER, AN AIR POCKET MAY FORM IN THE STEM. THIS AIR POCKET CAN KEEP WATER FROM BEING MOVED THROUGH THE PLANT!

COLORFUL CARNATIONS

CHILDREN WILL RUN AN EXPERIMENT TO DETERMINE HOW WATER TRAVELS THROUGH A PLANT.

MATERIALS:

TWO WHITE CARNATIONS (ONE OR MORE)
DRINKING GLASS FOR EACH CARNATION
FOOD COLORING
SCISSORS

ACTIVITY:

FILL THE DRINKING GLASSES HALF-FULL WITH WATER.

ADD AT LEAST **20** DROPS OF FOOD COLORING INTO THE GLASSES. EACH GLASS SHOULD HAVE A DIFFERENT COLOR.

HAVE AN ADULT CUT OF THE ENDS OF THE CARNATION STEMS AT AN ANGLE.

PLACE ONE CARNATION IN EACH GLASS.

ASK YOUR CHILD TO MAKE THE FOLLOWING PREDICTIONS:

WHICH COLOR WILL MOVE THROUGH THE CARNATION FASTER?

HOW LONG DO YOU THINK IT WILL TAKE TO SEE THE COLORS IN THE PETALS?

HAVE YOUR CHILD CHECK ON THEIR CARNATIONS AFTER SEVERAL HOURS (IT MIGHT TAKE UP TO **24** HOURS FOR THE COLORED WATER TO BE SEEN ON THE PETALS).

EXPLANATION:

MOST PLANTS GET THEIR WATER FROM THEIR ROOTS. THE STEM MOVES THE WATER THROUGH THE PLANT, INTO ITS LEAVES, FLOWERS AND FRUIT. EVEN THOUGH THE CARNATIONS DO NOT HAVE THEIR ROOTS, THE STEM CAN STILL MOVE WATER TO THE REST OF THE PLANT! THE FOOD COLORING IN THE WATER DOES NOT HARM THE PLANT. IT ONLY HELP YOU TO SEE WHERE THE WATER HAS BEEN MOVED THROUGHOUT THE PLANT!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "FLOWER POWER"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE OPENING AND CLOSING OF FLOWERS IS DETERMINED BY SEVERAL ENVIRONMENTAL CONDITIONS.

SOME FLOWERS ABSORB WATER FROM THEIR STEMS AND SWELL. AS THEY SWELL, THE PETALS OF THE FLOWER MOVE AWAY FROM EACH OTHER.

ESP ACTIVITY: FLOWER POWER

STUDENTS WILL SIMULATE HOW A PLANT "DRINKS" WATER.

MATERIALS:
PAPER FLOWER (SEE ATTACHED)
SCISSORS
BOWL FILLED WITH WATER
CLOCK WITH SECOND HAND

PROCEDURE:

CUT OUT FLOWER AND BEND PETALS UPWARD ON DOTTED LINE TO FORM A BLOOM.

FLOAT BLOOM ON TOP OF WATER.

RECORD AMOUNT OF TIME IT TOOK FOR BLOOM TO OPEN.

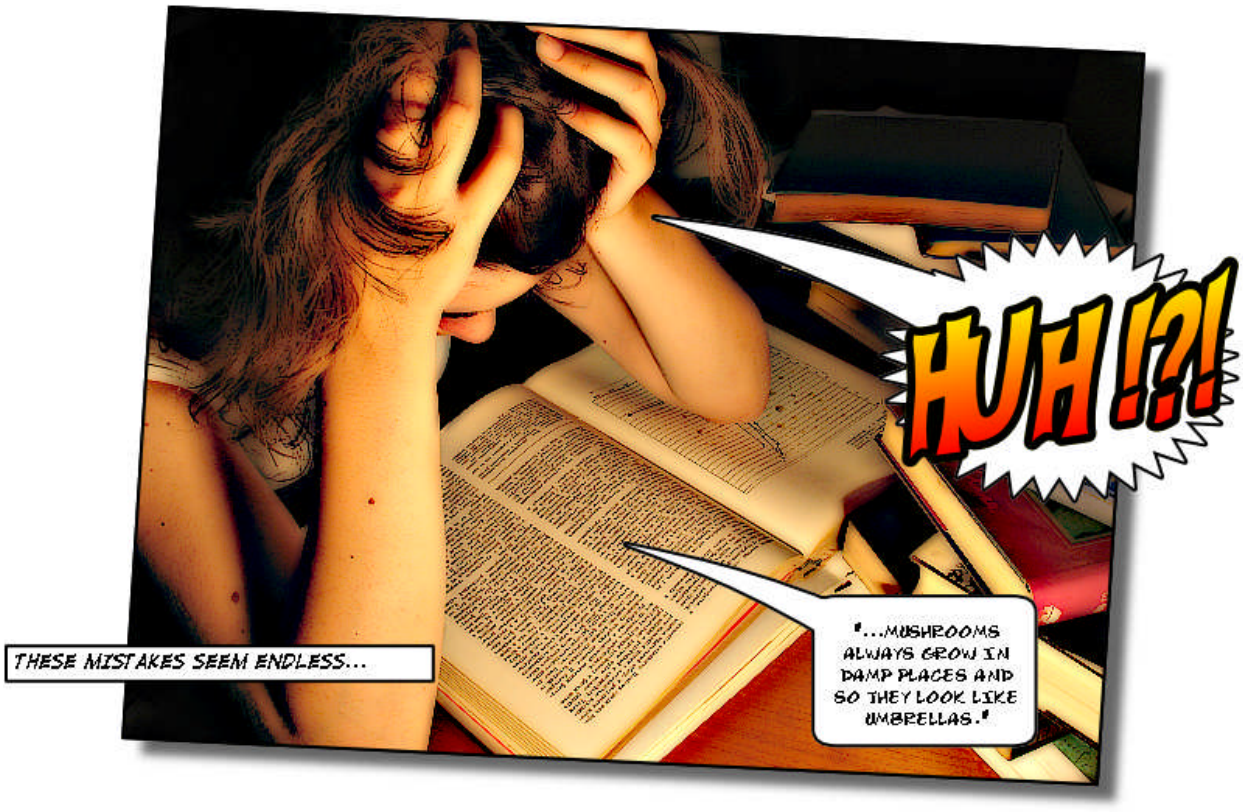
INCREASE/DECREASE THE SIZE OF PAPER FLOWER FOR EXPERIMENTATION.

EXPLANATION:

THE WATER IN THE BOWL GRADUALLY RISES UP THROUGH SMALL HOLES BETWEEN THE FIBERS OF THE PAPER. AS THE WATER TRAVELS UP THE PAPER "PETALS" THEY BEGIN TO SWELL AND MOVE AWAY FROM EACH OTHER. THIS SIMILAR PROCESS OCCURS WITH MOST FLOWERS AS THEY OPEN AND CLOSE DUE TO THEIR WATER RETENTION.

INDEPENDENT VARIABLE: SIZE OF THE FLOWER.
DEPENDENT VARIABLE: LENGTH OF TIME FOR THE BLOOM TO OPEN.
HYPOTHESIS:
IF THE SIZE OF THE FLOWER IS (INCREASED/DECREASED), THEN THE LENGTH OF TIME FOR THE BLOOM TO OPEN WILL (INCREASE/DECREASE).

WEEK 15: CLASSIFYING FUNGI AND PROTISTS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ORGANISMS IN THE KINGDOM FUNGI ARE TYPICALLY DECOMPOSERS, WHICH FEED UPON DEAD AND DECAYING MATTER IN THEIR HABITAT. MUSHROOMS ARE A WELL-KNOWN ORGANISM IN THIS KINGDOM.

KINGDOM PROTISTA CONTAIN ORGANISMS THAT CONTAIN TRAITS FROM OTHER KINGDOMS. SINCE THIS MAY BECOME CONFUSING FOR SCIENTISTS, THIS KINGDOM HAS BEEN DIVIDED INTO THREE DIFFERENT GROUPS: SLIME MOLDS (FUNGUS-LIKE PROTISTS), ALGAE (PLANT-LIKE PROTISTS) AND PROTOZOANS (ANIMAL-LIKE PROTISTS).

DEFINITIONS:

KINGDOM FUNGI	ORGANISMS, LIKE MUSHROOMS, THAT ACT AS DECOMPOSERS AND ABSORB THEIR FOOD THROUGH THEIR BODIES
ENZYMES	CHEMICALS MADE BY ORGANISMS THAT CAN HELP THE ORGANISM DO MANY DIFFERENT THINGS
DECOMPOSERS	ORGANISMS THAT BREAK DOWN BIOTIC MATERIAL (LIKE DEAD PLANTS AND ANIMALS) INTO MORE USEFUL FORMS (LIKE NUTRIENTS FOR LIVING PLANTS)
KINGDOM PROTISTA	ORGANISMS THAT SHARE TRAITS WITH PLANTS, ANIMALS AND FUNGI
SLIME MOLDS	FUNGUS-LIKE PROTISTS
ALGAE	"AL-GEE"; PLANT-LIKE PROTISTS
PROTOZOANS	ANIMAL-LIKE PROTISTS

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

HOW DO FUNGI EAT?

FUNGI ARE DECOMPOSERS. THEY SPREAD A STICKY GOO INTO THE AREA SURROUNDING THEIR BODY THAT CONTAINS ENZYMES. THESE CHEMICALS BREAK DOWN BIOTIC MATERIAL INTO SMALLER, SOFTER PARTS. THE FUNGI CAN THEN ABSORB THIS SUBSTANCE.

WHY DO SCIENTISTS HAVE A HARD TIME CLASSIFYING PROTISTS?

PROTISTS HAVE TRAITS THAT ARE SIMILAR TO ANIMALS, PLANTS AND FUNGI. SOME PROTISTS HAVE A MIXTURE OF ALL THREE!!

ARE FUNGI AUTOTROPHIC OR HETEROTROPHIC?

FUNGI, LIKE MUSHROOMS, MUST ABSORB NUTRIENTS INTO THEIR BODIES IN ORDER TO SURVIVE. THIS MAKES THEM HETEROTROPHIC.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 15:

PAGE ONE:

1. PROTOZOANS
2. DECOMPOSERS
3. ALGAE
4. KINGDOM PROTISTA
5. KINGDOM FUNGI
   ENZYMES
6. SLIME MOLDS

PAGE TWO:

7 - KINGDOM FUNGI
5 - ENZYMES
3 - DECOMPOSERS
2 - KINGDOM PROTISTA
6 - SLIME MOLDS
1 - ALGAE
4 - PROTOZOANS

PAGE THREE:

"YOU ARE GIVEN A CHANCE TO BECOME A PROTIST!! HOWEVER, YOU HAVE THREE KINDS OF PROTISTS TO CHOOSE FROM: ***SLIME MOLDS***, ***ALGAE*** AND ***PROTOZOANS***. WHICH ONE WOULD YOU LIKE TO BE AND WHY?"

ANSWERS WILL VARY

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WAITER!!! THERE'S A FUNGUS IN MY BREAD!!!"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE USE OF YEAST IS VERY IMPORTANT IN MANY OF OUR CURRENT FOOD-PRODUCING INDUSTRIES.

YEAST IS A FUNGUS THAT FEEDS UPON SUGAR TO SURVIVE. AS IT FEEDS UPON THE SUGAR, IT RELEASES A GAS THAT CAN BE USED IN THE PRODUCTION OF BREADS AND SOME BEVERAGES.

WAITER!!! THERE'S A FUNGUS IN MY BREAD!!!

CHILDREN WILL EXPLORE THE ACTIONS OF A WELL-USED FUNGUS.

Materials:

TEASPOON MEASURE
ACTIVE DRY YEAST
TWO BOTTLES OF SODA POP
WATER
TWO "HELIUM QUALITY" BALLOONS (NOT THE SMALL WATER-BALLOON SIZE!)

Activity:

REMOVE THE CONTENTS OF ONE OF THE BOTTLES OF SODA...ENJOY!

FILL THE BOTTLE UP WITH AN EQUAL AMOUNT OF WATER.

PUT A TEASPOON OF DRIED YEAST IN EACH BOTTLE.

SEAL THE BOTTLES AND SHAKE THEM UP!!!

TAKE OFF THE CAPS AND REPLACE THEM WITH BALLOONS.

PLACE THE BOTTLES IN A WARM PLACE, BUT NOT IN DIRECT SUNLIGHT!

ASK THE CHILD WHAT THEY BELIEVE WILL HAPPEN:

WHAT DO THEY THINK THE BALLOON WILL DO?
WHAT DO THEY THINK WILL HAPPEN TO THE SODA? THE WATER?

ALLOW THE BOTTLES TO REMAIN STILL FOR 24 HOURS. YOU CAN CHECK THE SIZE OF THE BALLOONS EVERY 8 HOURS AND SEE THE DIFFERENCE.

DISCUSS THEIR PREDICTIONS:

WERE THEY CORRECT?
WHAT HAPPENED TO THE SODA? THE WATER?

Explanation:

YEAST IS A VERY WELL-KNOWN AND IMPORTANT FUNGI! IT IS COMMONLY USED IN MOST BREADS TO ALLOW THE DOUGH TO "RISE" AS IT FILLS WITH GAS. THE BALLOON ON TOP OF THE SODA POP WILL BECOME NOTICEABLY LARGER SINCE THE YEAST FEEDS ON THE SUGAR IN THE LIQUID. AS IT USES UP THE SUGAR, THE YEAST GIVES OFF CARBON DIOXIDE GAS, WHICH FILLS UP THE BALLOON. WITHOUT ANY SUGAR IN THE PLAIN WATER, THE YEAST CANNOT GIVE OFF ANY GAS!

IF YOU CAN SHOW YOUR CHILD A PIECE OF BREAD, HAVE THEM LOOK CLOSELY AT ALL OF THE "HOLES" IN THE SURFACE. THESE "HOLES" ARE BUBBLES OF CARBON DIOXIDE GAS THAT IS MADE BY THE YEAST WHILE THE BREAD IS BEING MADE!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "PUTTING THE 'FUN' IN FUNGUS..."

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE GROWTH OF A FUNGUS CAN BE READILY OBSERVED OVER A PERIOD A FEW DAYS.

MOST FUNGUS IS FUZZY OR HAIRY IN APPEARANCE AND IS NOT TO BE CONFUSED WITH THE SMOOTH AND SHINY APPEARANCE OF BACTERIAL COLONIES.

PUTTING THE "FUN" IN FUNGUS...

CHILDREN WILL GROW THEIR OWN FUNGUS IN A CONTROLLED SETTING.

MATERIALS:

BREAD
POTATO (ANY OTHER VEGETABLE WILL DO!)
MOIST PAPER TOWELS
SEALABLE BAGGIES

ACTIVITY:

INFORM THE CHILD THEY ARE GOING TO BE GROWING THEIR OWN FUNGUS! HOWEVER, THIS ORGANISM NEEDS SOMETHING TO EAT. SO, TELL THE CHILD THAT THE FOOD AND WATER THEY PLACE IN THEIR BAGGIES WILL BE THE RESOURCES THE FUNGUS NEEDS TO GROW!

PLACE A DAMP PAPER TOWEL IN EACH BAG. PLACE A SLICE OF BREAD ONTO THE PAPER TOWEL AND SEAL THE BAGGIE.

PLACE INDIVIDUAL VEGETABLES ON THE PAPER TOWELS AND SEAL THEM UP IN THEIR OWN BAGGIE.

PLACE THE BAGGIES IN WARM AREAS AWAY FROM DIRECT SUNLIGHT.

ASK THEM TO PREDICT WHICH FOOD IS GOING TO GROW THE MOST FUNGUS.

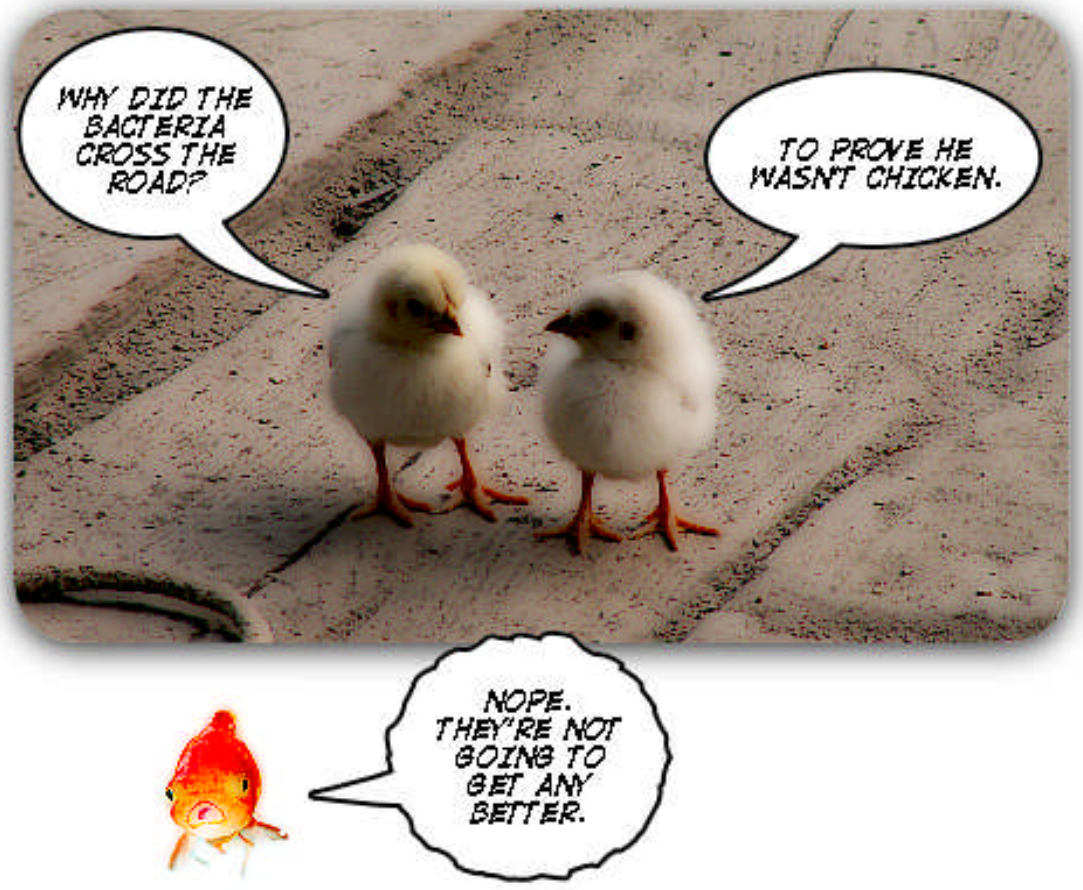
CHECK THE BAGS EACH DAY. FUNGAL GROWTH SHOULD BE VISIBLE IN 3-5 DAYS.

EXPLANATION:

THE SEALED BAGGIE TRAPS THE MOISTURE AND HEAT INSIDE. THIS IS THE PERFECT ENVIRONMENT FOR A FUNGUS TO GROW. WITH PLENTY OF FOOD, WATER AND HEAT, THE GROWTH RATE OF A FUNGUS CAN BE VERY HIGH!!! ONCE A FUNGUS STARTS TO GROW ON YOUR FOOD, IT WILL BE VERY EASY TO IDENTIFY. MOST FUNGI ARE FUZZY OR HAIRY AND CAN APPEAR AS ANY COLOR.

DO NOT CONFUSE YOUR FUNGAL GROWTH WITH A COLONY OF BACTERIA! BACTERIAL COLONIES TEND TO BE SLIMY OR SHINY.

WEEK 16: THE BACTERIAL KINGDOMS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ALL BACTERIA IN THE WORLD HAS BEEN GROUPED INTO TWO DIFFERENT KINGDOMS.

KINGDOM ARCHAEBACTERIA THRIVE IN VERY DANGEROUS HABITATS. THESE ORGANISMS HAVE BEEN PLACED INTO THREE SEPARATE GROUPS ACCORDING TO THE HABITAT WHERE THEY CAN BE FOUND. METHANOGENS ARE FOUND IN AREAS WITH HIGH AMOUNTS OF THE GAS, METHANE. HALOPHILES ARE FOUND IN AREAS OF HIGH SALT CONTENT. THERMOPHILES LIVE IN AREAS OF EXTREME HEAT.

ORGANISMS OF THE KINGDOM EUBACTERIA CAN BE FOUND IN NEARLY EVERY BIOME OF THE WORLD! THESE BACTERIA ARE THE TYPICAL ORGANISM THAT HUMANS COME INTO CONTACT WITH.

DEFINITIONS:

BACTERIA	SINGLE CELLED ORGANISMS THAT LIVE IN SOIL, WATER, AND OTHER ORGANISMS
FLAGELLA	BODY PART OF A BACTERIA THAT ACTS LIKE A TAIL WHICH MOVES THE BACTERIA THROUGH A LIQUID
KINGDOM ARCHAEBACTERIA	"ARK-EE-BAK-TEAR-E-AH"; BACTERIA THAT LIVE IN VERY DANGEROUS HABITATS
METHANOGENS	"METH-AN-O-GENS"; ARCHAEBACTERIA NAMED AFTER THE GAS THEY MAKE - METHANE
HALOPHILES	"HAL-O-FILES"; ARCHAEBACTERIA THAT LIVE IN VERY SALTY WATER
THERMOPHILES	"THERM-O-FILES"; ARCHAEBACTERIA THAT LIVE IN AREAS WITH VERY HIGH TEMPERATURES
OXYGEN	"OX-E-GEN"; THE GAS HUMANS NEED TO BREATHE TO STAY ALIVE
KINGDOM EUBACTERIA	"U-BAK-TEAR-E-AH"; COMMON BACTERIA THAT CAN LIVE IN EVERY BIOME OF THE WORLD

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHICH KINGDOM OF ORGANISM, ARCHAEBACTERIA OR EUBACTERIA, CAN BE FOUND ANYWHERE IN THE WORLD?

ORGANISMS OF KINGDOM EUBACTERIA CAN BE FOUND IN EVERY BIOME OF THE WORLD.

HOW DO SOME BACTERIA MOVE?

SOME BACTERIA USE A LONG, WHIP-LIKE TAIL TO MOVE THEM THROUGH A LIQUID TOWARDS A FOOD SOURCE.

DO ALL BACTERIA NEED OXYGEN TO SURVIVE?

NO. TO SOME BACTERIA, OXYGEN IS POISONOUS. THIS IS ESPECIALLY TRUE OF METHANOGENS AND OTHER ORGANISMS FROM THE KINGDOM ARCHAEBACTERIA.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 16:

PAGE ONE:

BACTERIA
FLAGELLA
KINGDOM ARCHAEBACTERIA
METHANOGENS
HALOPHILES
THERMOPHILES
OXYGEN
KINGDOM EUBACTERIA

PAGE TWO:

2 - BACTERIA
6 - FLAGELLA
1 - KINGDOM ARCHAEBACTERIA
8 - METHANOGENS
7 - HALOPHILES
4 - THERMOPHILES
5 - OXYGEN
3 - KINGDOM EUBACTERIA

UNIT FOUR REVIEW
ANSWER KEY

FILL IN THE BLANKS IN THE STORY BELOW:

SINCE I AM **HETEROTROPHIC**, I HAVE TO EAT OTHER ORGANISMS TO STAY ALIVE! THIS IS MUCH DIFFERENT THAN PLANTS WHO ARE **AUTOTROPHIC**. OTHER ORGANISMS, CALLED **DECOMPOSERS** BREAK DOWN ALL KINDS OF BIOTIC MATERIAL INTO MORE USEFUL FORMS.

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

6 – PLANTS
3 – FUNGI
1 – ANIMALS
5 – PROTISTS
4 – ARCHAEBACTERIA
2 – EUBACTERIA

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "GROWING COLORFUL CRITTERS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

GROWING ARCHAEBACTERIA DOES NOT REQUIRE EXPENSIVE EQUIPMENT. MOST OF THESE ORGANISMS CAN BE FOUND VERY CLOSE TO HOME!

THE GROWTH RATE OF SOME ARCHAEBACTERIA IS VERY SLOW. WHILE SOME SPECIES HAS A VERY FAST GROWTH RATE. PATIENCE MUST BE PRACTICED IN ORDER TO GROW THESE ORGANISMS.

IN ORDER TO PROVIDE AN ENVIRONMENT THAT IS SUITABLE FOR SOME ARCHAEBACTERIA, ONE MUST REMOVE ALL TRACES OF OXYGEN FROM THE ENVIRONMENT. ONCE THIS IS ACCOMPLISHED, THE ARCHAEBACTERIA HAS AN OPPORTUNITY TO GROW AND SPREAD INTO THIS AREA.

GROWING COLORFUL CRITTERS

CHILDREN WILL GROW TWO KINDS OF BACTERIA IN THEIR OWN TERRARIUM.

Materials:

CLEAR TENNIS BALL CONTAINER (WITH THE CAP) OR SODA BOTTLE WITH THE TOP CUT OFF
PLASTIC WRAP AND A RUBBER BAND (IF USING A SODA BOTTLE)
MUD FROM THE EDGE OF A SHALLOW POND (THE SMELLIER THE BETTER...YEAH!!!)
WATER
¼ NEWSPAPER PAGE (SHREDDED)
ONE RAW EGG
BOWL
SPOON

ACTIVITY:

REMOVE ANY LARGE OBJECTS FROM THE MUD AND MIX IT WITH WATER IN A BOWL UNTIL IT IS CAN FLOW LIKE A THICK CREAM.

PUT THE SHREDDED PAPER, THE RAW EGG (WITHOUT THE SHELL) AND ABOUT AN INCH OF MUD INTO THE CONTAINER OR SODA BOTTLE AND MIX WELL.

FILL THE CONTAINER WITH MUD UP TO AN INCH FROM THE TOP. COVER THE CONTAINER AND WASH YOUR HANDS!!!

PUT THE CONTAINER IN A SUNNY LOCATION AND LEAVE IT THERE, UNDISTURBED.

EVERY FEW DAYS, BRIEFLY REMOVE THE CONTAINER'S TOP TO VENT OFF THE GASES. DON'T FORGET ABOUT THIS STEP. IF YOU DO, YOU MIGHT FIND THAT THE TOP CAN BE FORCED OFF!!! IF THE MUD AT THE TOP IS DRYING OUT, ADD A LITTLE WATER.

IT MAY TAKE SEVERAL WEEKS TO GET YOUR BACTERIA TO GROW VERY WELL. WHEN THEY DO, YOU WILL BE AMAZED AT THE COLORS OF BACTERIA THAT YOU WILL FIND!!!

Explanation:

MANY DIFFERENT KINDS OF BACTERIA LIVE IN MUD. AS THESE ORGANISMS CONTINUE TO EAT AND GROW, THEY USE UP THEIR RESOURCES. ONE OF THESE RESOURCES IS OXYGEN. AFTER SEVERAL DAYS, MOST OF THE OXYGEN AT THE BOTTOM OF THE CONTAINER IS USED UP. ONLY THE ARCHAEBACTERIA CAN LIVE IN THIS ENVIRONMENT. THESE BACTERIA USE THE RESOURCES FROM THE PAPER AND THE EGG AS FOOD TO SURVIVE.

SOME BACTERIA ARE PHOTOSYNTHETIC. SO, THE BACTERIA NEAR THE TOP OF THE CONTAINER CAN USE THE LIGHT AND WATER TO MAKE THEIR OWN FOOD IN ORDER TO SURVIVE.

THE DIFFERENT ENVIRONMENTS ON THE TOP AND BOTTOM OF THE CONTAINER ALLOW FOR DIFFERENT COLONIES OF BACTERIA TO SURVIVE. YOU WILL BE ABLE TO NOTICE THESE DIFFERENT COLONIES BY THEIR DIFFERENT COLORS!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "HOMEMADE MICROBE FOOD: PART ONE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE PRODUCTION OF AGAR PLATES IS AN IMPORTANT INDUSTRY FOR A SCIENTIST WHO STUDIES BACTERIA. THESE INDIVIDUALS ARE KNOWN AS MICROBIOLOGISTS.

TRUE "AGAR" IS DEVELOPED FROM A PLANT AND IS USED AS A FOOD SOURCE FOR GROWING BACTERIA. THERE ARE PLENTY OF ALTERNATIVES TO CREATE HOMEMADE FOOD SOURCES FOR THE GROWTH OF BACTERIA.

CARE MUST ALWAYS BE TAKEN WHEN GROWING BACTERIA, ESPECIALLY WHEN THERE IS SUFFICIENT GROWTH ON THE FOOD SOURCE. BE CERTAIN NOT TO TOUCH, TASTE OR SMELL THE FOOD SOURCE AFTER YOU BEGIN TO GROW YOUR BACTERIA. WHEN YOU ARE COMPLETED, BE CERTAIN TO DISPOSE THE CONTAINER INTO THE TRASH!

HOMEMADE MICROBE FOOD: PART ONE

CHILDREN WILL MAKE THEIR OWN AGAR PLATES AND RUN A SIMPLE TEST FOR THE PRESENCE OF BACTERIA.

Materials:

SAUCEPAN AND STOVE
PACKET OF UNFLAVORED GELATIN
WATER
SUGAR
BEEF BOUILLON
FOUR FOIL MUFFIN CUPS
MUFFIN PAN
MEASURING SPOONS
FOUR SEALABLE SANDWICH BAGGIES
DATA CHART (SEE ATTACHED)

Activity:

IN THE SAUCEPAN, MIX TOGETHER ONE PACKAGE OF UNFLAVORED GELATIN, ONE CUP OF COLD WATER, 2 TEASPOONS OF SUGAR AND ONE TEASPOON OF BEEF BOUILLON.

BRING SLOWLY TO A BOIL, STIRRING CONSTANTLY.

ALLOW THE MIXTURE TO COOL A LITTLE BIT AND POUR INTO FOIL MUFFIN CUPS PLACED INSIDE OF THE MUFFIN PAN FOR SUPPORT.

FILL EACH CUP ABOUT HALFWAY WITH THE MIXTURE.

PLACE THE MUFFIN PAN IN THE REFRIGERATOR UNTIL THE GELATIN HARDENS. REMOVE THE FOIL CUPS FROM THE PAN AND PLACE ONE OF THEM IN A SEALABLE SANDWICH BAGGIE. BE CERTAIN NOT TO TOUCH THE SURFACE OF THE GELATIN!!!

TAKE ONE OF THE CUPS AND RUN YOUR FINGER ALL OVER THE SURFACE OF THE GELATIN. PLACE IT INTO A SEALABLE SANDWICH BAGGIE.

TAKE ANOTHER CUP AND LICK THE SURFACE OF THE GELATIN BEFORE PLACING IT IN A BAGGIE.

GO WASH YOUR HANDS THOROUGHLY AND RUN YOUR FINGER, ONCE AGAIN OVER A DIFFERENT GELATIN CUP. SEAL THIS ONE IN A BAGGIE AS WELL.

PLACE ALL OF THE BAGGIES IN A WARM AREA, BUT NOT IN DIRECT SUNLIGHT! CHECK ON THEM PERIODICALLY FOR 2-3 DAYS.

HAVE THE CHILD PREDICT WHICH GELATIN CUP WOULD GROW BACTERIA FIRST. THEY CAN ALSO PREDICT WHICH ONE WOULD HAVE THE MOST BACTERIA.

Explanation:

COMMERCIAL MEDIA FOR BACTERIA (THE MOST COMMON FORM IS CALLED AGAR) CAN BE VERY EXPENSIVE. SO CAN THE GLASSWARE USED TO GROW THE BACTERIA. THIS ACTIVITY ALLOWS YOU TO PRODUCE YOUR OWN FOOD SOURCE FOR GROWING BACTERIA IN A MODERATELY CONTROLLED ENVIRONMENT. NATURALLY, YOU MAY HAVE CONTAMINATED YOUR "AGAR" FROM BACTERIA IN THE REFRIGERATOR, THE BAGGIE OR YOUR HANDS. NEVERTHELESS, YOU SHOULD GET A GOOD COLLECTION OF BACTERIA ON EACH OF YOUR SAMPLES.

YOU SHOULD EXPECT TO FIND MORE BACTERIA FROM YOUR TONGUE AND YOUR UNWASHED HANDS, THAN FROM THE GELATIN TOUCHED BY YOUR WASHED HAND. THE FIRST CUP WAS PLACED INTO THE BAGGIE AS A CONTROL. THIS "CONTROL" IS USED AS A GAUGE FOR THE OTHER CUPS. IF YOU HAVE A LARGE AMOUNT OF BACTERIA GROWING ON YOUR CONTROL, YOU SHOULD EXPECT TO SEE LARGE GROWTH IN THE OTHER CUPS AS WELL. YOU SHOULD EXPECT TO FIND VERY LITTLE, IF ANY AT ALL, BACTERIA IN THIS CONTROL CUP!

HOMEMADE MICROBE FOOD DATA CHART

GELATIN CUP	CONTENTS	PREDICTION	ACTUAL RESULTS
CUP #1	NOTHING		
CUP #2	DIRTY FINGER		
CUP #3	LICKED SURFACE		
CUP #4	CLEAN FINGER		

UNIT FOUR TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	KINDGOMS	1. ORGANISMS THAT BREAK DOWN BIOTIC MATERIAL INTO MORE USEFUL FORMS (LIKE NUTRIENTS FOR LIVING PLANTS)
____	FUNGI	2. COMMON BACTERIA THAT CAN LIVE IN EVERY BIOME OF THE WORLD
____	CELLS	3. ORGANISMS MADE OF ONE CELL; CAN LIVE IN SOIL, WATER AND OTHER ORGANISMS
____	PROTISTS	4. ANIMALS WITHOUT A BACKBONE
____	ARCHAEBACTERIA	5. ORGANISMS THAT SHARE TRAITS WITH PLANTS AND ANIMALS AND FUNGI
____	INVERTEBRATES	6. A GROUP OF ORGANISMS THAT ARE AUTOTROPHIC AND HAVE SOME FORM OF LEAF AND STEM AND ROOT
____	EUBACTERIA	7. LARGE GROUPS THAT SCIENTISTS HAVE PLACED ALL LIVING ORGANISMS INTO
____	DECOMPOSERS	8. BACTERIA THAT LIVE IN VERY DANGEROUS HABITATS
____	AUTOTROPHIC	9. SMALLEST PARTS OF LIVING ORGANISMS
____	NONVASCULAR PLANTS	10. BEING ABLE TO MAKE YOUR OWN FOOD
____	PLANT KINGDOM	11. PLANTS WITHOUT BODY PARTS TO MOVE WATER FROM THEIR ROOTS TO THE STEM AND TO THE LEAVES
____	BACTERIA	12. ORGANISMS THAT ACT AS DECOMPOSERS AND ABSORB THEIR FOOD THROUGH THEIR BODIES

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. IF YOU ARE HETEROTROPHIC, YOU WOULD...

A. MAKE YOUR OWN FOOD
B. HAVE SOMEONE ELSE MAKE YOUR OWN FOOD
C. EAT OTHER ORGANISMS

2. BIODIVERSITY MEANS:

A. ALL OF THE DIFFERENT KINDS OF ANIMALS IN THE WORLD
B. THE ABILITY TO PLACE ORGANISMS INTO GROUPS
C. ALL OF THE DIFFERENT KINDS OF ORGANISMS IN THE WORLD

3. FERNS ARE A KIND OF:

A. FLOWERING VASCULAR PLANTS
B. NON-FLOWERING VASCULAR PLANTS
C. NON-FLOWERING NON-VASCULAR PLANTS

4. DECOMPOSERS ARE USUALLY FOUND IN WHICH KINGDOM?

A. FUNGI
B. PLANT
C. PROTISTA

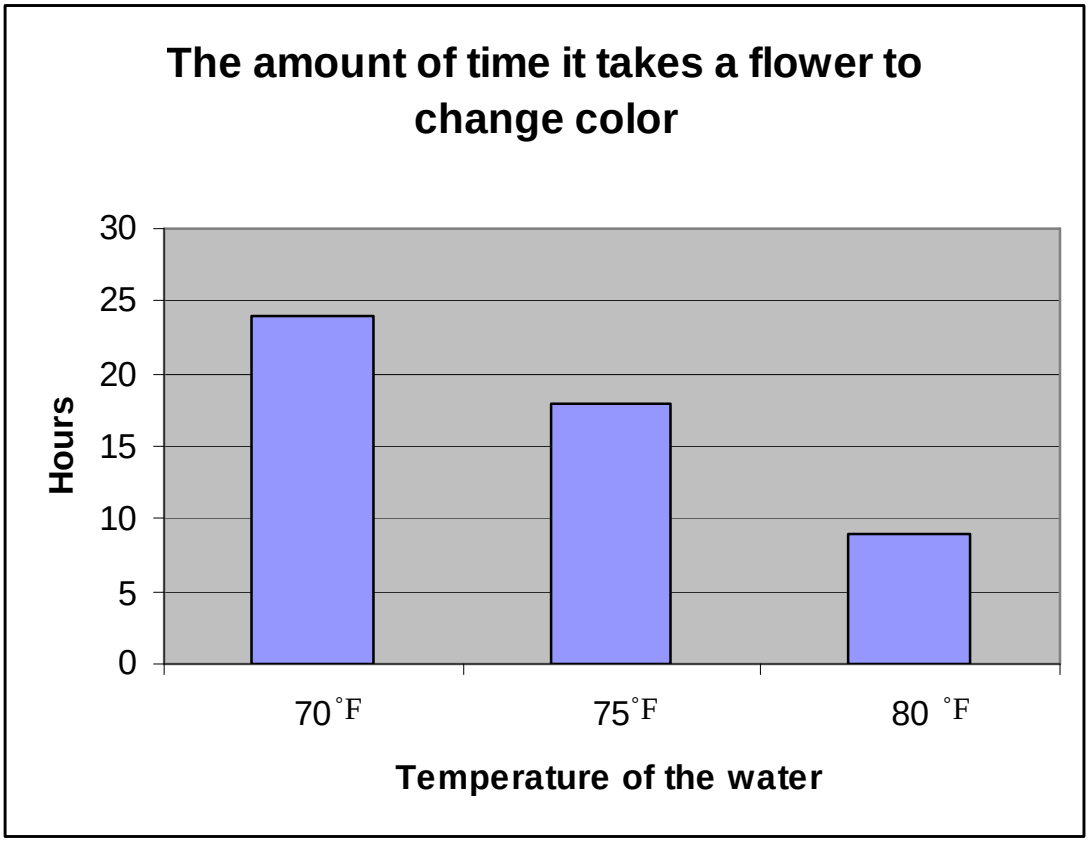
5. PROTISTS CAN BE...

A. ONLY AUTOTROPHIC
B. ONLY HETEROTROPHIC
C. BOTH AUTOTROPHIC AND HETEROTROPHIC

6. WHICH SENTENCE IS TRUE:

A. ALL BACTERIA ARE DANGEROUS TO HUMANS
B. SOME BACTERIA ARE HELPFUL TO HUMANS
C. BACTERIA CANNOT BE FOUND IN MANY BIOMES

LANE PLACED A WHITE FLOWER INTO THREE GLASSES OF COLORED WATER. THE WATER IN EACH OF THESE GLASSES HAD A DIFFERENT TEMPERATURE. HE RECORDED HOW LONG IT TOOK THE COLORED WATER TO REACH THE WHITE FLOWER AND START TURNING IT DIFFERENT COLORS. HERE IS HIS RESULTS:



WHICH TEMPERATURE OF WATER TOOK THE LONGEST TIME TO CHANGE THE COLOR OF THE FLOWER? _____

DO YOU THINK THAT THE TEMPERATURE OF THE WATER HAS AN EFFECT ON THE AMOUNT OF TIME IT TAKES FOR THE FLOWER TO CHANGE COLORS? WHY OR WHY NOT?

UNIT FOUR TEST ANSWER KEY

MATCHING

7 KINDGOMS
12 FUNGI
9 CELLS
5 PROTISTS
8 ARCHAEBACTERIA
4 INVERTEBRATES
2 EUBACTERIA
1 DECOMPOSERS
10 AUTOTROPHIC
11 NONVASCULAR PLANTS
6 PLANT KINGDOM
3 BACTERIA

MULTIPLE CHOICE

1. C
2. C
3. B
4. A
5. C
6. B

GRAPH ANALYSIS

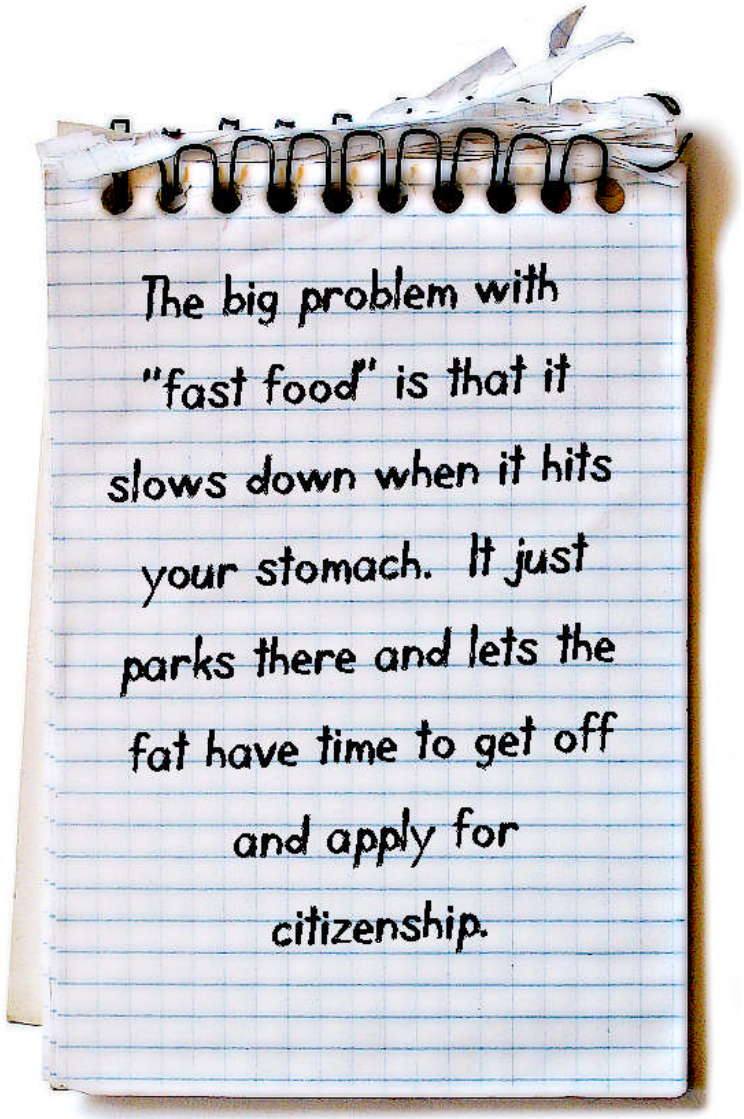
WHICH TEMPERATURE OF WATER TOOK THE LONGEST TIME TO CHANGE THE COLOR OF THE FLOWER?

70°F

DO YOU THINK THAT THE TEMPERATURE OF THE WATER HAS AN EFFECT ON THE AMOUNT OF TIME IT TAKES FOR THE FLOWER TO CHANGE COLORS? WHY OR WHY NOT?

YES, THE TEMPERATURE HAS AN EFFECT ON THE WATER. THE WARMER THE WATER IN THIS EXPERIMENT, THE FASTER THE COLOR CHANGE.

WEEK 17: FOOD CHAINS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ALL ANIMALS DEPEND ON PLANTS. SOME ANIMALS EAT PLANTS FOR FOOD. OTHER ANIMALS EAT ANIMALS THAT EAT THE PLANTS.

PLANTS ARE KNOWN AS PRODUCERS AS THEY PRODUCE THEIR OWN FOOD TO SURVIVE. ORGANISMS THAT SURVIVE BY ONLY EATING PLANTS ARE KNOWN AS HERBIVORES. ANIMALS THAT EAT OTHER ANIMALS ARE KNOWN AS CARNIVORES. SOME ORGANISMS EAT BOTH PLANTS AND ANIMALS, LIKE HUMANS, AND ARE KNOWN AS OMNIVORES.

MAPPING OUT A PATH OF "WHO-EATS-WHAT" IS KNOWN AS A FOOD CHAIN. THIS IS A VERY SIMPLE WAY OF IDENTIFYING HOW ENERGY IS PASSED BETWEEN A SMALL LIST OF ORGANISMS.

DEFINITIONS:

FOOD CHAIN	A RELATIONSHIP BETWEEN SPECIES THAT USE EACH OTHER FOR FOOD. IT IS CALLED A "CHAIN" BECAUSE NUTRIENTS ARE PASSED FROM ONE ORGANISM TO ANOTHER
PRODUCERS	PLANTS; THEY ARE NAMED "PRODUCERS" BECAUSE THEY ARE AUTOTROPHIC AND PRODUCE THEIR OWN FOOD
CONSUMERS	ANIMALS THAT GET ALL OF THEIR NUTRIENTS BY EATING (OR CONSUMING) OTHER ORGANISMS
HERBIVORES	THESE ANIMALS ONLY EAT PLANTS TO GET THEIR NUTRIENTS
CARNIVORES	THESE ARE THE ANIMALS THAT EAT OTHER ANIMALS (LIKE THE HERBIVORES) FOR FOOD
OMNIVORES	OMNIVORES WILL EAT PLANTS OR ANIMALS

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT IS THE DIFFERENCE BETWEEN A CARNIVORE AND AN OMNIVORE?

CARNIVORES ONLY EAT ANIMALS WHILE OMNIVORES EAT BOTH PLANTS AND ANIMALS.

WOULD YOU CALL A HERBIVORE A CONSUMER?

YES. HERBIVORES GET THEIR ENERGY FROM EATING OTHER ORGANISMS (PLANTS) TO SURVIVE.

DO YOU LIVE IN AN ENVIRONMENT?

YES. SINCE YOU AND I ARE BOTH EXIST IN THE WORLD, WE ARE DEFINITELY LIVING WITHIN AN ENVIRONMENT!

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 17:

PAGE ONE:

ACROSS:

1. FOOD CHAIN
5. OMNIVORES
6. PRODUCERS

DOWN:

2. CARNIVORES
3. HERVIVORES
4. CONSUMERS

PAGE TWO:

4 – FOOD CHAIN
2 – PRODUCERS
5 – CONSUMERS
1 – HERBIVORES
6 – CARNIVORES
3 – OMNIVORES

PAGE THREE:

"DRAW A PICTURE OF A FOOD CHAIN. LABEL YOUR DRAWING WITH THE FOLLOWING TYPES OF ORGANISMS: ***PRODUCER***, ***HERBIVORE***, AND ***CARNIVORE***"

ANSWERS WILL VARY

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "BEAKS OF FINCHES"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

IN NEARLY EVERY FOOD CHAIN, THE SUN PROVIDES ENERGY TO THE PRODUCERS, WHO ARE USED AS FOOD/ENERGY FOR THE CONSUMERS.

THE VARIOUS SIZES AND SHAPES OF BIRD BEAKS ALLOW SOME BIRDS TO BE OMNIVORES. HOWEVER, THERE IS NO SINGLE BIRD BEAK THAT CAN BE USED TO ACQUIRE EVERY POSSIBLE SOURCE OF FOOD.

BEAKS OF FINCHES

CHILDREN WILL SIMULATE THE ACTIONS OF BIRDS WITH THEIR OWN "BEAKS".

Materials:

CONTAINER OF BIRDSEED
SMALL CUP
BEAKS OF FINCHES DATA CHART (SEE ATTACHED)
THREE DIFFERENT TOOLS:

- SCISSORS
- PLIERS
- CLIPS
- TWEEZERS
- GARDEN SHEARS
- FIREPLACE TONGS
- BBQ TONGS
- ETC...

Activity:

INFORM THE CHILD THAT HE/SHE WILL BE PRETENDING THEY ARE A BIRD AND THAT THEY ARE GOING TO HAVE TO HUNT FOR THEIR FOOD.

THEY MAY CHOOSE THREE DIFFERENT TOOLS TO USE AS "BEAKS" TO COLLECT BIRDSEED. HOWEVER, IN ORDER TO SURVIVE, YOUR BEAK MUST BE ABLE TO COLLECT AT LEAST 50 SEEDS DURING EACH ROUND. ASK THE CHILD WHICH BEAK THEY THINK WILL BE ABLE TO COLLECT THE MOST SEED. THEY CAN MAKE THEIR PREDICTIONS ON THE BEAKS OF FINCHES DATA CHART.

PLACE THE CONTAINER OF BIRDSEED IN FRONT OF THE CHILD AND GIVE THEM 10 SECONDS TO COLLECT AS MUCH SEED AS THEY CAN. THEY WILL NEED TO DEPOSIT THEIR SEEDS IN A SMALL CUP.

AFTER 10 SECONDS, HAVE THE CHILD COUNT THE NUMBER OF SEEDS IN THEIR CUP AND RECORD THE NUMBER ON THE DATA CHART. REPEAT THIS EXPERIMENT TWO MORE TIMES.

ASK THE CHILD TO CHOOSE AT LEAST ONE MORE DIFFERENT BEAK AND REPEAT THIS PROCEDURE.

Explanation:

FINCHES ARE OMNIVORES, WHICH MEANS THEY WILL EAT BOTH PLANTS AND ANIMALS FOR ENERGY. AS CONSUMERS, THE FINCHES WILL PREY UPON SEEDS (PRODUCERS) WITHIN THIS ACTIVITY. IT WILL BE IMPORTANT TO REMIND YOUR CHILD OF THE FLOW OF ENERGY THROUGH THIS FOOD CHAIN THROUGHOUT THE ACTIVITY. THE SUN PROVIDES ENERGY TO THE PRODUCERS TO MAKE SEEDS, WHICH IN TURN IS USED AS ENERGY FOR THE CONSUMERS.

THE VARIOUS TOOLS THAT WILL BE USED BY THE CHILD TO PICK UP SEEDS ALL REPRESENT VARIOUS TYPES OF BEAKS THAT ARE USED BY DIFFERENT BIRDS. FOR EXAMPLE, THE HERON AND THE WOODPECKER BOTH HAVE LONG POINTED BEAKS. HOWEVER, THE HERON'S BEAK IS BETTER FOR CATCHING FISH, WHILE A WOODPECKER'S IS BETTER FOR DRILLING INTO WOOD FOR CATCHING INSECTS.

BEAKS OF FINCHES DATA CHART

TOOLS TO BE USED AS BEAKS:

1. _____
2. _____
3. _____

WHICH BEAK WILL COLLECT THE MOST SEED:

_____

	TRIAL ONE	TRIAL TWO	TRIAL THREE
BEAK #1			
BEAK #2			
BEAK #3			

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE AMOUNT OF BUTTER"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

EVERYTHING IN THE WORLD IS CONNECTED.

FOOD CHAINS ARE ALWAYS DESIGNED TO EXPLAIN HOW ENERGY IS PASSED FROM ORGANISM TO ORGANISM. HOWEVER, A FOOD CHAIN CAN ONLY DESCRIBE THE FLOW OF ENERGY IN ONE DIRECTION!

THE AMOUNT OF BUTTER

CHILDREN WILL ANALYZE A QUOTE TO DETERMINE HOW PRODUCERS AND CONSUMERS INTERACT IN REAL LIFE.

Materials:

PAPER AND PENCIL
COLORING MATERIALS

Activity:

READ THE FOLLOWING STATEMENT TO YOUR CHILD:

THE AMOUNT OF BUTTER MADE BY A FARMER DEPENDS ON THE NUMBER OF CATS IN THIS AREA.

> *SINCE FARMERS KEEP CATS, CATS EAT MICE, MICE EAT BEES, BEES POLLINATE CLOVER (A TYPE OF PLANT), AND COWS EAT CLOVER. THE MORE CLOVER THERE IS THE MORE FOOD THE COW HAS TO EAT. WITH MORE FOOD, THE COW CAN MAKE MORE MILK, WHICH IS THE MOST IMPORTANT INGREDIENT IN MAKING BUTTER.*

ASK YOUR CHILD TO DRAW A PICTURE OF EACH ORGANISM THAT EXISTS IN THE ABOVE STATEMENT. THIS MAY HELP THEM VISUALIZE THEIR ANSWERS TO THE FOLLOWING QUESTIONS...

NOW ASK YOUR CHILD TO ANSWER THE FOLLOWING QUESTIONS:

1. WHICH OF THE ABOVE ORGANISMS IS A GOOD EXAMPLE OF AN ***OMNIVORE***?
2. WHICH IS A ***PRODUCER***?
3. WHICH IS A ***CONSUMER***?
4. WHICH ORGANISM IS AN ***AUTOTROPH***?
5. WHICH ORGANISM IS A ***CARNIVORE***?
6. WHICH OF THE ORGANISMS USE ***FOOD***?
7. WHICH OF THE ORGANISMS IS THE LARGEST ONE OF THIS ***FOOD CHAIN***?
8. WHAT IS THE RELATIONSHIP BETWEEN THE OLD MAIDS AND THE CATS?
9. WHICH OF THE ABOVE IS A GOOD EXAMPLE OF ***HERBIVORE***? EXPLANATION:

THE ANSWERS TO THESE QUESTIONS ARE:

1. **WHICH OF THE ABOVE ORGANISMS IS A GOOD EXAMPLE OF AN OMNIVORE?** FARMERS, MICE

2. **WHICH IS A PRODUCER?** CLOVER

3. **WHICH IS A CONSUMER?** FARMERS, CATS, MICE, BEES, COWS

4. **WHICH ORGANISM IS AN AUTOTROPH?** CLOVER

5. **WHICH ORGANISM IS A CARNIVORE?** FARMERS, CATS, MICE

6. **WHICH OF THE ABOVE ORGANISMS USE FOOD?** ALL ORGANISMS USE FOOD

7. **WHICH OF THE ABOVE ORGANISMS IS AT THE TOP OF THE FOOD CHAIN?** FARMERS

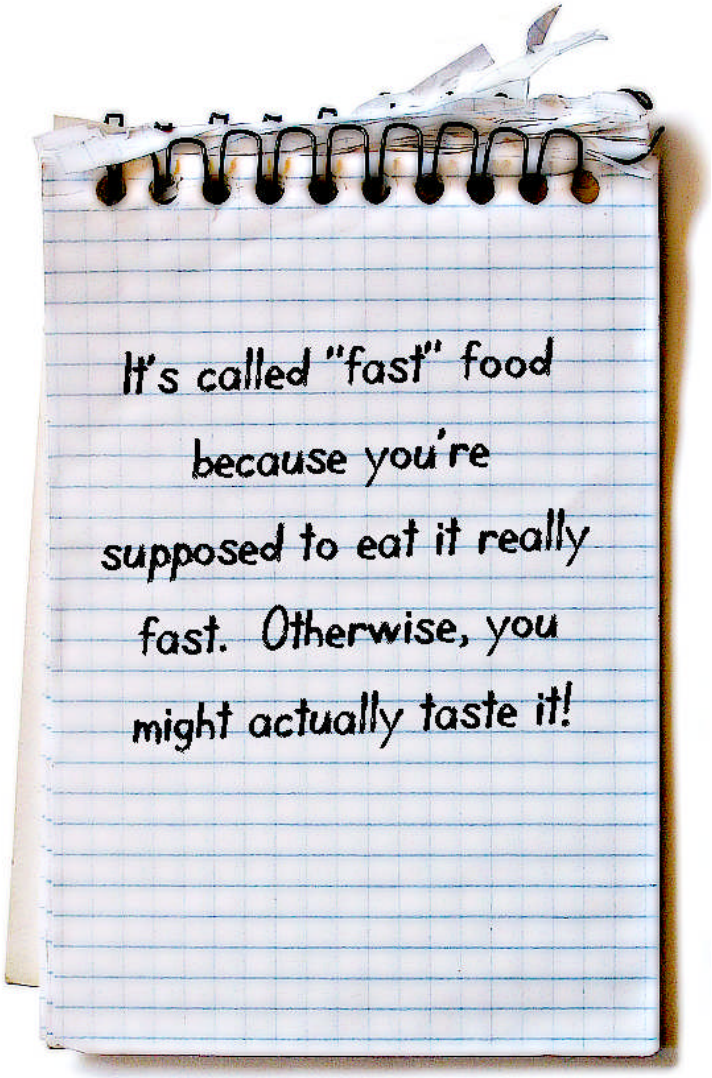
8. **WHAT IS THE RELATIONSHIP BETWEEN THE FARMERS AND THE CATS?** WITHOUT THE CATS, THERE WOULD BE MORE MICE RUNNING AROUND, EATING ALL OF THE BEES. IF ALL OF THE BEES ARE GONE, THE CLOVER WOULD NOT BE POLLINATED AND THE COWS WOULD NOT HAVE AS MUCH TO EAT! WITH LESS FOOD, THE COWS WOULD NOT MAKE AS MUCH MILK. THEREFORE, THE AMOUNT OF BUTTER THE FARMER COULD MAKE WOULD DECREASE.

9. **WHICH OF THE ABOVE IS A GOOD EXAMPLE OF HERBIVORE?** BEES AND COWS

EXPLANATION:

THIS STATEMENT IS A GOOD EXAMPLE OF HOW EVERYTHING WITHIN A FOOD CHAIN IS DEPENDENT ON EACH OTHER FOR ITS SURVIVAL. IF YOU AFFECT THE NUMBERS OF THE FARMERS, CATS, MICE, BEES, CLOVER OR COWS IN THIS HABITAT, THERE WILL BE AN AFFECT ON THE AMOUNT OF BUTTER.

WEEK 18: FOOD WEBS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ALL ANIMALS DEPEND ON PLANTS. SOME ANIMALS EAT PLANTS FOR FOOD. OTHER ANIMALS EAT ANIMALS THAT EAT THE PLANTS.

FOOD WEBS ARE MORE REALISTIC MODELS OF HOW ENERGY IS PASSED BETWEEN PREDATORS AND PREY IN A HABITAT.

THE BALANCE OF A HABITAT'S CARRYING CAPACITY IS MONITORED BY INDIVIDUALS WHO WORK IN THE AREA OF CONSERVATION.

DEFINITIONS:

FOOD WEB	A GROUP OF FOOD CHAINS LINKED TOGETHER
PREDATORS	ANIMALS THAT EAT OTHER ANIMALS FOR FOOD; ALSO KNOWN AS A CARNIVORE
PREY	ANIMALS THAT ARE EATEN BY PREDATORS
CARRYING CAPACITY	A BALANCE OF PREDATORS AND PREY IN A HABITAT

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT IS ANOTHER NAME FOR CARNIVORES?

Predators

WHICH TYPE OF ORGANISM IS USUALLY LARGER...PREDATORS OR PREY?

Most of the time, predators are much larger than prey.

WHAT DO YOU THINK WOULD HAPPEN IF THERE WERE NO PREDATORS IN THE ENVIRONMENT?

Without predators, the prey would eventually eat up all of their resources.

WHAT IS THE FIELD OF SCIENCE THAT PROTECTS OUR NATURAL RESOURCES?

Conservation

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 18:

PAGE ONE:

"A FOOD CHAIN IS A COLLECTION OF MANY FOOD WEBS JOINED TOGETHER."

THIS IS AN INCORRECT STATEMENT. A **FOOD WEB** IS A COLLECTION OF FOOD CHAINS JOINED TOGETHER!!!

PAGE TWO:

4 - FOOD WEB
1 - PREDATORS
2 - PREY
3 - CARRYING CAPACITY

PAGE THREE:

DRAW A PICTURE OF A FOOD WEB. LABEL YOUR DRAWING WITH THE FOLLOWING TYPES OF ORGANISMS: **PRODUCER**, **HERBIVORE**, AND **CARNIVORE**.

ANSWERS WILL VARY

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHERE DID YOU GO?"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE ABILITY OF AN ORGANISM TO BLEND INTO ITS SURROUNDINGS IS KNOWN AS CAMOUFLAGE.

CAMOUFLAGE IS AN EFFECTIVE TOOL FOR BOTH PREDATORS AND PREY.

THIS TRAIT HELPS TO BALANCE THE CARRYING CAPACITY WITHIN MOST FOOD WEBS IN THE ENVIRONMENT.

WHERE DID YOU GO?

CHILDREN WILL EXPLORE THE IMPORTANCE OF CAMOUFLAGE AS A FORM OF PROTECTION AS THEY ACT AS PREDATORS.

MATERIALS:

ONE FULL PIECE OF NEWSPAPER
SEVERAL DOZENS OF SMALL CUTOUTS FROM COLORED PAPER (PAPER PUNCHED HOLES WORK GREAT)
SEVERAL DOZEN SMALL CUTOUTS FROM A PIECE OF NEWSPAPER
DATA CHART (SEE ATTACHED)

ACTIVITY:

INFORM THE CHILD THAT HE/SHE WILL BE ACTING AS A PREDATOR HUNTING ITS PREY. THE PREY WILL BE THE CUTOUTS WHICH WILL BE LOCATED ON TOP OF ITS HABITAT (THE FULL PIECE OF NEWSPAPER).

SPREAD AN EQUAL AMOUNT OF CUTOUTS OF EACH TYPE ALL OVER THE NEWSPAPER. THE CHILD WILL HAVE ONE MINUTE TO COLLECT AS MANY CUTOUTS AS POSSIBLE. ONLY ONE DOT CAN BE PICKED UP AT A TIME!

ALLOW THE CHILD ONE MINUTE TO COLLECT THE CUTOUTS. HAVE THE CHILD COUNT EACH COLOR THEY PICKED UP AND RECORD THIS NUMBER ON THEIR CHART. PUT THESE DOTS BACK ONTO THE NEWSPAPER.

REPEAT THIS SAME PROCEDURE AT LEAST TWO MORE TIMES.

EXPLANATION:

AS A PREDATOR, YOUR CHILD PROBABLY NOTICED THE BRIGHTEST COLORED CUTOUTS ON THE NEWSPAPER FIRST. IT IS UNLIKELY THAT THEY PICKED UP MANY OF THE NEWSPAPER CUTOUTS AS THEY BLENDED INTO THEIR HABITAT. BEING ABLE TO BLEND INTO A HABITAT SO AS NOT TO BE SEEN (THIS IS KNOWN AS "CAMOUFLAGE") GIVES PREY AND ADVANTAGE OVER THE PREDATORS. THE ABILITY TO SURVIVE BY HIDING FROM PREDATORS HELPS TO BALANCE THE CARRYING CAPACITY IN ANY FOOD WEB. IF TOO MANY PREY EXIST IN THE FOOD WEB, THEY ARE MORE EASILY FOUND BY THE PREDATORS AND THEIR NUMBERS WILL START TO DROP. IF THE FOOD WEB CAN SUPPORT MORE PREY, THEN THEIR CAMOUFLAGE WILL HELP THIS SPECIES TO REPRODUCE FURTHER.

WHERE DID YOU GO? DATA CHART

	TRIAL ONE	TRIAL TWO	TRIAL THREE
NUMBERS OF DOTS			
NEWSPAPER CUTOUTS			
RED CUTOUTS			
ORANGE CUTOUTS			
YELLOW CUTOUTS			
GREEN CUTOUTS			
BLUE CUTOUTS			
PURPLE CUTOUTS			
WHITE CUTOUTS			
GREY CUTOUTS			
BLACK CUTOUTS			

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE STORK AND THE GRIM REAPER"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE CARRYING CAPACITY OF ANY FOOD WEB IS A BALANCE OF THE NUMBERS OF PREDATORS, PREY, BIRTH RATES, DEATH RATES AND SEVERAL OTHER VARIABLES.

WHEN THE BIRTH RATE OF A POPULATION WITHIN A FOOD WEB EXCEEDS ITS DEATH RATE, THE CARRYING CAPACITY OF THE HABITAT MAY BE IN JEOPARDY.

THE STORK AND THE GRIM REAPER

CHILDREN WILL EXPLORE THE CONCEPT OF CARRYING CAPACITY THROUGH A SIMULATION WHERE THE BIRTH RATE OF A SPECIES EXCEEDS ITS DEATH RATE

Materials:

EMPTY ONE QUART CONTAINER
OLD TOWEL/PAPER TOWELS
MASKING TAPE
BUCKET OF WATER
MEASURING CUPS (1 CUP AND 1/3 CUP)

Activity:

FILL THE ONE QUART CONTAINER UNTIL IT IS ABOUT 1/4 FULL, AND PLACE IT ON TOP OF THE TOWEL/PAPER TOWELS.

ASK YOUR CHILD TO BE THE "STORK" WHILE YOU PLAY THE PART OF THE "GRIM REAPER".

INFORM THE CHILD THAT THE ONE QUART CONTAINER WILL REPRESENT THE WORLD AND THE WATER IN THE BUCKET WILL REPRESENT PEOPLE. THE "STORK" WILL BE ADDING PEOPLE TO THE WORLD BY POURING WATER INTO THE CONTAINER FROM THE BUCKET. THE PARENT WILL ACT AS THE "GRIM REAPER", WHO WILL BE TAKING PEOPLE FROM THE WORLD BY TAKING WATER OUT OF THE CONTAINER AND POURING IT BACK INTO THE BUCKET.

INFORM THE CHILD THAT OUT OF 1000 PEOPLE IN THE WORLD AT THIS TIME, WE CAN EXPECT 22 PEOPLE TO HAVE A CHILD AND 9 PEOPLE TO REACH THE END OF THEIR LIVES OVER THE COURSE OF A YEAR.

BECAUSE OF THIS RATE, THE STORK WILL RECEIVE A LARGER MEASURING CUP BECAUSE OF THE LARGER AMOUNT OF WATER (PEOPLE) THAT IS TO BE ADDED TO THE ONE QUART CONTAINER (THE WORLD). THE GRIM REAPER IS NOT REMOVING AS MANY PEOPLE (WATER) AS THE STORK, SO THIS PERSON WILL USE A SMALLER MEASURING CUP.

GIVE THE 1-CUP TO THE STORK AND THE 1/3-CUP TO THE GRIM REAPER.

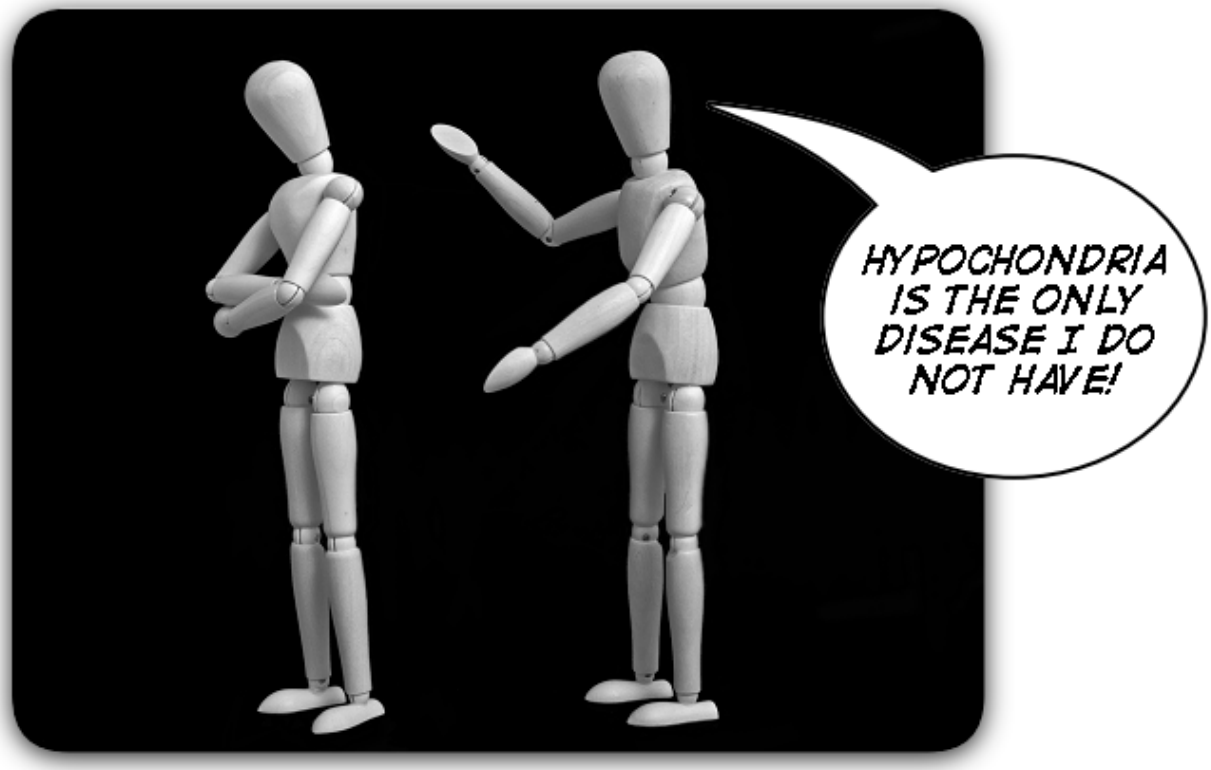
TAKE TURNS ADDING AND REMOVING WATER FROM THE ONE QUART CONTAINER. FOR EVERY CUP-FULL THE STORK ADDS, THE GRIM REAPER SUBTRACTS ONE.

CONTINUE ADDING AND REMOVING WATER. PERIODICALLY, ASK THE CHILD IF THEY SEE ANY CHANGE IN THE ONE QUART CONTAINER (WORLD)? WHEN IT BECOMES CLEAR THAT THE WATER LEVEL IS STEADILY RISING (WHICH IS TO SYMBOLIZE THE GROWING POPULATION OF PEOPLE IN THE WORLD), STOP MOVING THE WATER AND EXPLAIN WHAT IS HAPPENING.

Explanation:

POPULATION GROWTH OCCURS WHEN A SPECIES' BIRTH RATE EXCEEDS ITS DEATH RATE. EVERY HABITAT HAS A CARRYING CAPACITY, WHICH IS A LIMIT TO THE NUMBER OF MEMBERS OF A CERTAIN SPECIES IT CAN SUPPORT. USUALLY WE THINK OF CARRYING CAPACITY IN TERMS OF ANIMALS OR PLANTS (HOW MANY FROGS CAN LIVE IN A POND), BUT IT APPLIES TO HUMANS, TOO. THE RAPID POPULATION GROWTH OF HUMANS MAY EXCEED ITS CARRYING CAPACITY OF THIS PLANET.

WEEK 19: FAMINE, DISEASE AND VIRUSES



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

HUMAN POPULATIONS INCLUDE GROUPS OF INDIVIDUALS LIVING IN A PARTICULAR LOCATION. ONE IMPORTANT CHARACTERISTIC OF A HUMAN POPULATION IS THE POPULATION DENSITY--THE NUMBER OF INDIVIDUALS OF A PARTICULAR POPULATION THAT LIVES IN A GIVEN AMOUNT OF SPACE.

THE SIZE OF A HUMAN POPULATION CAN INCREASE OR DECREASE. POPULATIONS WILL INCREASE UNLESS OTHER FACTORS SUCH AS DISEASE OR FAMINE DECREASE THE POPULATION.

DEFINITIONS:

POPULATION DENSITY	A SCIENTIFIC WAY OF SAYING "THE NUMBER OF INDIVIDUALS OF A SPECIES IN A CERTAIN AREA"
FAMINE	A TIME WHEN LOTS OF PEOPLE GO HUNGRY AND DON'T HAVE ENOUGH FOOD TO EAT
DISEASE	A SICKNESS
VIRUSES	A SMALL ORGANISM THAT CAN SPREAD DISEASE

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

DO MANY SCIENTISTS BELIEVE THE CARRYING CAPACITY OF HUMANS IS WELL-BALANCED?

NO. MANY SCIENTISTS BELIEVE THAT THE GROWTH RATE OF HUMANS COULD BE DANGEROUS TO THE ENVIRONMENT.

WHERE DO MOST OF THE NUTRIENTS WE EAT COME FROM?

MOST OF THE NUTRIENTS WE USE TO STAY ALIVE COME FROM PLANTS. WE MAY NOT GET THESE NUTRIENTS DIRECTLY FROM PLANTS, AS THE PLANTS PASS ALONG THEIR ENERGY TO HERBIVORES AND THEN TO CARNIVORES...

WHAT ARE TWO THINGS CAN SLOW DOWN A POPULATION THAT IS GROWING TOO LARGE?

ANSWERS MAY VARY; HOWEVER, FAMINE AND DISEASE ARE TWO OF THE QUICKEST AND MOST NATURAL WAYS TO REDUCE THE SIZE OF A POPULATION.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 19:

PAGE ONE:

1. FAMINE – A TIME WHEN LOTS OF PEOPLE GO HUNGRY AND DON'T HAVE ENOUGH FOOD TO EAT
2. POPULATION DENSITY – A SCIENTIFIC WAY OF SAYING "THE NUMBER OF INDIVIDUALS OF A SPECIES IN A CERTAIN AREA"
3. DISEASE – A SICKNESS
4. VIRUSES – A SMALL ORGANISM THAT CAN SPREAD DISEASE

PAGE TWO:

2 – POPULATION DENSITY
3 – FAMINE
4 – DISEASE
1 – VIRUSES

PAGE THREE:

1. A
2. B
3. C
4. B
5. C
6. A

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "FIZZING VIRUSES"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

DISEASES ARE TYPICALLY SPREAD THROUGH THE TRANSMISSION OF HARMFUL BACTERIA OR VIRUSES THROUGHOUT A POPULATION.

SHOULD A HABITAT BE OVERPOPULATED WITH ORGANISMS, THE INTRODUCTION OF A BACTERIA OR VIRUS CAN QUICKLY SPREAD THROUGHOUT THE POPULATION. THIS CAN HAVE DEVASTATING RESULTS.

UNLIKE BACTERIA, VIRUSES CANNOT SURVIVE WITHOUT A HOST.

FIZZING VIRUSES

CHILDREN WILL SIMULATE HOW A VIRUS CAN SPREAD.

MATERIALS:

10 SMALL CUPS OR CONTAINERS (FILM CANISTERS WORK GREAT AND THEY ARE FREE!!!)
WATER
HYDROGEN PEROXIDE
BLEACH
EYEDROPPER OR STRAW

ACTIVITY:

EXPLAIN TO THE CHILD THAT WHEN TOO MANY PEOPLE ARE IN A HABITAT, THE POPULATION DENSITY INCREASES. WHEN THIS HAPPENS, THE RESOURCES THAT ARE NEEDED TO SUPPORT ALL OF THESE PEOPLE CAN GET USED UP AND THE AREA GOES THROUGH A FAMINE. ALSO, IF YOU GET TOO MANY PEOPLE IN A CROWDED AREA, THERE IS A CHANCE THAT A DISEASE CAN SPREAD FROM PERSON TO PERSON VERY QUICKLY. THIS IS HOW DISEASES CAN BE SPREAD.

FILL ALL OF THE SMALL CONTAINERS HALFWAY WITH WATER, EXCEPT FOR ONE OF THEM.

IN ONE CONTAINER, FILL IT HALFWAY WITH HYDROGEN PEROXIDE.

INSTRUCT THE CHILD NOT TO DRINK ANY OF THE CONTENTS IN THESE CONTAINERS!!!

INFORM THE CHILD THAT EACH OF THESE CONTAINERS REPRESENTS A SINGLE PERSON. EVERY TIME WE COME IN CONTACT WITH SOMEONE (I.E. SHAKING HANDS), WE GET ANY BACTERIA OR VIRUSES FROM THAT PERSON. ALSO, IF SOMEONE SNEEZES AND DOES NOT COVER THEIR MOUTH, BACTERIA AND VIRUSES CAN TRAVEL THROUGH THE AIR AND GET INTO OUR BODIES!!!

NOW, HAVE YOUR CHILD POUR THE LIQUID FROM ONE CONTAINER INTO ANOTHER. THEY ARE THEN TO POUR HALF OF THIS MIXTURE BACK INTO THE ORIGINAL CONTAINER. THIS "SWAPPING" OF LIQUIDS IS TO OCCUR ONLY FIVE TIMES! THEY ARE NOT TO SWAP WITH THE SAME PEOPLE TWICE!!!

AFTER SWAPPING THE LIQUIDS IN THE CONTAINERS, INFORM THE CHILD THAT ONE OF THESE "PEOPLE" HAD A DISEASE AND MAY HAVE SPREAD HIS DISEASE TO THE OTHER CONTAINERS. ASK YOUR CHILD TO PREDICT HOW MANY OTHER CONTAINERS HAVE THE DISEASE IN THEM.

PLACE ONE DROP OF BLEACH FROM YOUR EYEDROPPER OR STRAW INTO EACH OF THE CONTAINERS. IF ANY HYDROGEN PEROXIDE EXISTS IN THE CONTAINER, IT WILL BEGIN TO FIZZ! IF THE LIQUID DOES NOT FIZZ, THE "PERSON" DOES NOT HAVE THE DISEASE.

Explanation:

VIRUSES CAN SPREAD DISEASE AMONG PEOPLE VERY QUICKLY. THIS ACTIVITY IS VERY SIMILAR TO WHAT HAPPENS IN REAL LIFE. HOWEVER, IN THIS SIMULATION YOUR CHILD LIMITED THE NUMBER OF EXPOSURES TO THE DISEASE-CARRYING CONTAINER TO ONLY FIVE OTHER PEOPLE. IN REAL LIFE, YOU MAY COME INTO CONTACT WITH HUNDREDS OF PEOPLE!!!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "ELBOW TO ELBOW GARDENING"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

WHEN A HABITAT BECOMES OVERCROWDED, THERE IS A LARGE AMOUNT OF COMPETITION AMONG THE INDIVIDUALS OF THE POPULATION FOR RESOURCES. IF THIS POPULATION IS LIMITED IN THE AMOUNT OF RESOURCES THAT ARE AVAILABLE TO THE ORGANISMS, THERE ARE TYPICALLY NEGATIVE EFFECTS ON THE INDIVIDUALS INVOLVED.

FAMINE OCCURS WHEN THERE IS AN ABSENCE OF NATURAL RESOURCES AVAILABLE TO A POPULATION. THIS TYPICALLY MEANS THAT SEVERAL INDIVIDUALS WITHIN THE POPULATION WILL NOT BE ABLE TO SURVIVE.

ELBOW TO ELBOW GARDENING

CHILDREN WILL BE ABLE TO DETERMINE THE EFFECTS OF OVERCROWDING ON THE GROWTH OF LIVING THINGS.

Materials:

ONE CUP OF POTTING SOIL
THREE SMALL CONTAINERS (FILM CANISTERS WORK GREAT!)
PACKAGE OF RADISH SEEDS
COTTON YARN OR SMALL STRIPS OF CLOTH
WATER
NAIL
SMALL BOWL

Activity:

USE THE NAIL TO POKE A HOLE IN THE BOTTOM OF EACH FILM CANISTER.

THREAD THE YARN OR CLOTH THROUGH THE HOLE, LEAVING A SMALL AMOUNT IN THE CANISTER AND ABOUT 1-3" OUTSIDE OF THE HOLE.

FILL EACH CANISTER WITH POTTING SOIL.

POKE ONE HOLE INTO THE SOIL OF EACH CANISTER.

INTO ONE CANISTER, PLANT ONE SEED. IN THE SECOND CANISTER, PLANT 3 SEEDS. IN THE THIRD CANISTER, PLANT 10 SEEDS.

PLACE ALL THREE OF THE CANISTERS INTO A SMALL BOWL AND ADD A SMALL AMOUNT OF WATER. PLACE THE BOWL IN A WARM, SUNNY SPOT.

HAVE THE CHILD MAKE A PREDICTION AS TO WHICH CONTAINER WILL BEGIN TO GROW THEIR RADISHES FIRST. BE CERTAIN NOT TO LET THE WATER IN THE BOWL DRY UP!

IF THE AREA IS WARM ENOUGH, YOU SHOULD SEE SPROUTS GROWING WITHIN 48 HOURS (OUT OF THE FIRST CANISTER...HOPEFULLY!)

Explanation:

DIFFERENT PLANTS AND ANIMALS NEED DIFFERENT AMOUNTS OF SPACE TO GROW WELL AND BE HEALTHY. IN THIS ACTIVITY, THE AMOUNT OF SPACE MAKES A DIFFERENCE IN THE GROWTH RATE OF PLANTS. WITH 3-10 SEEDS PLANTED IN A SINGLE HOLE, THE RESOURCES REQUIRED BY EACH SEED IS REDUCED BECAUSE OF THE INCREASED COMPETITION. THE SINGLE SEED THAT WAS PLANTED IN THE FIRST CONTAINER SHOULD GROW FIRST AND SHOULD GROW THE TALLEST. IT DOES NOT HAVE TO SHARE ITS NUTRIENTS!!!

WHEN THE POPULATION DENSITY IN A HABITAT IS INCREASED GREATLY, IT HAS A NEGATIVE EFFECT ON THE INDIVIDUALS IN THE AREA! THIS NEGATIVE EFFECT CAN BE A FAMINE (WHICH IS HAPPENING IN OUR CONTAINER WITH 10 SEEDS!) OR A SPREADING OF DISEASE (WHICH IS EASY TO HAPPEN IF YOU HAVE TOO MANY PEOPLE IN A SMALL AREA!).

WEEK 20: CONSERVATION EFFORTS

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ALL ORGANISMS CAUSE CHANGES IN THE ENVIRONMENT WHERE THEY LIVE. SOME OF THESE CHANGES ARE DETRIMENTAL TO THE ORGANISM OR OTHER ORGANISMS, WHEREAS OTHERS ARE BENEFICIAL.

HUMANS DEPEND ON THEIR NATURAL AND CONSTRUCTED ENVIRONMENTS. HUMANS CHANGE ENVIRONMENTS IN WAYS THAT CAN BE EITHER BENEFICIAL OR DETRIMENTAL FOR THEMSELVES AND OTHER ORGANISMS.

INDIVIDUALS WHO WORK IN THE FIELD OF CONSERVATION TRY TO HELP PRESERVE OUR NATURAL RESOURCES THROUGH THEIR INVOLVEMENT WITH: HUNTING/FISHING PROGRAMS, RESTORING DAMAGED HABITATS, EDUCATING PEOPLE ABOUT GOOD USE OF THEIR LAND AND RELEASING ORGANISMS INTO THE ENVIRONMENT.

DEFINITIONS:

CONSERVATION	THE PROTECTION AND CAREFUL USE OF RESOURCES AND THE ENVIRONMENT
REINTRODUCTION	RELOCATING ORGANISMS BACK INTO THEIR HABITATS

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT IS ONE SIMPLE THING YOU CAN DO TO HELP YOU AND OTHERS FROM GETTING SICK?

WASH YOUR HANDS!!!

SHOULD HUNTERS BE ALLOWED TO KILL MORE ANIMALS THAN ARE BEING BORN EACH YEAR?

NO. CONSERVATION AGENTS TRY TO LIMIT HUNTERS FROM ONLY KILLING A SMALL PORTION OF THE ANIMALS EVERY YEAR. IN ADDITION, THE NUMBER OF ANIMALS TAKEN BY HUNTING SHOULD NEVER BE LARGER THAN THE NUMBER OF ANIMALS BEING BORN!

WHAT IS IT CALLED TO RELOCATE ORGANISMS BACK INTO THEIR HABITATS?

REINTRODUCTION

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 20:

PAGE ONE:

REINTRODUCTION MEANS RELOCATING ORGANISMS BACK INTO THEIR HABITATS.

PAGE TWO:

1. B
2. A
3. B
4. C
5. B
6. A

UNIT FIVE REVIEW
ANSWER KEY

FIND THE PRODUCERS, HERBIVORES, CARNIVORES, PREY AND CONSUMERS IN THE PICTURE. LIST THEM BELOW.

PRODUCERS	HERBIVORES	CARNIVORES	PREY	CONSUMERS
GRASS	GRASSHOPPER	SNAKE	GRASSHOPPER	GRASSHOPPER
		BIRD	SNAKE	SNAKE
				BIRD

IS THIS PICTURE SHOWING YOU A FOOD CHAIN OR A FOOD WEB?

THIS IS A PICTURE OF A FOOD CHAIN.

WHAT IS THE DIFFERENCE BETWEEN A FOOD CHAIN AND A FOOD WEB?

A FOOD WEB IS A COLLECTION OF TWO OR MORE FOOD CHAINS PUT TOGETHER.

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE PURPLE CHICKENS OF NOOKA NOOKA ISLAND"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

LARGE LISTS OF ENDANGERED ORGANISMS EXIST AND ARE CURRENTLY BEING MONITORED WHILE UNDER PROTECTION FROM THE LAW.

SEVERAL ORGANIZATIONS EXIST THAT ATTEMPT TO SOLICIT ASSISTANCE TO PROTECT CERTAIN INDIVIDUAL SPECIES.

INDIVIDUALS CAN ACT LOCALLY TO PROTECT ORGANISMS THAT MAY NOT BE FOUND IN THEIR IMMEDIATE HABITAT.

THE PURPLE CHICKENS OF NOOKA NOOKA ISLAND

THIS LIGHTHEARTED ACTIVITY WILL ALLOW THE CHILD TO CREATE A VISUAL STORY ABOUT A MADE-UP ENDANGERED SPECIES.

Materials:

STORY CARDS (SEE ATTACHED)
PAPER
PENCILS/PENS/CRAYONS/MARKERS

Activity:

EXPLAIN TO THE CHILD THAT SOMETIMES A SPECIES IN THE UNITED STATES GETS IN DANGER OF BECOMING EXTINCT. WHEN SCIENTISTS DECIDE THAT A PLANT OR ANIMAL IS IN DANGER OF THIS HAPPENING, THEY SPEAK WITH A PART OF THE US GOVERNMENT CALLED THE U.S. FISH AND WILDLIFE SERVICES.

IF THE GOVERNMENT BELIEVES WHAT THE SCIENTISTS HAVE TO SAY ABOUT THIS PLANT OR ANIMAL, THE ORGANISM IS PUT ON THE ENDANGERED SPECIES LIST. THIS MEANS THAT NOBODY CAN HURT OR DESTROY THE ORGANISM OR ITS HABITAT!

THANKS TO THE ENDANGERED SPECIES ACT, ANIMALS LIKE THE BALD EAGLE HAVE GROWN FROM A FEW ORGANISMS TO SEVERAL THOUSANDS OF EAGLES!

IN TODAY'S ACTIVITY, THE CHILD WILL BE DRAWING A PICTURE ABOUT A MADE-UP ENDANGERED SPECIES.

YOU OR YOUR CHILD CAN READ THE STORY CARDS AT THIS TIME. THE CHILD IS TO DRAW ONE PICTURE FOR EACH CARD.

PART ONE: HERE'S THE STORY...

YOU AND YOUR FRIENDS ARE ON A BOAT IN A HUGE LAKE WHILE YOU ARE ON VACATION. A STORM IS STORM IS COMING IN VERY FAST AND YOU DO NOT THINK YOU HAVE ENOUGH TIME TO MAKE IT BACK TO SHORE. LUCKILY, THERE IS A SMALL ISLAND NEARBY. YOU DECIDE TO TAKE YOUR BOAT TO THE ISLAND AND WAIT UNTIL THE STORM PASSES OVER YOU.

DRAW A PICTURE OF THE STORM AND THE ISLAND

PART TWO: HERE'S THE STORY...

ALL OF YOU FIND A SMALL CAVE THAT KEEPS YOU DRY AND SAFE DURING THE STORM. ONCE THE RAIN STOPS FALLING, YOU DECIDE TO EXPLORE THIS ISLAND. THERE ARE NO PEOPLE LIVING ON THIS ISLAND, BUT THERE ARE A LOT OF PLANTS, BUGS AND BIRDS. SUDDENLY, YOU HEAR A LOUD NOISE COMING FROM A LARGE BUSH NEARBY. YOU RUN OVER TO SEE WHAT IT COULD BE...

DRAW A PICTURE OF THE CAVE AND THE ORGANISMS YOU SEE

PART THREE: HERE'S THE STORY...

TO YOUR SURPRISE, IT IS A FLYING PURPLE CHICKEN! IT LOOKS LIKE A NORMAL CHICKEN EXCEPT FOR A COUPLE OF THINGS. FIRST, IT HAS MUCH LARGER WINGS THAT HELPS IT FLY FROM TREE TO TREE! AND, ALL OF ITS FEATHERS ARE PURPLE IN COLOR. YOU QUICKLY MAKE A DRAWING OF THE CHICKEN AND DESCRIBE IT. THE CHICKEN FLIES OFF AND YOU ALL HEAD BACK TO YOUR BOAT.

DRAW A PICTURE OF THE FLYING PURPLE CHICKEN

PART FOUR: HERE'S THE STORY...

YOU SHOW YOUR DRAWING AND YOUR DESCRIPTION OF THE FLYING PURPLE CHICKEN TO THE FAMOUS SCIENTIST DR. I.M. SMART. SHE IS VERY EXCITED ABOUT YOUR DISCOVERY BECAUSE YOU HAVE FOUND THE FAMOUS "PURPLE CHICKEN OF NOOKA NOOKA ISLAND." THIS BIRD WAS THOUGHT TO BE EXTINCT FOR MANY YEARS. DR. SMART TRAVELS TO THE ISLAND WHERE SHE SEES 12 MORE PURPLE CHICKENS. SHE CAPTURES ONE FOR STUDY. YOU BEGIN A CLUB CALLED THE "FRIENDS OF THE FLYING PURPLE CHICKEN" AND EVERYONE IN TOWN JOINS. THE LOCAL TELEVISION NEWS SHOWS UP AND PUTS ALL OF YOU ON TV.

DESIGN A POSTER FOR THE FRIENDS OF THE FLYING PURPLE CHICKEN

PART FIVE: HERE'S THE STORY...

SINCE EVERYONE KNOWS ABOUT THE FLYING PURPLE CHICKEN, THEY ALL WANT A CHANCE TO SEE THIS ORGANISM ON NOOKA NOOKA ISLAND. THOUSANDS OF PEOPLE START TRAVELING TO THE ISLAND. YOU AND DR. SMART ARE WORRIED THAT ALL THESE PEOPLE MAY DESTROY THE CHICKEN'S HABITAT. RESTAURANTS AND TOUR GROUPS ARE STARTING TO OPEN UP ALL OVER THE ISLAND AND TOUR BOATS TAKE PEOPLE BACK AND FORTH 10 TIMES A DAY. THIS MANY PEOPLE ON A SMALL ISLAND CAN CAUSE SOME PROBLEMS!

DRAW A PICTURE OF THE NEW STUFF FOR SALE ON THE ISLAND

PART SIX: HERE'S THE STORY...

DR. SMART INVITES YOU TO SPEAK WITH THE U.S. FISH AND WILDLIFE SERVICES. YOU AND DR. SMART TELL THE PEOPLE THAT THE PURPLE CHICKENS OF NOOKA NOOKA ISLAND ARE IN DANGER OF BEING EXTINCT. YOU ASK FOR THIS ORGANISM TO BE PLACED ON THE ENDANGERED SPECIES LIST. AFTER A FEW DAYS, THEY AGREE AND THE CHICKENS ARE PLACED ON THE LIST!

SINCE THE CHICKENS ARE PROTECTED UNDER THE LAW, THE ONLY PEOPLE WHO NOW LIVE ON THE ISLAND ARE SCIENTISTS. THE RESTAURANTS HAVE BEEN CLOSED AND ONLY ONE BOAT A DAY GOES BACK AND FORTH TO THE ISLAND. VISITORS WHO COME TO THE ISLAND TAKE TOURS LED BY SCIENTISTS, BUT THEY CAN ONLY TAKE PICTURES DURING THEIR VISIT.

BECAUSE OF YOUR EFFORT, HAPPY PURPLE CHICKENS FLY ALL OVER NOOKA NOOKA ISLAND.

DRAW A PICTURE OF LIFE ON NOOKA NOOKA ISLAND

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "A MAMMOTH PROBLEM"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE NATURAL TRIALS OF SURVIVAL AFFECT THE POPULATION OF ANY SPECIES.

THIS SIMULATION IDENTIFIES THE FACT THAT DESPITE THERE BEING A FEW WAYS TO REMAIN ALIVE WITHIN A HABITAT, THERE ARE MANY MORE WAYS FOR ONE NOT TO SURVIVE OR TO INCREASE THE SIZE OF THE POPULATION

ESP ACTIVITY: A MAMMOTH PROBLEM

STUDENTS WILL SIMULATE THE LIFESPAN OF A HERD OF WOOLY MAMMOTHS.

MATERIALS:

PENCIL
TYPING/NOTEBOOK PAPER
20 SMALL OBJECTS (I.E. BUTTONS, BEANS, COINS, ETC...)
MAMMOTH CARDS (SEE ATTACHED)

ACTIVITY:

YOU WILL BEGIN THIS ACTIVITY WITH AN IMAGINARY 20 MAMMOTHS IN YOUR HERD.

SHUFFLE THE CARDS AND PLACE THEM FACE DOWN ON THE TABLE. THE STUDENT WILL CHOOSE ONE CARD AND READ THE ACTION TO BE TAKEN. THREE CHOICES EXIST ON THE CARDS: ONE MAMMOTH MAY PERISH, GIVE BIRTH OR SURVIVE FOR ONE YEAR. IN ANY CASE, THE STUDENT WILL NEED TO SUBTRACT ONE MAMMOTH, ADD ONE MAMMOTH OR KEEP THE NUMBER OF MAMMOTHS WITHIN THE HERD THE SAME, RESPECTIVELY.

REPLACE THE CARD, SHUFFLE AND REPEAT THIS PROCEDURE FOR A TOTAL OF FIVE TURNS (YEARS), RECORDING THE NUMBER OF MAMMOTHS THAT REMAIN WITHIN THE HERD.

INCREASE THE NUMBER OF TURNS (YEARS) FOR EXPERIMENTATION.

Explanation:
ALTHOUGH NO DEFINITE ANSWER EXISTS TO EXPLAIN THE DEMISE OF THE WOOLY MAMMOTH, SEVERAL FACTORS MAY HAVE PLAYED A PART. THIS SIMULATION IS INTENDED TO PROVIDE AN OVERLY SIMPLISTIC LIFESPAN TO A HERD OF ANIMALS UNDERGOING NATURAL TRIALS OF SURVIVAL. THE ODDS ARE STACKED AGAINST THE MAMMOTH, WITH A MAJORITY OF THE CARDS INDICATING THEIR DEMISE, TWO CARDS WHICH SUSTAIN THE HERD'S NUMBERS AND ONE INCREASING THE POPULATION OF THE HERD.

Independent variable: NUMBER OF YEARS
dependent variable: NUMBER OF MAMMOTHS
hypothesis:
IF THE NUMBER OF YEARS IS (INCREASED/DECREASED), THEN THE NUMBER OF MAMMOTHS WILL (INCREASE/DECREASE).

MAMMOTH CARDS

CUT THEM OUT!!!

STARVATION

SUBTRACT ONE MAMMOTH

BABY CALF BORN

ADD ONE MAMMOTH

KILLED BY ANIMALS

SUBTRACT ONE MAMMOTH

DEATH BY NATURAL CAUSES

SUBTRACT ONE MAMMOTH

MAMMOTH SURVIVES THE YEAR

HERD REMAINS THE SAME

MAMMOTH SURVIVES THE YEAR

HERD REMAINS THE SAME

UNIT FIVE TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	PRODUCERS	1. A SICKNESS
____	HERBIVORES	2. THE PROTECTION AND CAREFUL USE OF RESOURCES AND THE ENVIRONMENT
____	CONSERVATION	3. A RELATIONSHIP BETWEEN SPECIES THAT USE EACH OTHER FOR FOOD
____	POPULATION DENSITY	4. A TIME WHEN LOTS OF PEOPLE GO HUNGRY AND DON'T HAVE ENOUGH FOOD TO EAT
____	FOOD CHAIN	5. RELOCATING ORGANISMS BACK INTO THEIR HABITAT
____	CARRYING CAPACITY	6. ANIMALS THAT GET ALL OF THEIR NUTRIENTS BY EATING (OR CONSUMING) OTHER ORGANISMS
____	PREY	7. THESE ANIMALS ONLY EAT PLANTS TO GET THEIR NUTRIENTS
____	CONSUMERS	8. AUTOTROPHIC ORGANISMS THAT PRODUCE THEIR OWN FOOD
____	FAMINE	9. A BALANCE OF PREDATORS AND PREY IN A HABITAT
____	FOOD WEB	10. A SCIENTIFIC WAY OF SAYING "THE NUMBER OF INDIVIDUALS OF A SPECIES IN A CERTAIN AREA"
____	REINTRODUCTION	11. ANIMALS THAT ARE EATEN BY PREDATORS
____	DISEASE	12. A GROUP OF FOOD CHAINS LINKED TOGETHER

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. IN A FOOD CHAIN, THE OMNIVORES...

A. EAT PLANTS FOR THEIR NUTRIENTS
B. EAT ANIMALS FOR THEIR NUTRIENTS
C. EAT BOTH PLANTS AND ANIMALS FOR THEIR NUTRIENTS

2. FOOD WEBS ARE DIFFERENT FROM FOOD CHAINS BECAUSE:

A. A GROUP OF FOOD CHAINS MAKE UP ONE FOOD WEB
B. A GROUP OF FOOD WEBS MAKE UP ONE FOOD CHAIN
C. FOOD WEBS ARE TOO SIMPLE

3. FOOD WEBS CAN BE FOUND IN:

A. TUNDRA AND DESERTS
B. ALL BIOMES
C. FORESTS AND GRASSLANDS

4. IF THE POPULATION DENSITY OF AN ORGANISM GETS BIGGER...

A. THE RESOURCES IN THE HABITAT WILL GO DOWN
B. THE RESOURCES IN THE HABITAT WILL GO UP
C. THE RESOURCES IN THE HABITAT WILL STAY THE SAME

5. DISEASE CAN BE SPREAD BY...

A. VIRUSES
B. BACTERIA
C. BACTERIA AND VIRUSES

6. CARRYING CAPACITY IS STUDIED BY PEOPLE WHO WORK IN...

A. BIODIVERSITY
B. CONSERVATION
C. REINTRODUCTION

YOU ARE A PART OF A FOOD WEB SINCE YOU NEED OTHER ORGANISMS TO SURVIVE. DESCRIBE THIS FOOD WEB BELOW. YOU MUST USE THE FOLLOWING WORDS IN YOUR DESCRIPTION:

PRODUCERS
CONSUMERS
HERBIVORES
PREY

UNIT FIVE TEST ANSWER KEY

MATCHING

8 PRODUCERS
7 HERBIVORES
2 CONSERVATION
10 POPULATION DENSITY
3 FOOD CHAIN
9 CARRYING CAPACITY
11 PREY
6 CONSUMERS
4 FAMINE
12 FOOD WEB
5 REINTRODUCTION
1 DISEASE

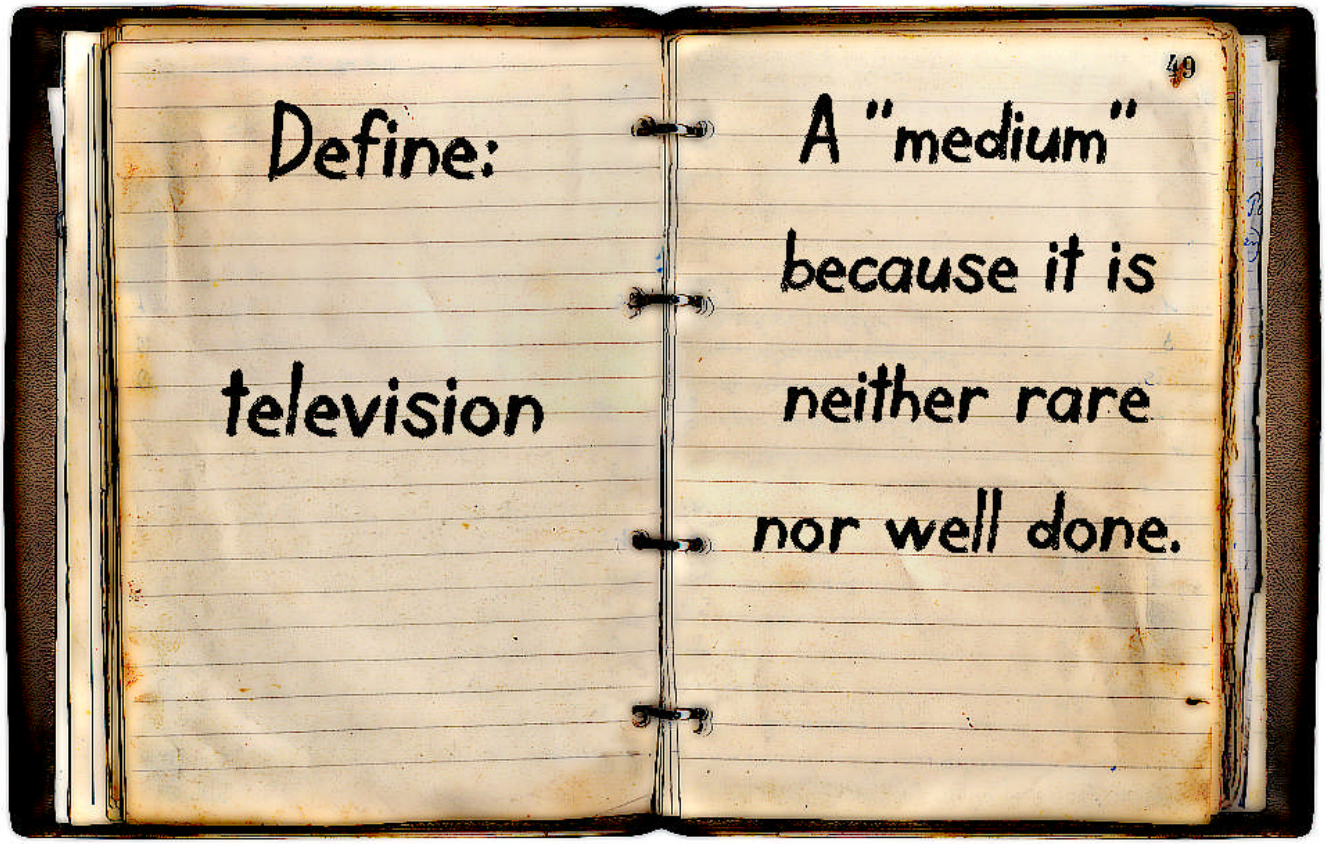
MULTIPLE CHOICE

1. C
2. A
3. B
4. A
5. C
6. B

WRITE A STORY...

ANSWERS WILL VARY. HOWEVER, THE CHILD MUST USE THE WORDS PRODUCERS, CONSUMERS, HERBIVORES AND PREY WITHIN THEIR DESCRIPTION OF THEIR FOOD WEB.

WEEK 21: TASTE AND SMELL



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

THE BEHAVIOR OF INDIVIDUAL ORGANISMS IS INFLUENCED BY INTERNAL CUES (SUCH AS HUNGER) AND BY EXTERNAL CUES (SUCH AS A CHANGE IN THE ENVIRONMENT). HUMANS AND OTHER ORGANISMS HAVE SENSES THAT HELP THEM DETECT INTERNAL AND EXTERNAL CUES.

TASTE AND SMELL ARE TWO OF OUR EXTERNAL SENSES AS THEY RELAY INFORMATION TO US FROM THE ENVIRONMENT. THESE TWO SENSES ARE CLOSELY CONNECTED. WITHOUT YOUR SENSE OF SMELL, IT IS NOT POSSIBLE TO FULLY TASTE ANYTHING AT ALL!

DEFINITIONS:

EXTERNAL SENSES	FEELINGS THAT GIVE US INFORMATION ABOUT WHAT IS GOING ON OUTSIDE OF OUR BODY
SENSE ORGAN	ORGANS SUCH AS EYES, EARS AND SKIN THAT ARE USED TO COLLECT INFORMATION OUTSIDE OF OUR BODY.
BRAIN	AN ORGAN THAT CONTROLS WHAT YOUR BODY DOES
MUCUS	"MEW-CUS"; A SLIMY, STICKY GOO
TASTE BUDS	PARTS OF THE TONGUE THAT ARE USED FOR THE SENSE OF TASTE
SALIVA	A LIQUID CREATED IN YOUR MOUTH

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHERE DO THE SENSE ORGANS SEND THEIR MESSAGES TO?

ALL SENSE ORGANS SEND MESSAGES TO THE BRAIN.

WHAT FILTERS THE AIR YOU BREATHE?

AS AIR ENTERS YOUR NOSE, YOUR NOSE HAIR AND MUCUS TRAPS ANYTHING THAT IS BEING CARRIED BY THE AIR (I.E. DIRT, POLLEN, BACTERIA, SMOKE PARTICLES, ETC.)

WHAT TWO SENSE ORGANS WORK TOGETHER TO GIVE YOU YOUR SENSE OF TASTE?

YOUR NOSE AND TONGUE.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 21:

PAGE ONE:

"WHAT ARE SENSE ORGANS AND WHAT DO THEY DO?"

SENSE ORGANS SEND MESSAGES TO YOUR BRAIN WHICH ARE USED TO GIVE US OUR EXTERNAL SENSES

PAGE TWO:

5 – EXTERNAL SENSES
3 – SENSE ORGANS
1 – BRAIN
2 – MUCUS
6 – TASTE BUDS
4 – SALIVA

PAGE THREE:

"LOOK INTO THE MIRROR AND DRAW A PICTURE OF YOUR OWN FACE! LABEL ALL OF THE SENSE ORGANS YOU CAN FIND!"

ANSWERS WILL VARY

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE NOSE KNOWS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE SENSE OF SMELL AND OF TASTE ARE DIRECTLY LINKED TO EACH OTHER.

THE FLAVORS OUR BRAIN RECOGNIZES CANNOT BE DETERMINED WITHOUT THE USE OF OUR NOSE. THIS IS WHY YOU CANNOT TASTE FOOD VERY WELL WHEN YOU HAVE A COLD.

THE NOSE KNOWS...

CHILDREN WILL EXPLORE HOW THE SENSES OF TASTE AND SMELL ARE CONNECTED.

Materials:

SEVERAL HARD CANDIES OF DIFFERENT FLAVORS (LOLLIPOPS WILL WORK TOO!)
GLASS OF WATER
BLINDFOLD (OPTIONAL)

Activity:

REMIND THE CHILD THAT HIS/HER TONGUE CAN TELL THE DIFFERENCE BETWEEN FOOD THAT IS SALTY, SWEET, SOUR AND BITTER. HOWEVER, SOME OF THESE SENSES CAN BE CONFUSED IF YOU CANNOT USE YOUR SENSES OF SIGHT AND SMELL.

INSTRUCT THE CHILD TO CLOSE THEIR EYES (OR USE A BLINDFOLD) SO THAT THEY CANNOT SEE THE CANDY THEY ARE GOING TO EAT.

HAVE THE CHILD PINCH THEIR NOSE.

UNWRAP ONE CANDY OUT OF THE WRAPPER AND HAVE THE CHILD PUT IT IN THEIR MOUTH.

ASK THE CHILD TO DESCRIBE WHAT THEY ARE SENSING. HAVE THEM PREDICT WHAT FLAVOR OF CANDY THEY HAVE IN THEIR MOUTH. WRITE THIS DOWN ON THE DATA CHART.

INSTRUCT THE CHILD TO STOP PINCHING THEIR NOSE AND STATE WHAT FLAVOR THEY HAVE IN THEIR MOUTH. WRITE THIS DOWN ON THE DATA CHART.

REMOVE THE CANDY AND HAVE THE CHILD RINSE OUT THEIR MOUTH WITH SOME WATER.

REPEAT THIS EXPERIMENT WITH A DIFFERENT CANDY.

Explanation:
THE CHILD IS NOT LIKELY TO IDENTIFY THE FLAVOR OF THE CANDY WHEN IT IS FIRST PUT IT IN HIS/HER MOUTH. HOWEVER, THEY SHOULD BE ABLE TO RECOGNIZE A SENSATION OF SWEETNESS OR SOURNESS OR BOTH. AFTER OPENING THEIR NOSES, MOST PEOPLE CAN EASILY IDENTIFY THE FLAVOR.

TASTE AND SMELL ARE CONNECTED. ODORS THAT PASS FROM THE MOUTH TO THE NOSE ARE DETECTED AND BECOME A PART OF A FOOD'S FLAVOR.

THE NOSE KNOWS... DATA CHART

TRUE FLAVOR OF THE CANDY	PREDICTION

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "MAPPING YOUR TONGUE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE HUMAN TONGUE CONTAINS THOUSANDS OF NERVE ENDINGS. EACH ONE CAN ONLY CODE FOR A SINGLE SENSATION OF SALTY, BITTER, SWEET OR SOUR.

THE NERVE ENDINGS FOR EACH OF THESE FLAVORS ARE GROUPED TOGETHER IN PARTICULAR AREAS ON THE TONGUE.

MAPPING YOUR TONGUE

CHILDREN WILL EXPLORE WHAT PARTS OF THEIR TONGUE ARE SENSITIVE TO CERTAIN FLAVORS.

Materials:

SEVERAL COTTON SWABS
SEVERAL KINDS OF LIQUID SAMPLES FOR EACH OF THE FOUR FLAVORS (I.E. VINEGAR = SOUR, STRONG COFFEE = BITTER, SYRUP = SWEET AND SALT WATER = SALTY)
GLASS OF WATER
BLANK MAP OF THE TONGUE DATA SHEET (SEE ATTACHED)

Activity:

INSTRUCT THE CHILD THAT YOU WILL BE PLACING A SMALL AMOUNT OF LIQUID ON DIFFERENT PARTS OF THEIR TONGUE WITH A COTTON SWAB. THEY ARE TO INFORM YOU WHAT THEY CAN TASTE EACH TIME (SOUR, SWEET, BITTER OR SALTY).

YOU MAY ONLY TOUCH THEIR TONGUE WITH THE COTTON SWAB ONE TIME BEFORE HAVING THEM RINSE THEIR MOUTH WITH WATER.

ASK THE CHILD TO CLOSE THEIR EYES.

DIP ONE SWAB INTO A LIQUID AND PLACE IT ON AREA #1 (FROM THE BLANK MAP) ON THE CHILD'S TONGUE. HAVE THEM STATE WHAT FLAVOR THEY CAN TASTE AND RECORD IT ON THE DATA SHEET.

HAVE THEM RINSE THEIR MOUTH OUT WITH WATER AND REPEAT THIS PROCEDURE FOR AREAS #2-4.

WHEN THIS IS COMPLETED, REPEAT THIS PROCEDURE WITH ANOTHER FLAVOR.

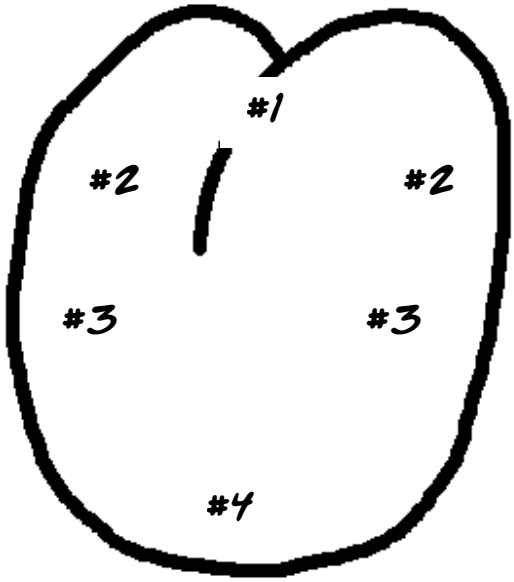
Explanation:

TASTE BUDS ARE FOUND ALL OVER YOUR TONGUE AND ARE RESPONSIBLE FOR IDENTIFYING SALTY, SWEET, BITTER AND SOUR FLAVORS IN YOUR FOOD. EACH OF THESE TASTE BUDS GROUP TOGETHER ON SPECIFIC PARTS OF YOUR TONGUE. THOSE THAT RECOGNIZE BITTER TASTING FLAVORS ARE FOUND IN THE BACK OF THE TONGUE. MOVING TOWARDS THE TIP OF THE TONGUE, YOU WOULD FIND TASTE BUDS THAT RECOGNIZE SOUR FLAVORS, THEN SALTY FLAVORS. SWEET FLAVORS ARE RECOGNIZED ON THE TIP OF THE TONGUE.

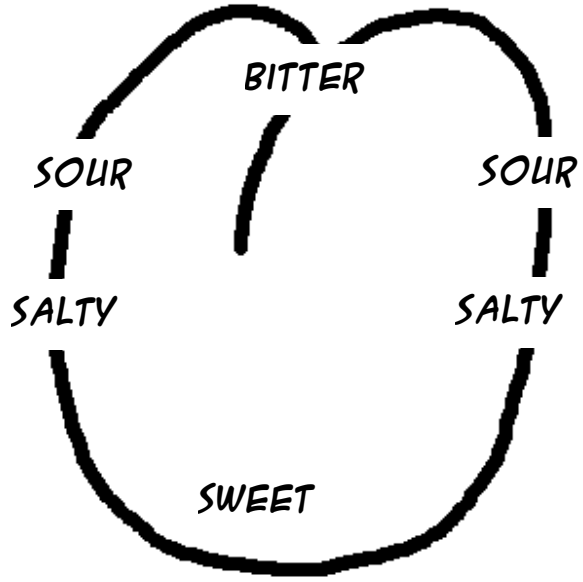
MAP OF THE TONGUE
DATA SHEET

LOCATION ON THE TONGUE	FLAVOR PLACED ON THE TONGUE	FLAVOR THAT IS SENSED BY THE CHILD
LOCATION #1	SWEET	
LOCATION #2	SWEET	
LOCATION #3	SWEET	
LOCATION #4	SWEET	
LOCATION #1	SOUR	
LOCATION #2	SOUR	
LOCATION #3	SOUR	
LOCATION #4	SOUR	
LOCATION #1	SALTY	
LOCATION #2	SALTY	
LOCATION #3	SALTY	
LOCATION #4	SALTY	
LOCATION #1	BITTER	
LOCATION #2	BITTER	
LOCATION #3	BITTER	
LOCATION #4	BITTER	

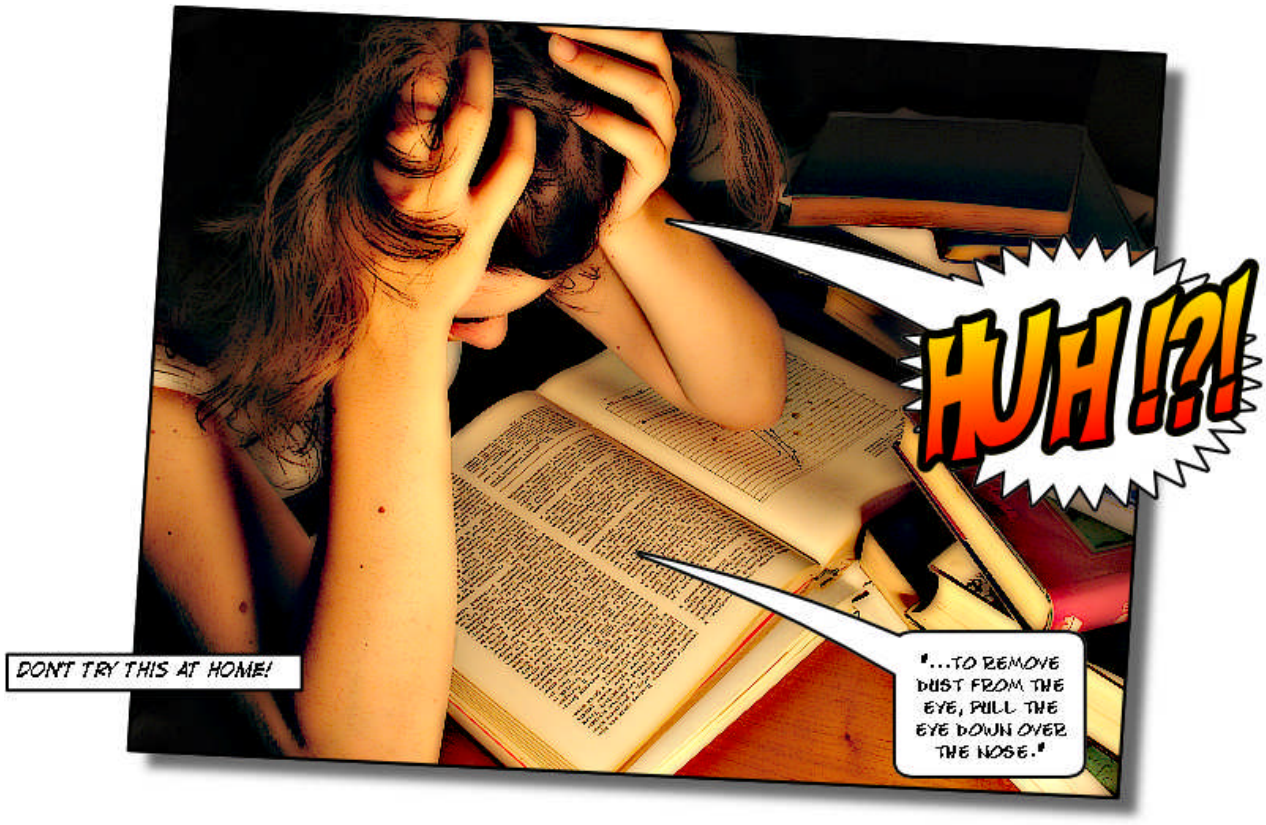
MAP OF TONGUE LOCATIONS



MAP OF THE TONGUE



WEEK 22: VISION, HEARING AND TOUCH



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

THE BEHAVIOR OF INDIVIDUAL ORGANISMS IS INFLUENCED BY INTERNAL CUES (SUCH AS HUNGER) AND BY EXTERNAL CUES (SUCH AS A CHANGE IN THE ENVIRONMENT). HUMANS AND OTHER ORGANISMS HAVE SENSES THAT HELP THEM DETECT INTERNAL AND EXTERNAL CUES.

THE SENSES OF VISION, HEARING AND TOUCH ARE ALL EXTERNAL SENSES AS THEY ARE ALL LINKED TO ACTIVITIES THAT TAKE PLACE OUTSIDE OF OUR BODIES. THE LARGEST SENSE ORGAN BELONGS TO OUR SENSE OF TOUCH AS NERVE ENDINGS SURROUND OUR ENTIRE BODY. NOT ALL AREAS ON OUR BODIES ARE AS SENSITIVE AS OTHERS. THIS IS DUE TO THE AMOUNT OF NERVE ENDINGS THAT EXIST IN PARTICULAR PLACES OF OUR BODIES.

DEFINITIONS:

PUPIL	THE BLACK "DOT" IN YOUR EYE WHERE LIGHT ENTERS YOUR BODY
IRIS	THE COLORFUL PORTION OF YOUR EYE THAT CHANGES THE SIZE OF THE PUPIL
RETINA	TAKES A PICTURE OF ANYTHING YOU SEE AND SENDS IT TO YOUR BRAIN
EYEBROWS	BUSHY STRIPS OF HAIR ABOVE YOUR EYES THAT HELP TO KEEP SWEAT FROM DRIPPING INTO YOUR EYES
EYELASHES	PROTECTIVE HAIRS THAT "SWEEP AWAY" ANY BAD STUFF IN THE AIR THAT MAY GET INTO YOUR EYES
EYELIDS	PROTECTIVE SKIN THAT CAN SURROUND THE EYE AND SWEEP AWAY DIRT AND OTHER JUNK THAT GETS ON YOUR EYEBALLS
TEARS	FLUID THAT IS MADE BY YOUR EYES TO KEEP THEM WET AND CLEAN
SOUND WAVES	VIBRATIONS THAT CAUSE ANY KIND OF NOISE
EARDRUM	PART OF YOUR EAR THAT VIBRATES WHEN SOUND WAVES HIT IT
COCHLEA	"COKE-LEE-AH"; LOOKS LIKE A SEASHELL AND IS FILLED WITH FLUID; WHEN SOUND WAVES VIBRATE THE EARDRUM, TINY HAIRS INSIDE THE COCHLEA VIBRATE TOO; EACH HAIR SENDS A DIFFERENT MESSAGE TO THE BRAIN
NERVE ENDINGS	AREAS IN YOUR SKIN THAT SENSE THE FEELINGS OF HEAT, COLD, PRESSURE, PAIN AND TASTE

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT ARE YOUR SENSE ORGANS FOR VISION, HEARING AND TOUCH?

EYES, EARS AND SKIN.

WHAT STRUCTURES ON YOUR FACE DO YOU USE TO PROTECT YOUR EYES?

EYEBROWS, EYELASHES, EYELIDS AND TEARS.

WHAT CAN YOU FIND INSIDE YOUR COCHLEA? WHY IS IT IMPORTANT?

INSIDE YOUR COCHLEA YOU WILL FIND MANY HAIRS. THESE HAIRS VIBRATE TO THE SOUND WAVES THAT ENTER THROUGH THE EAR. AS THESE HAIRS VIBRATE, THEY EACH SEND A MESSAGE TO THE BRAIN WHICH IDENTIFIES WHAT IT IS YOU ARE LISTENING TO.

IS YOUR TONGUE VERY GOOD AT SENSING THINGS THAT ARE HOT? WHY OR WHY NOT?

YOUR TONGUE IS NOT VERY GOOD AT SENSING THINGS THAT ARE HOT OR COLD! THIS IS BECAUSE THERE ARE VERY FEW NERVE ENDINGS ON THE TONGUE THAT ARE USED TO IDENTIFY TEMPERATURE. YOUR FINGERS, HOWEVER, ARE VERY GOOD AT DETERMINING TEMPERATURE.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 22:

PAGE ONE:

(WORD SEARCH)

PAGE TWO:

8 - PUPIL
4 - IRIS
5 - RETINA
1 - EYEBROWS
11 - EYELASHES
3 - EYELIDS
9 - TEARS
10 - SOUND WAVES
2 - EARDRUM
7 - COCHLEA
6 - NERVE ENDINGS

PAGE THREE:

1. C
2. C
3. B
4. C
5. C
6. A

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "A CUP OF SOUND"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

SOUND WAVES CAN BE BOUNCED WITHIN A SOLID OBJECT AND DIRECTED INTO DIFFERENT POSITIONS. THIS USUALLY TAKES PLACE INSIDE A SPEAKER.

SHOULD THE SOUND WAVES BE ALLOWED TO BOUNCE BACK-AND-FORTH INSIDE A CLOSED STRUCTURE, THE INTENSITY OF THE SOUND CAN BE INCREASED. THIS IS WHAT HAPPENS INSIDE OF A MEGAPHONE. IT ALSO OCCURS WITHIN THE EAR CANAL.

THE CONSTRUCTION OF A SIMPLE SPEAKER FROM THIS ACTIVITY SIMULATES THE ACTIONS OF OUR EAR CANAL AS SOUND WAVES ARE COLLECTED, TRAPPED AND ANALYZED BY OUR SENSE ORGANS.

A CUP OF SOUND

CHILDREN WILL CREATE A HOMEMADE SPEAKER.

Materials:

SMALL PAPER CUP
2 FEET OF STRING
ONE TOOTHPICK
SMALL SOURCE OF WATER

Activity:

TO BUILD THIS DEVICE, POKE A HOLE IN THE BOTTOM OF THE CUP USING THE TOOTHPICK. TIE THE STRING AROUND THE TOOTHPICK AND INSERT THE FREE END OF THE STRING INTO THE HOLE THROUGH THE INSIDE OF THE CUP.

BREAK OFF THE SIDES OF THE TOOTHPICK SO THAT WHEN YOU PULL DOWN ON THE STRING, IT RESTS SECURELY INSIDE THE CUP.

NOW, WET YOUR FINGERS AND PULL DOWN ON THE STRING. THIS NOISEMAKER IS HARD TO KEEP QUIET!!!

Explanation:

THE WATER ON YOUR FINGERS CREATES FRICTION BETWEEN YOUR FINGERS AND THE STRING. WHEN THE WET FINGERS ARE PULLED DOWN THE STRING, THE FRICTION YOU CREATE CAUSES UNEVEN PRESSURE ALONG THE STRING AND CREATES VIBRATIONS. THE VIBRATIONS TRAVEL UP THE STRING TO THE CUP. THE CUP VIBRATES ALONG WITH THE STRING; HOWEVER, THE VIBRATIONS CAUSE SOUND WAVES TO FORM INSIDE THE WALLS OF THE CUP. THE SOUND WAVES BOUNCE BACK AND FORTH INSIDE THE CUP INCREASING THE INTENSITY OF THE SOUNDS YOU HEAR.

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "TOUCH THE DOT"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

UNLIKE SOME ORGANISMS, HUMAN EYES ARE POSITIONED IN THE FRONT OF THE HEAD. THIS ALLOWS US TO USE BOTH EYES TO IDENTIFY THE RELATIVE DISTANCE THAT EXISTS BETWEEN OURSELVES AND WHAT WE ARE FOCUSING ON. THIS IS KNOWN AS OUR DEPTH PERCEPTION.

BY IMPAIRING OUR VISION, OUR DEPTH PERCEPTION IS NOT AS EFFICIENT AND IT REQUIRES PRACTICE TO BE ABLE TO JUDGE DISTANCES ONCE AGAIN.

ESP ACTIVITY: TOUCH THE DOT

DEPTH PERCEPTION IS EXPLORED AS STUDENTS INTENTIONALLY IMPAIR THEIR VISION.

MATERIALS:

PENCIL
NOTEBOOK/TYPING PAPER
MEASURING TAPE

ACTIVITY:

DRAW A FAIRLY LARGE DOT (ABOUT 1 INCH) ONTO A PIECE OF PAPER. PLACE THE PAPER ON A TABLE APPROXIMATELY 2-3 FEET IN FRONT OF YOU.

CLOSE ONE OF YOUR EYES WITH ONE OF YOUR HANDS.

USE THE OPPOSITE HAND TO ATTEMPT TO TOUCH THE PENCIL POINT TO THE DOT. MEASURE AND RECORD THE DISTANCE BETWEEN YOUR PENCIL MARK AND THE ORIGINAL DOT.

CHANGE EYES AND USE BOTH EYES FOR EXPERIMENTATION.

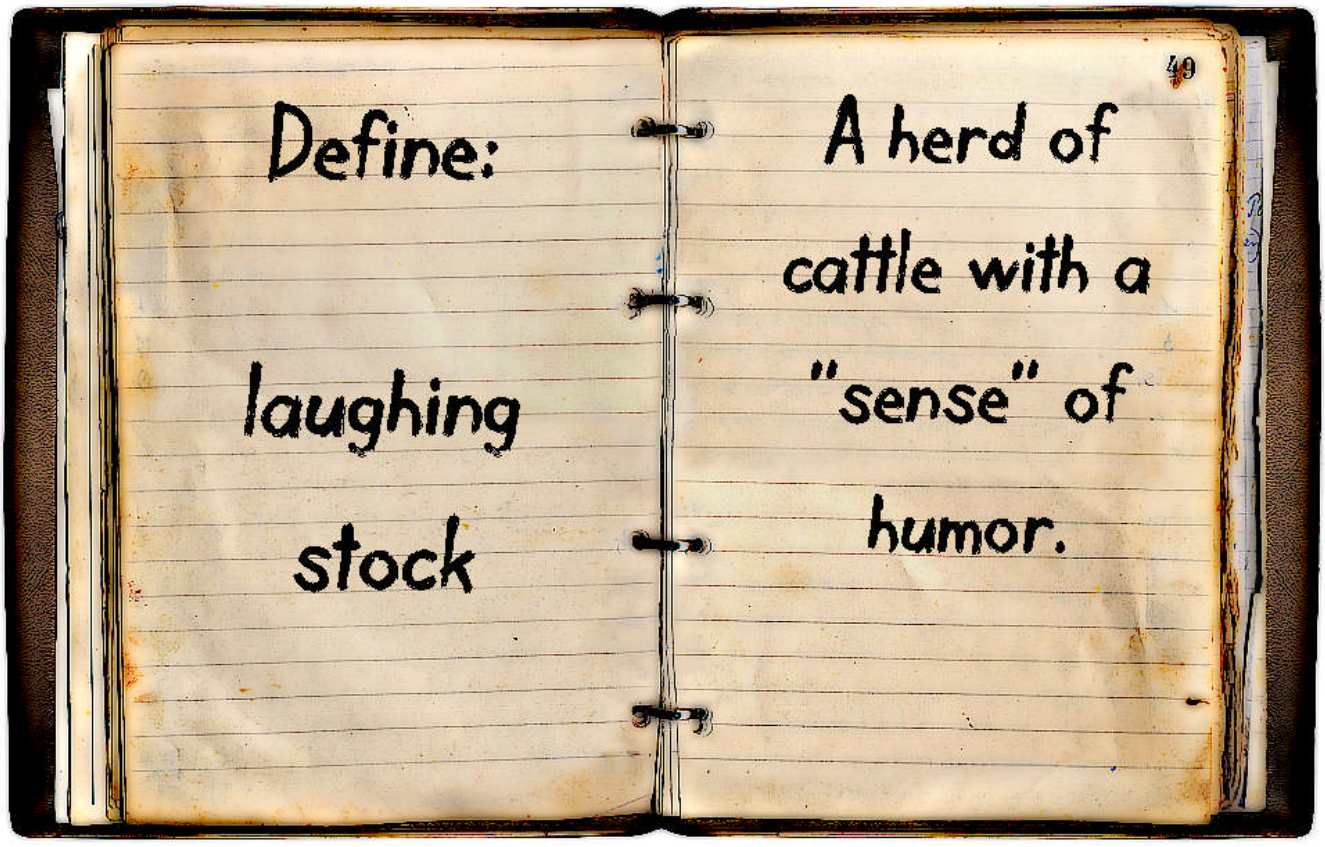
EXPLANATION:

YOU WILL FIND IT INCREASINGLY MORE DIFFICULT TO TOUCH THE DOT WITHOUT THE USE OF ONE (OR BOTH) OF YOUR EYES. HUMANS USE BOTH OF THEIR EYES TO DETERMINE THEIR RELATIVE DISTANCE TO OTHER OBJECTS. BY IMPAIRING YOUR VISION, YOUR PERSPECTIVE IS ALTERED.

INDEPENDENT VARIABLE: NUMBER OF EYES USED
DEPENDENT VARIABLE: DISTANCE FROM THE DOT.
HYPOTHESIS:

IF THE NUMBER OF EYES USED IS (INCREASED/DECREASED), THEN THE DISTANCE FROM THE DOT WILL (INCREASE/DECREASE).

WEEK 23: "OTHER" SENSES



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

EACH PLANT OR ANIMAL HAS DIFFERENT STRUCTURES THAT SERVE DIFFERENT FUNCTIONS IN GROWTH, SURVIVAL, AND REPRODUCTION. FOR EXAMPLE, HUMANS HAVE DISTINCT BODY STRUCTURES FOR WALKING, HOLDING, SEEING, AND TALKING.

IN ADDITION TO OUR EXTERNAL SENSES, WE ALSO HAVE INTERNAL SENSES THAT INFORM US OF WHAT IS GOING ON INSIDE OUR BODIES. FEELINGS SUCH AS HUNGER AND THIRST CANNOT BE SENSED FROM OUTSIDE OF OUR BODIES!

NOT ALL ORGANISMS HAVE THE SAME INTERNAL/EXTERNAL SENSES. SOME ANIMALS HAVE SENSES THAT ARE FOREIGN TO HUMANS. SOME ORGANISMS USE ECHO LOCATION TO MOVE, INFRARED VISION TO SEE AND ELECTRICAL SENSORS TO DETECT MOTION FROM THEIR ENVIRONMENT. PLANTS ALSO HAVE OTHER SENSES IN THAT THEY CAN GROW TOWARDS A STRONG LIGHT SOURCE. THIS IS CALLED PHOTOTROPISM.

DEFINITIONS:

INTERNAL SENSES	TYPES OF FEELINGS WE RECEIVE INSIDE OUR BODY LIKE HUNGER AND THIRST
CANALS	THREE CURVED TUBES IN YOUR EAR THAT ARE FILLED WITH FLUID; ACTS LIKE THE COCHLEA BUT WORKS TO KEEP YOU BALANCED
ECHOLOCATION	"EK-O-LOW-KAY-SHUN"; A WAY FOR SOME ANIMALS (LIKE BATS AND DOLPHINS) TO KEEP FROM BUMPING INTO EVERYTHING BY GIVING OFF SOUNDS AND LISTENING FOR ECHOS
ECHO	THE BOUNCING BACK OF A SOUND WAVE TO THE PERSON WHO MADE THE SOUND
INFRARED	"IN-FRA-RED"; A WAY FOR ANIMALS (LIKE RATTLESNAKES) TO SEE THE HEAT COMING OFF OF THE BODY OF ANOTHER ANIMAL
ELECTRIC SENSE	A WAY FOR SOME ANIMALS, LIKE THE ELECTRIC EEL, TO USE A STRONG ELECTRIC CHARGE TO SEE, MOVE AND TO KILL OTHER ANIMALS
PHOTOTROPISM	"FOE-TOE-TRO-PIZM"; THE ABILITY OF A PLANT TO SENSE THE DIRECTION OF SUNLIGHT AND TO GROW TOWARDS IT

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT ARE SOME OF OUR INTERNAL SENSES?

HUNGER, THIRST AND PAIN ARE ALL INTERNAL SENSES.

WHAT IS THE DIFFERENCE BETWEEN THE COCHLEA AND THE CANALS IN YOUR EAR?

THE COCHLEA IS USED TO DETERMINE SOUNDS WHILE THE CANALS ARE USED FOR BALANCE.

WHEN YOU FEEL DIZZY, WHAT IS HAPPENING INSIDE YOUR CANALS?

THE FLUID INSIDE THE CANALS OF YOUR EAR SWIRLS AROUND WHEN YOU SPIN. ONCE YOU STOP SPINNING, THE FLUID IN YOUR EARS KEEPS ON MOVING. THIS CONFUSES THE BRAIN BECAUSE IT BELIEVES YOU ARE STILL MOVING WHEN YOU ARE NOT!

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 23:

PAGE ONE:

1. INTERNAL SENSES
2. CANALS
3. ECHOLOCATION
4. ECHO
5. INFRARED
6. ELECTRIC SENSE
7. PHOTOTROPISM

PAGE TWO:

7 – INTERNAL SENSES
5 – CANALS
1 – ECHOLOCATION
3 – ECHO
4 – INFRARED
6 – ELECTRIC SENSE
2 – PHOTOTROPISM

PAGE THREE:

"IMAGINE THAT YOU HAVE A SPECIAL SENSE THAT NOBODY ELSE HAS. WHAT SENSE WOULD YOU HAVE? DESCRIBE HOW YOU WOULD USE IT!!!"

ANSWERS WILL VARY

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "SHARK ATTACK"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

IT IS NEARLY IMPOSSIBLE TO UNDERSTAND WHAT IT IS LIKE TO HAVE A SENSE THAT WE, AS HUMANS, DO NOT HAVE. THE ELECTRIC SENSE THAT IS PRESENT IN MANY FISH IS ONE OF THESE SENSES.

NEARLY EVERY LIVING CREATURE EITHER PRODUCES OR REFLECTS A TINY ELECTRIC CHARGE INTO THE ENVIRONMENT. THIS MOVEMENT OF ELECTRIC CURRENT CAN BE USED AS A SENSE AMONG SOME PREDATORS TO LOCATE THEIR PREY.

SHARK ATTACK

CHILDREN WILL SIMULATE HOW A SHARK CAN USE ITS ELECTRICAL SENSE TO FIND FOOD.

Materials:

BLINDFOLD
TWO JARS CONTAINING 1/4 CUP POPCORN OR A FEW PEBBLES

Activity:

INFORM THE CHILD THAT HE/SHE WILL BE PRETENDING THEY ARE A SHARK AND WILL BE "HUNTING" FOR THEIR FOOD. IN THIS CASE, THEIR FOOD WILL BE A SHRIMP! MOST SHARKS HAVE AN ELECTRICAL SENSE THAT ALLOWS THEM TO FIND FOOD. HUMANS DO NOT HAVE THIS SENSE, BUT WE CAN PRETEND THAT WE DO!

GIVE ONE OF THE JARS TO THE CHILD. THIS WILL BE YOUR "SHARK". THE SHARK IS TO BE BLINDFOLDED DURING THIS ACTIVITY. THE PARENT (OR SIBLING) WILL BE ACTING AS THE "SHRIMP". THIS PERSON WILL ALSO HAVE A JAR.

HAVE THE SHRIMP HIDE SOMEWHERE IN THE HOUSE OR OUTSIDE.

THE RULES OF THIS GAME ARE SIMPLE...WHENEVER THE SHARK SHAKES ITS JAR, THE SHRIMP MUST SHAKE ITS JAR AS WELL! THE SHARK CAN THEN HUNT DOWN THE SHRIMP BY FOLLOWING ITS SIGNAL. THE GAME IS OVER WHEN THE SHARK IS WITHIN REACH OF THE SHRIMP.

FOR AN EXTRA CHALLENGE, HAVE THE SHRIMP MOVE ONCE DURING EACH ROUND!

Explanation:

SHARKS ARE THE MOST FORMIDABLE PREDATORS OF THE OCEANS. THEY USE THEIR SENSE OF SIGHT, SOUND, SMELL TOUCH AND TASTE AS WELL AS THEIR ELECTRICAL SENSE WHEN HUNTING FOR FOOD. THIS GAME WOULD BE VERY EASY FOR THE CHILD IF THEY WERE ALLOWED TO USE THEIR SENSE OF SIGHT!

THE SHRIMP'S SHAKER SIMULATES THE ELECTRICAL IMPULSES THAT THIS ORGANISM GIVES OFF INTO THE WATER. THE SHARK HAS BEEN BLINDFOLDED TO SIMULATE HOW IT CAN USE OTHER SENSES (SUCH AS ITS ELECTRICAL SENSE) TO HUNT DOWN FOOD.

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHERE O' WHERE COULD I BE?"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

ALL HUMANS HAVE A SENSE OF THEIR PHYSICAL LOCATION IN SPACE. IF THE RIGHT ARM IS EXTENDED OUTWARD, NEARLY EVERY PERSON CAN SENSE THE LOCATION OF HIS/HER ARM AND MIMIC THIS SAME ACTION WITH THEIR LEFT ARM, EVEN IF BLINDFOLDED. THIS SENSE OF BODY POSITION IS KNOWN AS PROPRIOCEPTION.

WE HAVE THE ABILITY TO LEARN FROM OUR MISTAKES VERY QUICKLY AND EFFICIENTLY. WHEN OUR BODIES MAKE A MISTAKE IN JUDGING THE DISTANCE BETWEEN TWO OBJECTS, OUR PROPRIOCEPTION ALLOWS US TO TAKE THE APPROPRIATE STEPS TO CORRECT THE PROBLEM.

WHERE O' WHERE COULD I BE?

CHILDREN WILL EXPLORE HOW THEY CAN SENSE THEIR BODY POSITION, CALLED PROPRIOCEPTION.

MATERIALS:

PAPER/PENCIL

ACTIVITY 1:

HAVE THE CHILD CLOSE THEIR EYES AND RAISE BOTH HANDS ABOVE THEIR HEAD.

THEY ARE TO KEEP THE FINGERS OF THEIR LEFT HAND COMPLETELY STILL.

WITH THEIR RIGHT HAND, THEY ARE TO QUICKLY TOUCH THEIR INDEX FINGERTIP TO THEIR NOSE.

THEN ASK THE CHILD TO QUICKLY TOUCH THEIR LEFT HAND THUMB WITH THE TIP OF THEIR RIGHT INDEX FINGER.

HAVE THE CHILD REPEAT THE ENTIRE PROCESS QUICKLY WHILE ATTEMPTING TO TOUCH EACH FINGERTIP. MAKE CERTAIN THEY ALWAYS RETURN TO THEIR NOSE IN BETWEEN FINGERTIP ATTEMPTS.

INSTRUCT THE CHILD TO SWITCH HANDS AND TRY AGAIN.

ASK THE CHILD HOW SUCCESSFUL THEY ARE IN FINDING EACH FINGERTIP. DO THEY IMPROVE WITH TIME? AND, IS THERE A DIFFERENCE WHEN THE DIFFERENT HANDS ARE USED?

Activity 2:

MARK AN "X" ON A PIECE OF PAPER.

HAVE THE CHILD HOLD ONTO THE PENCIL AND RAISE THIS HAND ABOVE THEIR HEAD.

THEY ARE TO CLOSE THEIR EYES AND ATTEMPT TO MAKE A DOT AS NEAR AS POSSIBLE TO THE X.

HAVE THEM OPEN THEIR EYES TO CHECK THEIR SUCCESS AND REPEAT THIS PROCEDURE SEVERAL MORE TIMES.

ASK THE CHILD IF THEY GOT CLOSER TO THE "X" AS THEY REPEATED THEIR PROCEDURE.

Explanation:

ONE INTERNAL SENSE WE HAVE IS A SENSE OF WHERE ARE BODY PARTS ARE. WE CAN SENSE WHERE ARE BODY PARTS ARE, EVEN WITH OUR EYES CLOSED!

THIS INTERNAL SENSE IS CALLED PROPRIOCEPTION ("PRO-PREE-O-CEP-SHUN"). OUR BODY IS FILLED WITH NERVES THAT SEND MESSAGES TO OUR BRAIN. SOME OF THESE NERVES ARE USED TO FIGURE OUT WHAT OUR BODY IS DOING AND HOW IT IS MOVING!

THE LONGER YOU PRACTICE ATTEMPTING TO LOCATE EACH FINGER OR PUTTING THE DOT ON THE "X", THE MORE ACCURATE YOU BECOME. YOUR BODY LEARNS WHERE IT IS TO MOVE IN SPACE FROM ITS MISTAKES AND MAKES CORRECTIONS TO BECOME MORE ACCURATE!

WEEK 24: THE BRAIN

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

THE ABILITY OF THE BRAIN TO MANAGE OUR THOUGHTS AND ABILITIES IS CONTROLLED BY DIFFERENT SECTIONS OF ITS STRUCTURE. THE BRAIN CAN BE DIVIDED INTO THREE UNIQUE AREAS: THE CEREBRUM, CEREBELLUM AND THE BRAINSTEM. EACH CONTROLS A DIFFERENT PART OF OUR MIND AND BODY.

A "MESSAGE SYSTEM" CAN BE FOUND WITHIN EACH BODY AS WELL AS INFORMATION IS SENT THROUGH THE SPINAL COLUMN WHICH IS, IN TURN, CONNECTED TO MILLIONS OF NERVES WHICH SEND CHEMICAL MESSAGES TO AND FROM THE BRAIN THROUGHOUT THE ENTIRE BODY.

DEFINITIONS:

CEREBRUM	"SUH-REE-BRUM"; THE LARGEST PART OF YOUR BRAIN THAT CONTAINS FOUR LOBES
RIGHT HEMISPHERE	ONE HALF OF YOUR BRAIN THAT TAKES CARE OF YOUR CREATIVE ABILITIES
LEFT HEMISPHERE	ONE HALF OF YOUR BRAIN THAT TAKES CARE OF YOUR PROBLEM-SOLVING ABILITIES
LOBES	PARTS OF THE HEMISPHERES OF YOUR BRAIN
FRONTAL LOBE	THIS LOBE CONTROLS YOUR ABILITY TO SPEAK, MOVEMENT, EMOTIONS AND PROBLEMS SOLVING
PARIETAL LOBE	''PAH-RIE-A-TAL''; THIS LOBE CONTROLS YOUR FEELINGS OF PAIN, PRESSURE, TEMPERATURE, AND TOUCH
OCCIPITAL LOBE	''OCK-SIP-IT-AL''; THIS LOBE CONTROLS YOUR SENSE OF VISION
TEMPORAL LOBE	''TEM-POOR-AL''; THIS LOBE CONTROLS YOUR SENSES OF HEARING, SMELLING AND YOUR UNDERSTAND SPEECH
CEREBELLUM	"SARAH-BELL-UM''; SMALLER THAN THE CEREBRUM; HELPS YOU TO KEEP YOUR BALANCE AND CONTROLS ALL OF YOUR REFLEXES
REFLEXES	ACTIONS YOUR BODY GOES THROUGH WITHOUT THINKING ABOUT THEM
BRAINSTEM	FOUND BETWEEN YOUR SPINE AND THE CEREBRUM, THIS PART OF YOUR BRAIN HELPS YOU TO BREATH, SWALLOW, DIGEST FOOD AND ALSO CONTROLS HOW FAST YOUR HEART BEATS AND HOW IT PUMPS BLOOD THROUGH YOUR BODY
SPINAL CORD	FOUND INSIDE YOUR SPINE; HELPS YOUR BRAIN BY SENDING MESSAGES THROUGHOUT YOUR BODY
SPINE	A LONG STACK OF BONES THAT ACTS TO PROTECT YOUR SPINAL CORD
NERVES	SMALL FIBERS IN YOUR BODY THAT SEND MESSAGES FROM YOUR SENSE ORGANS TO YOUR SPINAL CORD

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHICH PART OF YOUR BRAIN TAKES CARE OF YOUR CREATIVE ABILITIES? YOUR PROBLEM-SOLVING ABILITIES?

The right hemisphere of your brain controls your creative abilities. The left hemisphere of your brain controls the problem-solving abilities.

WHAT DOES YOUR BRAIN USE TO SEND AND RECEIVE MESSAGES TO YOUR SENSE ORGANS?

Your brain uses the spinal chord to transmit messages through nerves which are connected to your sense organs.

WHAT DOES YOUR BODY USE TO PROTECT THE SPINAL CORD?

The spinal cord is protected by a long stack of bones that make up your backbone or spine.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 24:

PAGE ONE:

CEREBRUM
RIGHT HEMISPHERE
OCCIPITAL LOBE
TEMPORAL LOBE
CEREBELLUM
LEFT HEMISPHERE
LOBES
BRAINSTEM
SPINAL CORD
SPINE
NERVES
FRONTAL LOBE
PARIETAL LOBE
REFLEXES

PAGE TWO:

14 - CEREBRUM
12 - RIGHT HEMISPHERE
1 - LEFT HEMISPHERE
2 - LOBES
8 - FRONTAL LOBE
7 - PARIETAL LOBE
6 - OCCIPITAL LOBE
4 - TEMPORAL LOBE
5 - CEREBELLUM
9 - REFLEXES
10 - BRAINSTEM
11 - SPINAL CORD
3 - SPINE
13 – NERVES

UNIT SIX REVIEW
ANSWER KEY

FILL IN THE BLANKS IN THE STORY BELOW.

I USE MY **EARS** TO HELP ME STAY BALANCED. THESE SENSE ORGANS SEND MESSAGES TO MY BRAIN WITH THE HELP OF **NERVES**. BEFORE THESE MESSAGES REACH MY BRAIN THEY HAVE TO TRAVEL THROUGH MY **SPINAL CORD**.

THESE SENSE ORGANS ARE ALSO USED FOR MY SENSE OF **HEARING**. I HAVE FOUR MORE SENSES: **TASTE**, **VISION**, **TOUCH** AND **SMELL**.

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHERE DID I PUT THAT???"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE INFORMATION WE STORE IN OUR SHORT TERM MEMORY CAN BE USED TO REMEMBER SEEMINGLY INSIGNIFICANT TASKS, SUCH AS THE LOCATION OF PARTICULAR CARDS IN A GAME OF "CONCENTRATION".

AS YOU INCREASE THE NUMBER OF TIMES YOU PLAY "CONCENTRATION", AND IF YOU KEEP THE CARDS IN THE SAME POSITION DURING EVERY GAME, OUR MINDS REMEMBER WHERE EACH CARD IS LOCATED AS WE LEARN THE PATTERN IN EACH ROUND.

AS THE CHILD'S MEMORY STORES THIS INFORMATION, THE TIME IT TAKES TO FIND THE MATCHES SHOULD BECOME MUCH SHORTER AFTER MULTIPLE ROUNDS!

WHERE DID I PUT THAT???

CHILDREN WILL USE A POPULAR GAME TO EXPLORE HOW THEIR BRAIN CAN LEARN.

MATERIALS:

TEN SETS OF PAIRED CARDS WITH MATCHING FACES (HAVE THE CHILD MAKE THESE!)
CLOCK OR WATCH WITH SECOND HAND
DATA CHART (SEE ATTACHED)

ACTIVITY:

ARRANGE THE CARDS FACE DOWN. YOU WILL WANT TO BE CERTAIN TO REMEMBER EXACTLY WHERE EACH CARD IS PLACED SINCE THEY WILL NEED TO BE REPLACED IN THE SAME LOCATION LATER IN THE ACTIVITY!

INSTRUCT THE CHILD TO LIFT TWO CARDS AT A TIME AND LOOK FOR THE MATCHED PAIR. IF THEY ARE NOT SUCCESSFUL WITH THE TWO CARDS THAT WERE TURNED OVER, THEY ARE TO RETURN THEM UPSIDE DOWN ON THE TABLE IN THE SAME PLACE AND TRY AGAIN. IF THEY ARE SUCCESSFUL, THEY CAN REMOVE THE TWO CARDS FROM THE TABLE.

THE TIME FOR THE CHILD TO FIND ALL OF THE MATCHES WILL BE RECORDED.

ONCE THIS IS COMPLETED, PLACE THE CARDS BACK IN THE SAME SPOT, UPSIDE DOWN, AND HAVE THE CHILD REPEAT THE SAME PROCEDURE AT LEAST TWO MORE TIMES. RECORD EACH ROUND!

EXPLANATION:

IF THE CARDS HAVE BEEN PLACED IN THE SAME SPOT, THE CHILD SHOULD BE ABLE TO FIND THE MATCHES MUCH EASIER IN SUBSEQUENT ROUNDS. THIS IS BECAUSE OUR MINDS REMEMBER WHERE EACH CARD IS LOCATED AS WE LEARN THE PATTERN IN EACH ROUND. AS THE CHILD'S MEMORY STORES THIS INFORMATION, THE TIME IT TAKES TO FIND THE MATCHES SHOULD BECOME MUCH SHORTER! THE CHILD WILL PROBABLY HAVE SOME DIFFICULTY THE NEXT DAY IN LOCATING ALL OF THE MATCHES. THIS IS BECAUSE THE INFORMATION THEY STORED IN THE FIRST DAY WAS PLACED INTO THEIR SHORT-TERM MEMORY. A LOT OF INFORMATION THAT IS STORED IN THIS AREA IS REPLACED OR FORGOTTEN MUCH MORE FREQUENTLY THAN OUR LONG-TERM MEMORY!

WHERE DID I PUT THAT???
DATA CHART

TRIALS	TIME TO FIND ALL THE MATCHES
TRIAL ONE	
TRIAL TWO	
TRIAL THREE	
TRIAL FOUR	
TRIAL FIVE	
TRIAL SIX	

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "YOUR MIND CAN PLAY TRICKS ON YOU"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE HUMAN MIND IS ASSOCIATIVE. THIS MEANS THAT AS YOU FOCUS ON SOMETHING HOT, WARM AND/OR HUMID YOUR BRAIN CORRELATES OTHER THINGS THAT RESEMBLE THESE CONDITIONS.

THIS KNOWLEDGE IS IMPORTANT FOR EVERYDAY OCCURRENCES THAT INVOLVE OUR MEMORY. IN SHORT, IT IS VERY IMPORTANT TO BE VERY OBSERVANT OF WHAT WE CAN ACTUALLY SENSE!

YOUR MIND CAN PLAY TRICKS ON YOU...

CHILDREN WILL EXPLORE HOW EASY IT IS TO HEAR ONE THING AND THINK ABOUT SOMETHING ELSE.

MATERIALS:

PAPER AND PENCIL
THESAURUS (OPTIONAL)

ACTIVITY:

SLOWLY READ THE FOLLOWING LIST OF WORDS TO YOUR CHILD OUT LOUD:

SOUR	NICE	CANDY
HONEY	SUGAR	SODA
BITTER	CHOCOLATE	GOOD
HEART	TASTE	CAKE
TOOTH	TART	PIE

HAVE YOUR CHILD WRITE DOWN AS MANY WORDS AS POSSIBLE THAT THEY CAN REMEMBER FROM THIS LIST.

YOU MAY WANT TO REPEAT THIS ONE MORE TIME!!!

NOW READ TO THEM THE WORDS IN THIS NEXT LIST:

MAD	WRATH	FEAR
HAPPY	HATE	FIGHT
RAGE	HATRED	TEMPER
MEAN	FURY	CALM
DISLIKE	EMOTION	ENRAGE

HAVE YOUR CHILD WRITE DOWN AS MANY WORDS AS POSSIBLE THAT THEY CAN REMEMBER FROM THIS LIST. YOU MAY WANT TO REPEAT THIS ONE MORE TIME!!!

ASK THEM IF THEY SAID THAT THE WORD "SWEET" WAS IN THE FIRST LIST. NOW ASK THEM IF THEY PUT THE WORD "ANGRY" IN THE SECOND LIST?

IT IS VERY LIKELY THAT THEY DID PLACE THESE WORDS IN THEIR LISTS, EVEN THOUGH THEY ARE NOT IN THERE!!!

FOR AN EXTRA CHALLENGE, HAVE THE CHILD CREATE THEIR OWN WORD ASSOCIATION/MEMORY GAME BY USING A THESAURUS.

Explanation:

MOST PEOPLE MISTAKENLY PLACE THE WORDS "SWEET" AND "ANGRY" IN THESE LISTS BECAUSE OUR MINDS HONESTLY BELIEVE THEY ARE THERE! OUR MEMORY IS ASSOCIATIVE, WHICH MEANS THAT IF YOU ARE THINKING ABOUT ONE THING, YOUR MIND MAY START THINKING ABOUT RELATED THINGS THAT ARE SIMILAR. FOR EXAMPLE, A PERSON WILL PROBABLY ASSOCIATE CANDY, HONEY AND SUGAR WITH SOMETHING SWEET. THEREFORE, THE MEMORY OF THINGS THAT ARE SWEET IS SO STRONG WITHIN A PERSON'S MIND THAT THEY BELIEVE THIS WORD WAS A PART OF THE ORIGINAL LIST!

UNIT SIX TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	EXTERNAL SENSES	1. AN ORGAN THAT CONTROLS YOUR BODY
____	INTERNAL SENSES	2. SMALL FIBERS IN YOUR BODY THAT SEND MESSAGES FROM YOUR SENSE ORGANS TO YOUR SPINAL CORD
____	SENSE ORGANS	3. TYPES OF FEELINGS WE RECEIVE INSIDE OUR BODY LIKE HUNGER AND THIRST
____	PUPIL	4. THREE CURVED TUBES IN YOUR EAR THAT ARE FILLED WITH FLUID THAT HELP TO KEEP YOU BALANCED
____	SPINAL CORD	5. THE LARGEST PART OF YOUR BRAIN THAT CONTAINS FOUR LOBES
____	NERVE ENDINGS	6. FEELINGS THAT TELL US WHAT IS GOING ON OUTSIDE OF OUR BODY
____	NERVES	7. THE BLACK "DOT" IN YOUR EYE WHERE LIGHT ENTERS YOUR BODY
____	BRAIN	8. AREAS IN YOUR SKIN THAT SENSE THE FEELINGS OF HEAT/COLD/PRESSURE/PAIN AND TASTE
____	CANALS	9. ORGANS SUCH AS EYES
____	IRIS	10. THE ABILITY OF A PLANT TO SENSE AND GROW TOWARDS LIGHT
____	CEREBRUM	11. THE COLORFUL PORTION OF YOUR EYE THAT CHANGES THE SIZE OF THE PUPIL
____	PHOTOTROPISM	12. FOUND INSIDE YOUR SPINE; HELPS YOUR BRAIN BY SENDING MESSAGES THROUGHOUT YOUR BODY

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. YOUR NOSE HAIR IS USED TO...

A. KEEP YOUR NOSE WARM
B. BLOCK THINGS FROM GETTING INTO YOUR BODY
C. HELP YOU TASTE YOUR FOOD

2. WHAT HELPS TO SPREAD FOOD ALL OVER YOUR TONGUE?

A. SALIVA
B. TEETH
C. A SPOON

3. DURING THE BRIGHTEST PART OF THE DAY, YOUR PUPIL WILL GET...

A. LARGER
B. SMALLER
C. THE SAME SIZE AS DURING THE NIGHT

4. NERVE ENDINGS CAUSE YOU TO FEEL PAIN IN YOUR...

A. HANDS
B. FINGERNAILS
C. HAIR

5. EXAMPLES OF OUR INTERNAL SENSES INCLUDE...

A. VISION, TASTE AND HEARING
B. TOUCH, BALANCE AND HUNGER
C. HUNGER, THIRST AND BALANCE

6. THE PART OF YOUR BRAIN THAT CONTROLS YOUR REFLEXES IS THE...

A. CEREBRUM
B. CEREBELLUM
C. BRAIN STEM

WHICH SENSE ORGAN IS USED TO HELP YOU KEEP YOUR BALANCE? HOW DOES IT WORK?

UNIT SIX TEST ANSWER KEY

MATCHING

6 EXTERNAL SENSES
3 INTERNAL SENSES
9 SENSE ORGANS
7 PUPIL
12 SPINAL CORD
8 NERVE ENDINGS
2 NERVES
1 BRAIN
4 CANALS
11 IRIS
5 CEREBRUM
10 PHOTOTROPISM

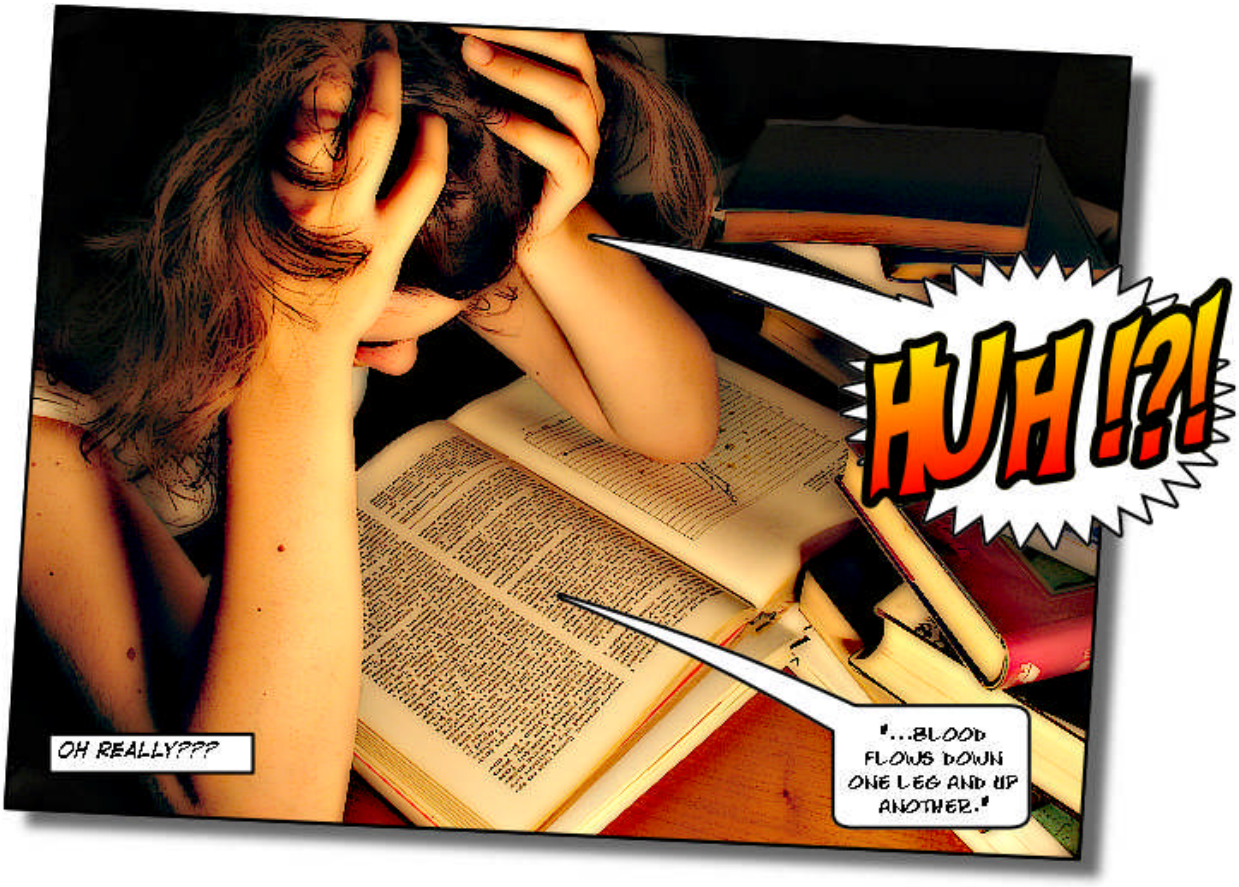
MULTIPLE CHOICE

1. B
2. A
3. B
4. A
5. C
6. B

WRITE A STORY...

YOUR EARS CONTROL YOUR SENSE OF BALANCE. INSIDE YOUR EAR YOU HAVE THREE LITTLE CURVED TUBES CALLED CANALS WHICH ARE FULL OF LIQUID AND CONTAIN TINY LITTLE HAIRS IN THEM. EVERY TIME YOU MOVE YOUR HEAD, THE LIQUID MOVES AS WELL. THE MOVING LIQUID MAKES THE LITTLE HAIRS MOVE TOO. SO WHENEVER THESE HAIRS MOVE, A NEW MESSAGE IS SENT TO YOUR BRAIN. WHEN YOU LOSE YOUR BALANCE YOUR CANALS SEND A MESSAGE TO THE BRAIN FOR YOUR BODY TO MOVE BACKWARDS OR FORWARDS...WHEREVER YOU NEED TO GO TO STAND STRAIGHT UP!

WEEK 25:
SKIN, MUSCLE AND BONES



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

SKIN IS THE LARGEST ORGAN IN THE HUMAN BODY WHICH ACTS TO PROTECT A SYSTEM OF MUSCLES, BONES AND OTHER ORGANS.

MUSCLES CONTRACT TO ALLOW MOVEMENT TO EXIST IN OUR BONES THROUGH A CONNECTIVE TISSUE CALLED TENDONS. THE BONES THEMSELVES ARE CONNECTED TOGETHER WITH THE HELP OF OTHER TISSUES KNOWN AS LIGAMENTS. IN AREAS OF MOVEMENT, A LAYER OF CARTILAGE EXISTS BETWEEN THE BONES IN ORDER TO KEEP THEM FROM GRINDING TOGETHER.

DEFINITIONS:

ORGANS	PARTS OF THE BODY THAT HAVE SPECIAL JOBS TO DO
SKIN	THE LARGEST ORGAN OF THE HUMAN BODY
EPIDERMIS	"EH-PIH-DUR-MISS"; THE OUTER LAYER OF SKIN CELLS THAT CAN BE SEEN OUTSIDE OF YOUR BODY
MUSCLE	AN ORGAN THAT HELPS YOU TO MOVE EVERYTHING IN YOUR BODY
SKELETAL MUSCLES	MUSCLES WHICH STRETCH TO ALLOW YOUR BONES TO MOVE
TENDONS	GROUPS OF CELLS THAT ATTACH YOUR SKELETAL MUSCLES TO YOUR BONES
LIGAMENTS	BANDS OF CELLS THAT CONNECT YOUR BONES TOGETHER
CARTILAGE	A "CUSHION" OF CELLS BETWEEN YOUR BONES TO KEEP THEM FROM RUBBING TOGETHER
CONTRACT	"TO SHORTEN"

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

HOW IS YOUR SKIN LIKE A SANDWICH BAGGIE?

IT IS A BENDABLE CONTAINER THAT DOES NOT ALLOW TOO MANY FLUIDS TO ENTER/EXIT AND CAN BE RESEALED IF IT BECOMES OPENED.

IF YOU ARE ALWAYS GROWING NEW SKIN CELLS, WHY DON'T YOU HAVE A REALLY THICK LAYER OF SKIN?

YOUR BODY PRODUCES NEW LAYERS OF SKIN CELLS INSIDE YOUR BODY. THE LAYERS WE SEE ON THE OUTSIDE OF OUR BODY ARE CONSTANTLY BEING SCRAPED OFF.

WHY ARE MUSCLES ALWAYS FOUND IN PAIRS?

MUSCLES CAN ONLY PULL. SO WHEN A MUSCLE IS PULLING IN ONE DIRECTION, ITS PARTNER CAN PULL BACK IN THE OPPOSITE DIRECTION.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 25:

PAGE ONE:

ACROSS:

1. SKELETAL
3. SKIN
6. ORGANS
7. EPIDERMIS
8. CARTILAGE

DOWN:

2. TENDONS
4. LIGAMENTS
5. MUSCLE
8. CONTRACT

PAGE TWO:

9 - ORGANS
1 - SKIN
6 - EPIDERMIS
5 - MUSCLE
7 - SKELETAL MUSCLES
3 - TENDONS
2 - LIGAMENTS
4 - CARTILAGE
8 – CONTRACT

PAGE THREE:

1. A
2. A
3. A
4. B
5. B
6. C

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "MODELING THE ARM"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

SKELETAL MUSCLES ALLOW YOUR BONES TO MOVE DUE TO CONNECTIVE TISSUE CALLED TENDONS WHICH ATTACH MUSCLE TO BONE.

WHEN A MUSCLE CONTRACTS, IT SHORTENS, WHICH CAUSES MOVEMENT IN OUR BONES.

MUSCLES CAN ONLY PULL. THEY CANNOT PUSH!

MODELING THE ARM

CHILDREN WILL CREATE A MODEL OF THE ARM AND MAKE PREDICTION ON ITS MOVEMENT.

Materials:

TWO PLASTIC RULERS (THE ONES WITH ALL OF THE HOLES IN THEM...YOU CAN USE PAINT STIRRERS AS WELL, IF YOU DRILL HOLES INTO THEM!)
TAPE MEASURE OR ANOTHER RULER
ONE PAPER CLIP
TWO FEET OF STRING
ONE METAL BRAD
CLEAR TAPE

Activity:

HOLD THE RULERS WITH THE SMOOTH SIDES TOGETHER. FASTEN THEM TOGETHER WITH THE BRAD THROUGH THE END HOLES OF BOTH RULERS.

OPEN THE PAPER CLIP TO MAKE A HOOK. TIE ONE END OF THE STRING TO ONE END OF THE CLIP.

MAKE AN "L" SHAPE WITH THE TWO RULERS. HOOK THE PAPERCLIP ONTO THE END HOLE OF THE HORIZONTAL RULER THAT IS FARTHEST AWAY FROM THE JOINT.

THREAD THE OTHER END OF THE STRING THROUGH THE TOP END HOLE OF THE VERTICAL RULER.

YOU NOW HAVE A MODEL FOR THE ARM.

PLACE THE MODEL ARM ON A TABLE. SLOWLY PULL TWO INCHES OF STRING THROUGH THE END HOLE IN THE VERTICAL RULER. THIS WILL RAISE THE LOWER ARM OFF OF THE TABLE. MEASURE AND RECORD THE DISTANCE BETWEEN THE TIP OF THE BOTTOM RULER AND THE TABLE.

MOVE THE PAPERCLIP HOOK TO THE CENTER HOLE. ASK THE CHILD IF THEY PREDICT THE ARM WILL MOVE A GREATER DISTANCE, A LESSER DISTANCE OR REMAIN THE SAME WITH THE HOOK IN THIS POSITION. AGAIN PULL TWO INCHES THROUGH THE END HOLE IN THE TOP RULER AND RECORD THE DISTANCE THE ARM MOVES OFF OF THE TABLE.

MOVE THE PAPERCLIP HOOK TO THE HOLE THAT IS CLOSEST TO THE JOINT. ASK THE CHILD FOR THE SAME PREDICTION, PULL THE STRING TWO INCHES AND RECORD THE MOVEMENT OF THE ARM ONCE AGAIN.

Explanation:

THE HORIZONTAL AND VERTICAL RULERS REPRESENT THE LOWER AND UPPER ARMS, RESPECTIVELY. THE PAPERCLIP ACTS LIKE A TENDON, CONNECTING MUSCLE TO BONE AND THE STRING ACTS LIKE MUSCLE, WHICH MOVES THE BONES.

THE CHILD SHOULD SEE THAT BY MOVING THE HOOK ON THEIR ARM MODEL, THEY CAN MOVE THE BOTTOM RULER DIFFERENT DISTANCES. AS THE HOOK WAS MOVED CLOSER TO THE JOINT, THEY WERE ABLE TO MOVE THE LOWER ARM THE GREATEST DISTANCE! THIS IS VERY IMPORTANT BECAUSE THIS LAST TRIAL IS VERY SIMILAR TO HOW OUR MUSCLES AND TENDONS CAUSE OUR ARMS TO MOVE! THE LOCATION OF OUR MUSCLES GIVES OUR BODIES THE ABILITY TO MAKE VERY LARGE MOTIONS IN OUR BONES WITH A VERY SMALL AMOUNT OF MUSCLE CONTRACTION (WHEN A MUSCLE CONTRACTS, IT SHORTENS...WHICH IS SIMILAR TO PULLING ON THE STRING!) REMEMBER, MUSCLES CAN ONLY PULL, THEY CANNOT PUSH!

MODELING THE ARM DATA CHART

RULER POSITION	DISTANCE THE RULER IS RAISED FROM THE TABLE
POSITION ONE: FARTHEST HOLE FROM THE JOINT	
POSITION TWO: MIDDLE HOLE	
POSITION THREE: CLOSEST HOLE TO THE JOINT	

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WORN OUT"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE SIZE OF THE MUSCLE IS DIRECTLY PROPORTIONAL TO THE AMOUNT OF MOVEMENT THAT MUSCLE PERFORMS.

THE LARGER THE MUSCLE, THE GREATER THE AMOUNT OF MOVEMENT IT CAN PERFORM. THEREFORE, YOU SHOULD NOTICE A LONGER REACTION TIME WITH A LARGER MUSCLE (LIKE A LEG) THAN WITH A SMALLER MUSCLE (LIKE THOSE FOUND IN A HAND).

ESP ACTIVITY: WORN OUT

DOES MUSCLE SIZE AFFECT ITS STAMINA?

MATERIALS:

MEASURING TAPE
CLOCK WITH SECOND HAND

ACTIVITY:

MEASURE THE CIRCUMFERENCE OF THE WRIST WITH A MEASURING TAPE.

RECORD THE TIME IT TAKES TO OPEN AND CLOSE YOUR HAND 50 TIMES (MAKING SURE TO OPEN YOUR HAND COMPLETELY AND CLOSE IT TIGHTLY TO MAKE A FIST EACH TIME).

INCREASE THE SIZE OF THE MUSCLE FOR EXPERIMENTATION. FOR EXAMPLE:

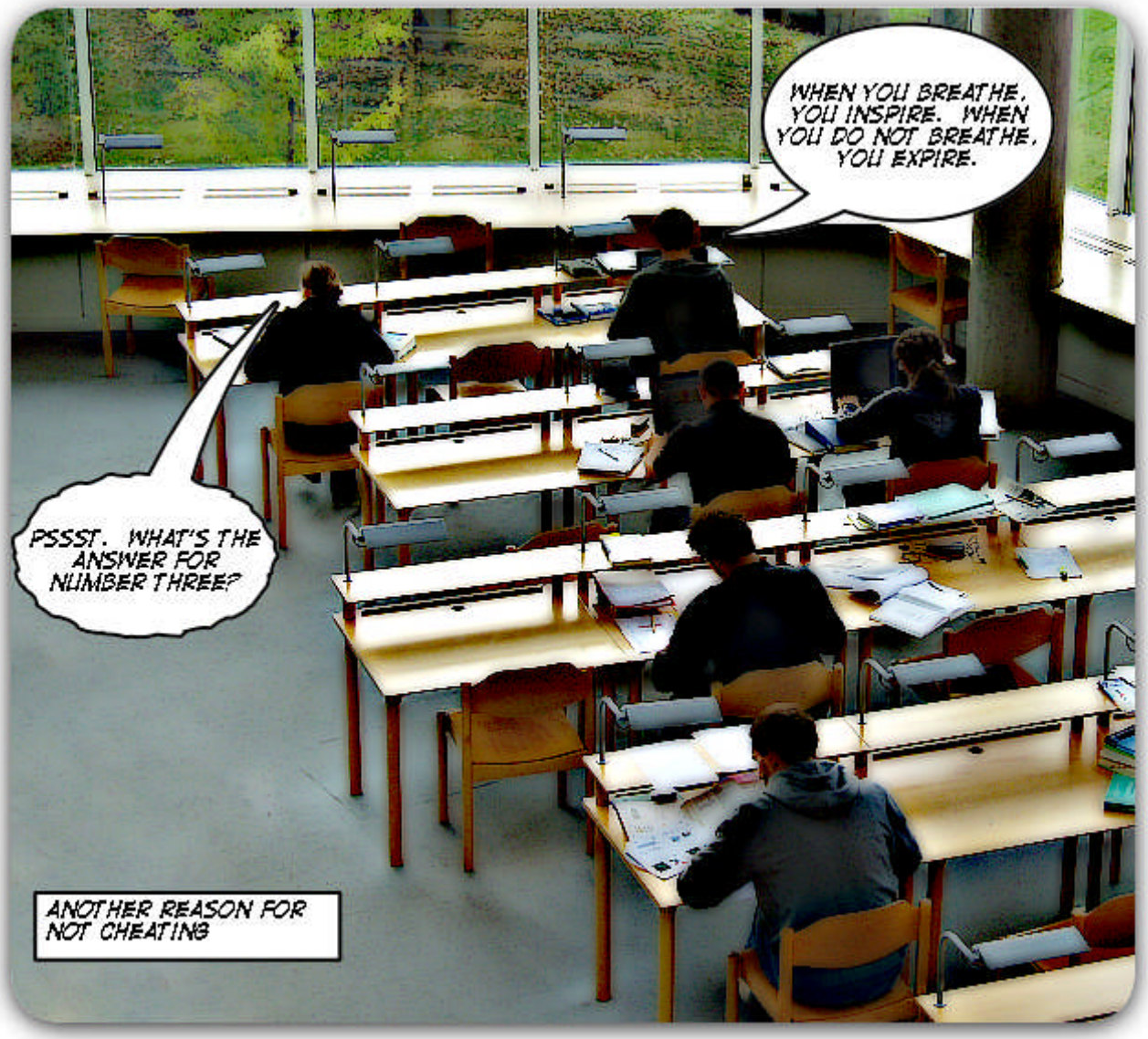
CIRCUMFERENCE OF BICEP (STRAIGHTEN AND BEND ELBOW)
CIRCUMFERENCE OF THE THIGH (STRAIGHTEN AND BEND THE KNEE)

EXPLANATION:

THE SIZE OF THE MUSCLE IS DIRECTLY PROPORTIONAL TO THE AMOUNT OF MOVEMENT THAT MUSCLE PERFORMS. SMALLER MUSCLES UNDERGO A SHORTER AMOUNT OF MOVEMENT THAN LARGER MUSCLES, THEREFORE THEY TAKE A SHORTER AMOUNT OF TIME TO GO THROUGH ALL 50 REPETITIONS.

INDEPENDENT VARIABLE: CIRCUMFERENCE OF THE MUSCLE
DEPENDENT VARIABLE: LENGTH OF TIME TO COMPLETE 50 REPETITIONS
HYPOTHESIS:
IF THE CIRCUMFERENCE OF THE MUSCLE IS (INCREASED/DECREASED), THEN THE LENGTH OF TIME TO COMPLETE 50 REPS WILL (INCREASE/DECREASE).

WEEK 26: HEART AND LUNGS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ONE MAJOR ORGAN IN THE HUMAN BODY IS THE HEART. THIS ORGAN IS MADE OF CARDIAC MUSCLE AND IS RESPONSIBLE FOR PUMPING BLOOD THROUGHOUT THE BODY THROUGH "PIPES" CALLED ARTERIES, CAPILLARIES AND VEINS. EACH OF THESE PIPES HAVE SEPARATE JOBS TO PERFORM.

BLOOD IS A SOLUTION OF PLASMA, RED BLOOD CELLS AND WHITE BLOOD CELLS.

THE BLOOD THAT IS PUMPED THROUGHOUT THE BODY INTERACTS WITH THE LUNGS TO PICK UP OXYGEN THAT IS USED BY ALL CELLS IN THE BODY FOR SURVIVAL.

DEFINITIONS:

CARDIAC	ANYTHING RELATED TO THE HEART
CARDIAC MUSCLE	A KIND OF MUSCLE THAT IS ONLY FOUND IN THE HEART
ARTERIES	"PIPES" THAT ARE USED TO MOVE BLOOD OUT OF YOUR HEART
INHALE	TO BREATHE IN
EXHALE	TO BREATHE OUT
CAPILLARIES	"CAP-ILL-AIR-EZ"; THE SMALLEST POSSIBLE "PIPE" THAT CAN BE USED TO CARRY BLOOD
VEINS	LARGE "PIPES" THAT CARRY BLOOD BACK INTO THE HEART
PLASMA	THE LIQUID PART OF YOUR BLOOD
RED BLOOD CELLS	PART OF THE BLOOD THAT CARRIES OXYGEN TO ALL OF THE MUSCLES AND ORGANS OF YOUR BODY
WHITE BLOOD CELLS	PARTS OF THE BLOOD THAT ATTACK ANYTHING THAT SHOULD NOT BE IN YOU

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT IS THE MAIN JOB OF YOUR HEART?

THE MAIN JOB OF THE HEART IS TO PUMP BLOOD THROUGHOUT THE BODY.

WHY DOES YOUR HEART BEAT FASTER WHILE YOU EXERCISE?

EXERCISE REQUIRES A LOT OF ENERGY AND RESOURCES FOR YOUR MUSCLES. THE HEART PUMPS THESE RESOURCES AT A FASTER RATE TO KEEP YOUR MUSCLES WORKING HARD.

HOW DOES OXYGEN FROM THE AIR GET INTO THE BLOOD?

THE OXYGEN FROM THE AIR IS STORED IN THE LUNGS. IT THEN GETS PICKED UP BY THE RED BLOOD CELLS IN YOUR BLOOD AS THEY PASS OVER THE LUNGS.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 26:

PAGE ONE:

RED BLOOD CELLS
CARDIAC MUSCLE
ARTERIES
PLASMA
CAPILLARIES
CARDIAC
VEINS
WHITE BLOOD CELLS

PAGE TWO:

8 - CARDIAC
3 - CARDIAC MUSCLE
4 - ARTERIES
6 - CAPILLARIES
5 - VEINS
1 - PLASMA
2 - RED BLOOD CELLS
7 - WHITE BLOOD CELLS

PAGE THREE:

"IMAGINE YOU ARE A RED BLOOD CELL THAT IS INSIDE A HUMAN BODY. DESCRIBE YOUR JOURNEY AS YOU ARE PUMPED THROUGHOUT THE BODY."

ANSWERS MAY VARY; HOWEVER, THE CHILD SHOULD IDENTIFY THEIR JOURNEY AS THEY PICK UP OXYGEN FROM THE LUNGS, DELIVER IT TO THE MUSCLES/CELLS AND OBTAIN MORE OXYGEN AS THE HEART PUMPS THEM THROUGHOUT THE BODY.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "MODELING THE HEART"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE HEART IS AN EFFICIENT PUMP THAT IS MADE OF FOUR SEPARATE AREAS CALLED "CHAMBERS".

EACH CHAMBER IS USED FOR A SEPARATE FUNCTION. IN SIMPLE TERMS, OXYGEN-RICH BLOOD IS PUMPED BY THE RIGHT CHAMBERS OF THE HEART THROUGHOUT THE BODY. THE LEFT CHAMBERS ARE RESPONSIBLE FOR MOVING NON-OXYGEN-RICH BLOOD TO THE LUNGS.

MODELING THE HEART

CHILDREN WILL MAKE A PUMPING MODEL OF A FOUR-CHAMBERED HEART.

Materials:

FOUR SMALL SODA BOTTLES WITH SCREW-ON LIDS
ELECTRICAL TAPE
TWO LARGE CLIPS (CALLED "BULLDOG CLIPS" YOU CAN FIND IN AN OFFICE SUPPLY STORE)
TWO PLASTIC FUNNELS
TWO PIECES OF (EACH 1 ½ FEET LONG) OF CLEAR PLASTIC TUBING
TWO PIECES OF 4" CLEAR PLASTIC TUBING
RED AND BLUE FOOD COLORING
MASKING OR DUCT TAPE
MODELING CLAY (BUBBLE GUM WILL WORK TEMPORARILY!!!)

Activity:

MAKE ONE SMALL HOLE IN EACH BOTTLE LID THAT IS LARGE ENOUGH TO FIT THE SMALL PIECE OF PLASTIC TUBING. CONNECT TWO LIDS TOGETHER, WITH THEIR TOPS FACING EACH OTHER, WITH A SMALL PIECE OF PLASTIC TUBING. LEAVE ABOUT ONE INCH OF TUBING BETWEEN THE LIDS. REPEAT THIS WITH THE OTHER TWO LIDS. SEAL THE HOLES AROUND THE TUBES WITH THE MODELING CLAY.

MAKE HOLES IN THE BOTTOM OF TWO BOTTLES THAT ARE LARGE ENOUGH TO FIT THE PLASTIC FUNNELS INTO.

MAKE TWO HOLES ON THE SIDES OF THE OTHER TWO BOTTLES THAT ARE ABOUT 2 INCHES FROM THE TOP.

THREAD THE TWO LONGER PIECES OF PLASTIC TUBING THROUGH THE HOLES IN THE SIDES OF THE BOTTLES. PUSH THE TUBES ALMOST TO THE BOTTOM OF THE BOTTLES AND SEAL THE HOLES WITH THE MODELING CLAY.

SCREW ALL FOUR LIDS ONTO THE BOTTLES. USE THE ELECTRICAL TAPE TO SECURE THE BOTTLES NEXT TO EACH OTHER IN PAIRS. MAKE CERTAIN THAT THE BOTTLES WITH THE HOLES ON THEIR BOTTOMS ARE NEXT TO EACH OTHER. YOU MAY

WANT TO SECURE THE ENDS OF THE LONGER PLASTIC TUBING BY TAPING THEM TO THE UPPER TWO BOTTLES.

MIX UP ENOUGH RED WATER AND BLUE WATER TO FILL UP ONE OF THE BOTTLES.

ATTACH THE CLIPS ONTO THE SECTIONS OF TUBING BETWEEN THE LIDS. THESE CLIPS WILL ACT AS HEART VALVES, ALLOWING THE FLUID IN THE HEART TO ONLY TRAVEL IN ONE DIRECTION.

USING THE FUNNELS, POUR THE RED WATER INTO THE TOP OF ONE OF THE BOTTLES AND POUR THE BLUE WATER INTO THE TOP OF THE OTHER BOTTLE.

OPEN THE CLIPS TO LET THE "BLOOD" FLOW THROUGH THE TUBES, THEN CLOSE THEM AGAIN.

SQUEEZE THE LOWER BOTTLES. NOTICE HOW QUICKLY THE "BLOOD" SQUIRTS OUT OF THE TUBES.

Explanation:

YOUR HEART IS A MUSCLE THAT PUMPS BLOOD THROUGH SMALL VESSELS AROUND YOUR BODY. BLOOD CONTAINING OXYGEN IS PUMPED THROUGH THE LEFT SIDE OF YOUR HEART AND TO ALL OF THE OTHER CELLS IN YOUR BODY. WHEN THE OXYGEN IS USED UP, THE BLOOD IS SENT BACK TO THE RIGHT SIDE OF YOUR HEART AND THEN YOUR LUNGS. HERE, THE BLOOD IS FILLED WITH OXYGEN ONCE AGAIN!

AS YOUR CHILD IS ENJOYING THEIR HEART MODEL, REMIND THEM THAT THEIR HEART IS PUMPING BLOOD AT A RATE OF ABOUT 60 TIMES A MINUTE!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "MODELING THE LUNGS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE LUNGS ARE STORAGE AREAS FOR THE AIR WE BREATHE IN AND BREATHE OUT.

THEY ARE FLEXIBLE "BALLOONS" THAT ARE MOVED BY A MUSCLE CALLED THE DIAPHRAGM WHICH INCREASES AND DECREASES THE AMOUNT OF SPACE AROUND THE LUNGS. WHEN THE DIAPHRAGM STRETCHES OUT, IT ALLOWS MORE SPACE IN THE LUNGS TO EXIST WHICH DRAWS AIR INSIDE YOUR BODY. WHEN THE DIAPHRAGM STRETCHES BACK, IT PLACES PRESSURE ON THE LUNGS TO FORCE AIR OUT THROUGH OUR MOUTH AND NOSE.

MODELING THE LUNGS

CHILDREN WILL MAKE A WORKING MODEL OF A PAIR OF LUNGS.

Materials:

MODELING CLAY
TWO BALLOONS
TWO RUBBER BANDS
ONE SMALL STRIP OF WOOD(1/4" X 4-6")
A STRAW
THE UPPER HALF OF A PLASTIC BOTTLE WITH THE LID
GLUE

Activity:

CUT THE WOOD TO FID THE WIDTH OF THE BOTTLE. GLUE IT INSIDE THE CUT END OF THE BOTTLE.

SECURE ONE BALLOON OVER THE OPEN END OF THE BOTTLE WITH A RUBBER BAND. YOU MAY NEED TO CUT THE BALLOON TO MAKE IT FIT.

MAKE A SMALL HOLE IN THE BOTTLE TOP. PUSH THE STRAW THROUGH.

ATTACH THE OTHER BALLOON TO THE END OF THE STRAW WITH A RUBBER BAND. SEAL THE HOLE WITH MODELING CLAY.

SCREW THE LID ONTO THE BOTTLE AFTER FEEDING THE BALLOON THROUGH THE BOTTLE.

STRETCH THE BALLOON ON THE BOTTOM OF THE BOTTLE DOWNWARD. YOU SHOULD NOTICE THAT THE BALLOON INSIDE THE BOTTLE INFLATES.

AS YOU RELEASE THE BALLOON ON THE BOTTOM OF THE BOTTLE, THE BALLOON INSIDE THE BOTTLE WILL DEFLATE.

Explanation:

AS YOU PULL DOWNWARD ON THE BALLOON, YOU ARE REDUCING THE AIR PRESSURE INSIDE THE BOTTLE. HOW? BECAUSE YOU ARE INCREASING THE SPACE THAT EXISTS INSIDE THE BOTTLE BY STRETCHING OUT THE BOTTOM BALLOON (THIS IS THE SAME THING YOUR DIAPHRAGM DOES!) SINCE THERE IS MORE SPACE INSIDE THE BOTTLE, AIR GETS PUSHED THROUGH THE STRAW TO FILL UP THE EMPTY SPACE. WITH AIR FLOWING IN THE STRAW, THE INSIDE BALLOON (YOUR LUNGS) START TO INFLATE. THIS IS WHAT HAPPENS WHEN YOU BREATHE IN.

THE WOOD THAT YOU GLUED INSIDE THE BOTTLE KEEPS THE WALLS FROM CAVING IN WHEN YOU LOWER THE AIR PRESSURE INSIDE THE BOTTLE.

WHEN YOU RELEASE THE BALLOON (DIAPHRAGM), THE AIR PRESSURE INSIDE THE BOTTLE INCREASES AND PUSHES ON THE "LUNGS" IN YOUR BOTTLE. THIS FORCES THE AIR OUT THROUGH THE STRAW. THIS IS WHAT HAPPENS WHEN YOU BREATHE OUT.

WEEK 27: STOMACH, INTESTINES AND KIDNEYS

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

THE FOOD YOU EAT GETS FORCED DOWN A SMALL TUBE CALLED THE ESOPHAGUS WHICH ENDS IN THE STOMACH. THE STOMACH IS A STORAGE AREA FOR FOOD AS IT PRESERVES THE FOOD IN A BATH OF ACID.

AS THE FOOD EXITS THE STOMACH, IT ENTERS THE SMALL INTESTINES WHICH ACT TO BREAK DOWN AND ABSORB SOLID FOOD. WATER IS ABSORBED OUT OF THIS MATTER AS IT PASSES THROUGH THE LARGE INTESTINE.

DURING DIGESTION, YOUR BLOOD GETS FILTERED THROUGH A PAIR OF SMALL ORGANS CALLED KIDNEYS. BAD CHEMICALS ARE REMOVED DURING THIS TIME.

DEFINITIONS:

STOMACH	AN ACID-FILLED SACK THAT STORES YOUR FOOD BEFORE DIGESTION
ESOPHAGUS	"EE-SOF-AH-GUS"; A LONG TUBE THAT MOVES FOOD FROM YOUR THROAT INTO YOUR STOMACH
ACID	A DANGEROUS CHEMICAL INSIDE YOUR STOMACH THAT KILLS ANY BACTERIA THAT MAY BE ON THE FOOD YOU EAT
ULCER	A PAINFUL HOLE IN A PERSON'S STOMACH
SMALL INTESTINE	A 20-FOOT LONG ORGAN THAT IS FILLED WITH VILLI AND IS THE PLACE WHERE YOU DIGEST YOUR FOOD
VILLI	"VEE-LIE"; SMALL BUMPS INSIDE YOUR SMALL INTESTINE THAT PULLS OUT ALL OF THE NUTRIENTS FROM THE FOOD YOU EAT
LARGE INTESTINE	A LONG ORGAN IN YOUR BODY, ATTACHED TO THE SMALL INTESTINE, THAT ABSORBS ALL OF THE WATER OUT OF YOUR FOOD
KIDNEYS	TWO SMALL ORGANS IN YOUR BODY THAT CLEAN OUT YOUR BLOOD
HUMAN ANATOMY	"A-NAT-O-MEE";THE STUDY OF THE HUMAN BODY

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT KIND OF MUSCLE MOVES FOOD DOWN YOUR ESOPHAGUS?

SMOOTH MUSCLE

HOW DOES YOUR STOMACH KEEP YOUR FOOD FROM SPOILING?

YOUR STOMACH IS FILLED WITH ACID THAT COVERS THE FOOD YOU HAVE EATEN. THIS ACID CAN DESTROY MOST BACTERIA THAT MAY BE GROWING ON YOUR FOOD.

WHAT HAPPENS TO THE "BAD STUFF" THAT WE EAT? HOW DOES IT GET OUT OF OUR BLOOD?

ALL BLOOD PASSES THROUGH A "STRAINER" CALLED THE KIDNEYS. THIS PAIR OF ORGANS FILTER OUR BLOOD FOR ANY "BAD THINGS" THAT MAY BE IN OUR FOOD.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 27:

PAGE ONE:

STOMACH
ESOPHAGUS
ACID
ULCER
SMALL INTESTINE
VILLI
LARGE INTESTINE
KIDNEYS
HUMAN ANATOMY

PAGE TWO:

9 - STOMACH
7 - ESOPHAGUS
1 - ACID
6 - ULCER
5 - SMALL INTESTINE
3 - VILLI
8 - LARGE INTESTINE
4 - KIDNEYS
2 - HUMAN ANATOMY

PAGE THREE:

"LAST WEEK YOU WERE A RED BLOOD CELL. TODAY, IMAGINE YOU ARE A JELLY DONUT!!! DESCRIBE YOUR JOURNEY THROUGH THE BODY FROM THE MOUTH TO THE INTESTINES."

ANSWERS WILL VARY; HOWEVER, THE CHILD SHOULD DESCRIBE THE APPROPRIATE ORGANS THEY ENCOUNTER: ESOPHAGUS, STOMACH, LARGE INTESTINE, SMALL INTESTINE. THEY MAY ALSO DESCRIBE HOW THEY ARE AFFECTED BY THE VILLI AND KIDNEYS DURING THEIR DIGESTION!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "A SNOTTY LITTLE ACTIVITY"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

MUCUS IS AN IMPORTANT SUBSTANCE IN OUR BODY.

MUCUS CAN BE FOUND AS A PROTECTIVE COVERING FOR THE INSIDE LINING OF OUR STOMACH. IT IS ALSO A LUBRICANT FOR OUR ORGANS...IT KEEPS THEM FROM RUBBING TOGETHER WHICH CAN BE VERY PAINFUL. IN ADDITION, MUCUS CAN BE FOUND IN OUR NOSE (BOOGERS) AND THE BACK OF OUR THROAT (PHLEGM).

A SNOTTY LITTLE ACTIVITY

CHILDREN WILL MAKE A MODEL OF MUCUS.

Materials:

LIGHT CORN SYRUP
UNFLAVORED GELATIN
MEASURING CUP
WATER
STOVE/MICROWAVE

Activity:

HEAT ½ CUP OF WATER UNTIL IT BOILS, REMOVE IT FROM THE HEAT AND ADD MIX IN THREE ENVELOPES OF UNFLAVORED GELATIN.

LET IT SIT FOR A FEW MINUTES AND STIR WITH A FORK. ADD ENOUGH LIGHT CORN SYRUP TO MAKE ONE CUP OF "MUCUS".

STIR WITH A FORK AND LIFT OUT THE LONG STRANDS OF GOO. AS THE MUCUS START TO COOL, YOU MAY NEED TO ADD A SMALL AMOUNT OF WATER.

HAVE THE CHILD COLLECT SOME DIRT FROM OUTSIDE (OR INSIDE!). YOU WILL ONLY NEED ABOUT A PINCH. PLACE A PINCH OF THIS DUST INTO YOUR MUCUS AND STIR WELL... ***CONGRATULATIONS!!! YOU JUST MADE A FAKE BOOGER!!!***

Explanation:

REAL MUCUS HAS SOME VERY IMPORTANT JOBS IN YOUR BODY. YOU CAN FIND THIS STUFF EVERYWHERE!!! IT STICKS TO THE INSIDE OF YOUR STOMACH AND KEEPS THE ACID IN YOUR STOMACH FROM BURNING A HOLE THROUGH YOU!!! MUCUS ALSO COVERS THE INSIDE OF YOUR NOSE TO TRAP JUNK THAT YOU INHALE. WHEN YOU HAVE TOO MUCH "STUFF" MIXED UP IN YOUR MUCUS, YOU EITHER BLOW YOUR NOSE TO GET THE MUCUS OUT OR IT CAN FALL OUT AS A BOOGER.

MUCUS IS MADE MOSTLY OUT OF SUGARS AND PROTEIN...THE SAME THING YOU USED TO MAKE YOUR OWN FAKE MUCUS! THOSE LONG STRINGS INSIDE YOUR FAKE SNOT ARE LONG STRANDS OF PROTEIN. THIS STUFF IS NOT ONLY STICKY, BUT IT IS ALSO STRETCHY AS WELL. PROTEIN IS WHY REAL SNOT CAN BE STRETCHED OUT SO FAR!!!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "HOW DID IT GET IN THERE?"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

MOST CHILDREN UNDERSTAND HOW A STRAINER WORKS IN THE KITCHEN. OUR KIDNEYS PERFORM A SIMILAR TASK BY FILTERING OUR BLOOD EVERY DAY.

IT MAY BE DIFFICULT FOR CHILDREN TO IMAGINE HOW SMALL THE HOLES WOULD HAVE TO BE ON A STRAINER TO BE ABLE TO ACTUALLY FILTER OUR BLOOD. IN FACT, IT WOULD NOT BE POSSIBLE TO ACTUALLY SEE THE HOLES WITHOUT THE USE OF A MICROSCOPE!

HOW DID IT GET IN THERE?

CHILDREN WILL MODEL HOW KIDNEYS FILTER THEIR BLOOD.

Materials:

CORNSTARCH
WATER
TWO DRINKING GLASSES OR COFFEE MUGS
SANDWICH BAGGIE
TWIST TIE (FROM A BREAD SACK)
IODINE

Activity:

STIR TOGETHER ONE TEASPOON OF CORNSTARCH INTO 1/8 CUP OF WATER.

PUT ¾ CUP OF HOT WATER INTO A CLEAR GLASS AND STIR WELL.

IN THE OTHER GLASS, MIX TOGETHER ONE TEASPOON OF IODINE WITH ¾ CUP OF WATER.

CUT OFF THE TOP OF THE BAGGIE AND POUR IN ¼ CUP OF THE CORNSTARCH MIXTURE AND SEAL THE BAGGIE TIGHTLY WITH THE TWIST TIE.

GENTLY PLACE THE BAGGIE INTO THE IODINE SOLUTION. DO NOT ALLOW THE TIED END OF THE BAGGIE TO GET WET!!!

ASK THE CHILD TO MAKE SOME PREDICTIONS AS TO WHAT IS GOING TO HAPPEN.

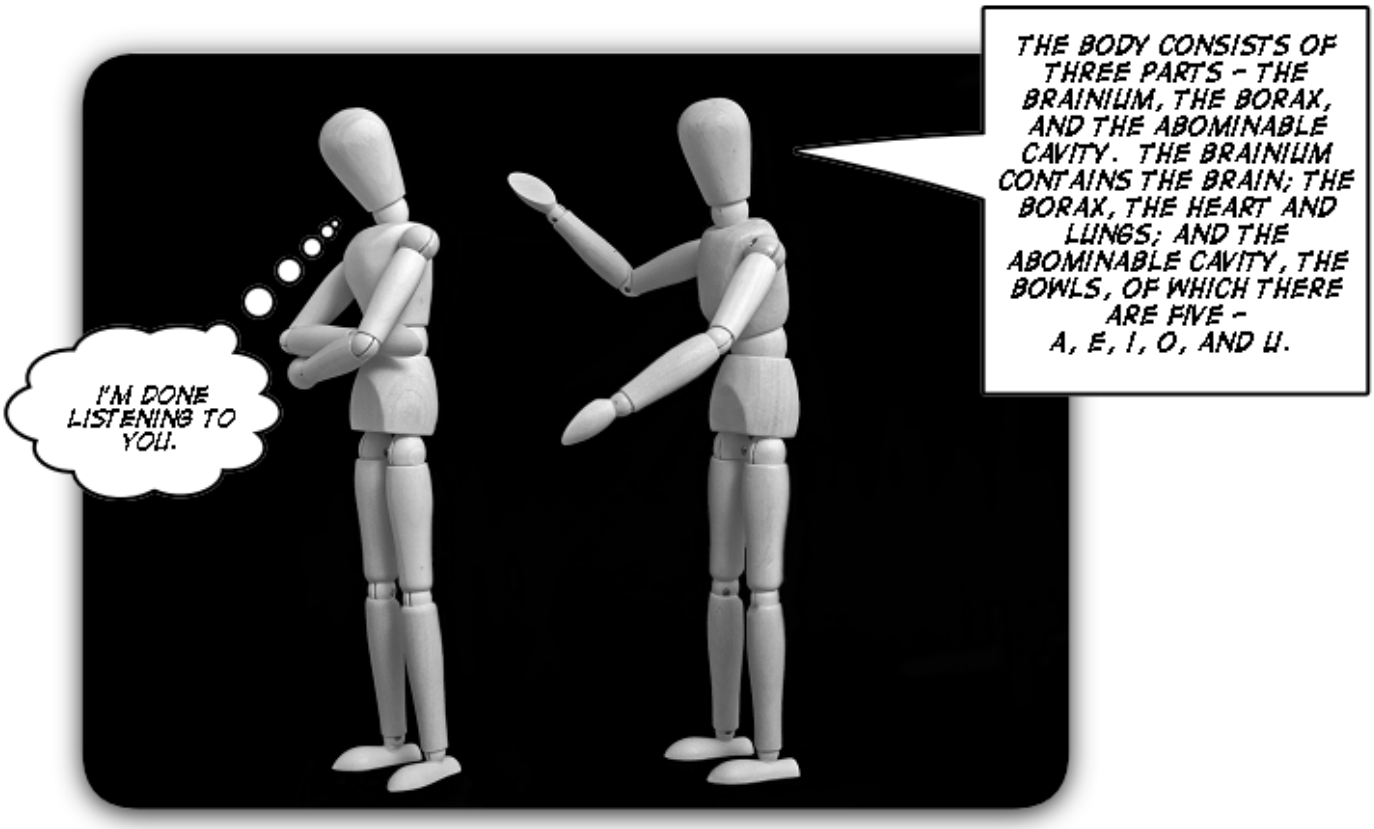
CHECK THE BAGGIE EVERY 3 MINUTES FOR A TOTAL OF 15 MINUTES. YOU WILL BE LOOKING FOR A COLOR CHANGE...***INSIDE THE BAGGIE!***

Explanation:

IN THIS EXPERIMENT, THE BAGGIE ACTS AS A FILTER BY ALLOWING IODINE MOLECULES TO FLOW INTO THE CORNSTARCH MIXTURE VERY SLOWLY. WHEN IODINE COMES INTO CONTACT WITH CORNSTARCH, THEY REACT TO MAKE A DARK BLUE CHEMICAL.

YOUR KIDNEYS FILTER BLOOD IN ORDER TO GET RID OF HARMFUL CHEMICALS THAT ARE FOUND IN YOUR BODY. NATURALLY, YOUR KIDNEYS MUST LEAVE THE "GOOD STUFF" IN YOUR BODY ALONE. THIS "GOOD STUFF" WOULD BE YOUR RED BLOOD CELLS, WHITE BLOOD CELLS AND A WHOLE BUNCH OF OTHER THINGS AS WELL! WHEN YOUR CHILD NOTICES THE DARK BLUE REACTION TAKING PLACE IN THEIR BAGGIE, YOU WILL WANT TO INFORM HIM/HER THAT IT IS ONLY THE IODINE THAT IS PASSING THROUGH THE BAGGIE. THE WATER IS NOT MOVING THROUGH AT ALL...YOU DON'T SEE THE BAG SWELLING UP WITH A WHOLE BUNCH OF WATER, DO YOU? NOPE! YOUR KIDNEYS ARE DOING THIS VERY SAME THING RIGHT NOW BY FILTERING SOME THINGS OUT OF YOUR BLOOD!

WEEK 28: PANCREAS, LIVER AND GALLBLADDER



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

THE PANCREAS IS RESPONSIBLE FOR GENERATING ENZYMES TO HELP THE SMALL INTESTINES DIGEST YOUR FOOD. IT ALSO SENDS OUT HORMONES TO THE LIVER TO HELP REGULATE SUGAR LEVELS IN THE BLOOD. IN ADDITION TO STORING SUGAR, THE LIVER ALSO HELPS TO FILTER THE BLOOD FROM HARMFUL CHEMICALS AND GENERATES BILE WHICH IS USED IN THE SMALL INTESTINE TO DIGEST FATS. WHEN NOT IN USE, BILE IS STORED IN THE GALLBLADDER.

DEFINITIONS:

PANCREAS	"PAN-KRE-AZ"; MAKES ENZYMES TO HELP BREAK DOWN THE FOOD THAT COMES INTO YOUR SMALL INTESTINE
DIGESTING	TO BREAK DOWN YOUR FOOD INTO SMALLER, SOFTER AND MORE USABLE PIECES
PROTEINS	THE BUILDING BLOCKS FOR MANY PARTS OF THE BODY
HORMONES	CHEMICAL MESSENGERS MADE BY YOUR BODY
GLUCAGON	A HORMONE MADE BY YOUR PANCREAS WHICH INFORMS THE LIVER TO SEND MORE SUGAR INTO YOUR BLOOD
INSULIN	A HORMONE MADE BY YOUR PANCREAS WHICH INFORMS THE LIVER TO STOP SENDING SUGAR INTO YOUR BLOOD
DIABETES	"DI-A-BEET-EZ"; A COMMON DISEASE THAT OCCURS WHEN YOUR PANCREAS STOPS MAKING INSULIN
LIVER	AN ORGAN OF THE BODY THAT FILTERS YOUR BLOOD, STORES SUGAR AND MAKES BILE
BILE	A LIQUID THAT IS MADE BY YOUR LIVER AND IS USED TO DIGEST ANY FAT THAT IS IN YOUR FOOD
GALLBLADDER	A STORAGE AREA FOR BILE

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT TWO JOBS DOES YOUR PANCREAS HAVE TO DO?

MAKE ENZYMES TO HELP DIGEST OUR FOOD AND MAKES CERTAIN OUR BLOOD HAS ENOUGH SUGAR IN IT.

WHAT MAY HAPPEN IF YOUR PANCREAS STOPS MAKING INSULIN?

WITHOUT INSULIN TO LOWER THE AMOUNT OF SUGAR IN YOUR BLOOD, YOU CAN GET VERY SICK. WHEN YOUR BODY CANNOT PRODUCE INSULIN, YOU ARE SAID TO HAVE DIABETES.

WHAT SIMILARITIES DO YOUR LIVER AND PANCREAS HAVE?

BOTH THE LIVER AND PANCREAS ARE ORGANS IN YOUR BODY, THEY BOTH PRODUCE CHEMICALS AND THEY BOTH GET RID OF WASTES IN YOUR BODY.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 28:

PAGE ONE:

1. BILE
2. DIGESTING
3. PROTEINS
4. HORMONES
5. GLUCAGON
6. INSULIN
7. DIABETES
8. PANCREAS
9. GALLBLADDER
10. LIVER

PAGE TWO:

9 - PANCREAS
4 - DIGESTING
1 - PROTEINS
7 - HORMONES
10 - GLUCAGON
8 - INSULIN
6 - DIABETES
3 - LIVER
2 - BILE
5 – GALLBLADDER

UNIT SEVEN REVIEW
ANSWER KEY

FILL IN THE BLANKS IN THE STORY BELOW.

YOU USE THE **SKELETAL** MUSCLES AND BONES IN YOUR ARMS TO REACH FOR THE LAST SLICE OF PIZZA AND PLACE IT INTO YOUR MOUTH. AFTER CHEWING UP THE PIZZA, YOUR **ESOPHAGUS** FORCES YOUR FOOD DOWN INTO YOUR **STOMACH.** THE **SMOOTH** MUSCLES IN YOUR STOMACH STORE YOUR FOOD UNTIL IT GETS MOVED INTO YOUR **SMALL INTESTINES.** AT THIS POINT, IT LOOKS LIKE A CREAMY GOO. YOUR **PANCREAS** SQUIRTS ENZYMES AND YOUR GALLBLADDER SQUIRTS BILE INTO THE GOO. THE GOO GETS DIGESTED INTO SMALLER, SOFTER PIECES AND GETS PLACED INTO YOUR BLOOD. YOUR BLOOD IS PASSED THROUGH THE **LIVER**. THIS ORGAN REMOVES THE POISONS AND WASTES FROM THE BLOOD. YOUR BLOOD LEAVES YOUR LIVER AND ENDS UP IN YOUR **LUNGS.** WHERE IT CAN PICK UP OXYGEN.

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE CAT'S MEOW"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

BILE IS A CHEMICAL PRODUCED BY YOUR LIVER THAT IS USED TO DIGEST FATS THAT YOU EAT OR DRINK.

BILE IS STORED IN YOUR GALLBLADDER AND IS RELEASED INTO YOUR INTESTINES DURING DIGESTION.

GIVEN THE UNLIKELIHOOD OF OBTAINING A SAMPLE OF BILE, IT IS NOT PRACTICAL FOR YOUNG STUDENTS TO UTILIZE THIS FLUID; HOWEVER, A SUITABLE REPLACEMENT CAN BE FOUND IN DISH SOAP. THIS CHEMICAL HAS A SIMILAR PROPERTY OF BILE IN THAT THEY BOTH BREAK APART FATS VERY EFFICIENTLY.

THE CAT'S MEOW

CHILDREN WILL MODEL HOW FAT CAN BE DIGESTED BY BILE.

Materials:

WHOLE MILK
WATER
SHALLOW DISH OR PIE PAN
FOOD COLORING
LIQUID DISH OR HAND SOAP
COTTON SWABS

Activity:

POUR ABOUT ½ INCH OF MILK INTO THE DISH/PAN.

ADD A COUPLE OF DROPS OF FOUR DIFFERENT FOOD COLORS AT THE EDGE OF THE CONTAINER. PLACE THE DROPS EQUAL DISTANCES FROM EACH OTHER. (IF YOU CAN IMAGINE THE DISH/PAN AS A CLOCK, PUT THE DROPS AT 3, 6, 9 AND 12 O'CLOCK.)

INFORM THE CHILD THAT THEY ARE GOING TO DIP THE TIP OF THE COTTON SWAB INTO THE SOAP AND INSERT IT IN THE CENTER OF THE CONTAINER OF MILK. THEY WILL NEED TO HOLD THE SWAB IN PLACE FOR A SHORT PERIOD OF TIME.

ASK THE CHILD TO MAKE A PREDICTION AS TO WHAT MAY HAPPEN.

DIP AND HOLD THE SOAP-COATED COTTON SWAB INTO THE MILK. YOU SHOULD NOTICE, AFTER A FEW MOMENTS, THAT THE FOOD COLORING STARTS TO SWIRL AROUND INSIDE THE MILK.

Explanation:

YOUR LIVER MAKES A LIQUID CALLED BILE, WHICH IS USED TO BREAK DOWN THE FAT IN YOUR FOOD.

IN THIS EXPERIMENT, YOU ARE USING ANOTHER CHEMICAL (SOAP) TO BREAK DOWN THE FAT THAT IS FOUND INSIDE THE MILK.

SMALL PARTICLES OF SOAP TRY TO SURROUND OTHER CHEMICALS, LIKE FATS. WHEN THE SOAP SURROUNDS A FAT, IT TENDS TO BREAK APART THE FAT INTO SMALLER PIECES. THIS IS WHY YOU USE SOAP TO WASH YOUR HANDS AND CLOTHES. IT SURROUNDS THE "DIRTY" STUFF AND BREAKS IT APART SO THAT IT CAN BE CLEAN AGAIN!

IN THIS EXPERIMENT, THE FAT IS SO SPREAD OUT INSIDE THE MILK THAT THE SOAP CANNOT EASILY SURROUND IT! SO, IT SWIRLS AROUND AND AROUND TRYING TO SURROUND ALL OF THE FAT! THIS SWIRLING MOTION CAUSES THE FOOD COLORING TO MOVE AS WELL!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "STRETCHING OUT YOUR DINNER"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE SMALL INTESTINE IS FILLED WITH SMALL, FINGER-LIKE PROJECTIONS THAT ARE CALLED VILLI.

THESE VILLI ALLOW THE SMALL INTESTINE TO INCREASE ITS SURFACE AREA AS THEY ARE FOLDED ALONG THE INNER LINING OF THIS ORGAN. WHEN FOOD IS PRESENT, THE FOLDS ARE ABLE TO OPEN UP, THEREBY PROVIDING A LARGER AREA FOR FOOD TO BE ABSORBED.

ESP ACTIVITY: STRETCHING OUT YOUR DINNER

CHILDREN WILL EXPLORE HOW THE SMALL INTESTINE ABSORBS OUR FOOD.

MATERIALS:
PAPER TOWELS
MEASURING CUPS/SPOONS
BOWL OF WATER

ACTIVITY:
FILL A BOWL WITH A MEASURED AMOUNT OF WATER. THE BOWL SHOULD BE ABOUT HALF-FULL.

TAKE ONE PAPER TOWEL AND LOWER ITS EDGE INTO THE WATER FOR TEN SECONDS. DO NOT FOLD THE PAPER TOWEL DURING THIS PROCESS. DEPENDING ON THE SIZE OF THE BOWL, YOU MAY NEED TO CUT THE PAPER TOWEL INTO QUARTERS!!!

REMOVE THE PAPER TOWEL FROM THE WATER AND MEASURE THE AMOUNT OF WATER THAT REMAINS IN THE BOWL. THEN, REPLACE THE AMOUNT OF WATER THAT WAS REMOVED BY THE PAPER TOWEL.

FOLD THE PAPER TOWEL INTO MULTIPLE LAYERS AND DIP ITS EDGE INTO THE WATER AGAIN FOR EXPERIMENTATION.

EXPLANATION:
DURING DIGESTION, THE FOOD YOU EAT IS CHEMICALLY BROKEN DOWN AND ABSORBED BY THE SMALL INTESTINE. THE WALLS OF THE SMALL INTESTINE ARE FOLDED AND BENT INTO SMALL FINGER-LIKE PROJECTIONS CALLED VILLI. THESE VILLI INCREASE THE AMOUNT OF SURFACE AREA ON THE SMALL INTESTINE THAT ABSORB THE NUTRIENTS WE NEED TO LIVE. IT IS A COMMON MISCONCEPTION THAT THE STOMACH DIGESTS OUR FOOD....IT IS THE SMALL INTESTINES THAT DO ALL THE WORK!

INDEPENDENT VARIABLE: NUMBER OF FOLDS
DEPENDENT VARIABLE: AMOUNT OF WATER REMAINING
HYPOTHESIS:
IF THE NUMBER OF FOLDS IS (INCREASED/DECREASED), THEN AMOUNT OF WATER REMAINING WILL (INCREASE/DECREASE).

UNIT SEVEN TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	MUSCLE	1. MAKES ENZYMES TO HELP BREAK DOWN THE FOOD THAT COMES INTO YOUR SMALL INTESTINE
____	LIVER	2. A LONG TUBE THAT MOVES FOOD FROM YOUR THROAT INTO YOUR STOMACH
____	RED BLOOD CELLS	3. THE LARGEST ORGAN OF THE HUMAN BODY THAT PROTECTS THE BODY
____	STOMACH	4. AN ORGAN THAT HELPS YOU TO MOVE EVERYTHING IN YOUR BODY
____	PANCREAS	5. A KIND OF MUSCLE THAT IS ONLY FOUND IN THE HEART
____	ESOPHAGUS	6. AN ACID-FILLED SACK THAT STORES YOUR FOOD BEFORE DIGESTION
____	DIGESTING	7. AN ORGAN THAT FILTERS YOUR BLOOD
____	PLASMA	8. A "CUSHION" OF CELLS BETWEEN YOUR BONES TO KEEP THEM FROM RUBBING TOGETHER
____	SKIN	9. TO BREAK DOWN YOUR FOOD INTO SMALLER PIECES
____	CARDIAC MUSCLE	10. THE LIQUID PART OF YOUR BLOOD
____	CARTILAGE	11. SMALL BUMPS INSIDE YOUR SMALL INTESTINE THAT PULLS OUT ALL OF THE NUTRIENTS FROM THE FOOD YOU EAT
____	VILLI	12. PART OF THE BLOOD THAT CARRIES OXYGEN TO ALL OF THE MUSCLES AND ORGANS OF YOUR BODY

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. YOUR SKIN DOES NOT GET THICKER BECAUSE...

A. YOU ARE ALWAYS MAKING NEW SKIN CELLS INSIDE YOUR BODY
B. YOU ARE ALWAYS LOOSING SKIN CELLS ON YOUR BODY
C. YOUR BODY NEVER MAKES NEW SKIN CELLS

2. WHAT KIND OF MUSCLE HELPS YOU TO MOVE AROUND THE MOST?

A. SKELETAL
B. CARDIAC
C. SMOOTH

3. YOUR HEART BEATS FASTER WHEN YOU EXERCISE BECAUSE...

A. YOUR HEART MOVES YOUR BONES WHEN YOU EXERCISE
B. YOUR MUSCLES NEED MORE OXYGEN FROM YOUR BLOOD
C. YOUR MUSCLES NEED LESS OXYGEN FROM YOUR BLOOD

4. OXYGEN GETS INTO YOUR RED BLOOD CELLS FROM YOUR...

A. LUNGS
B. ARTERIES
C. VEINS

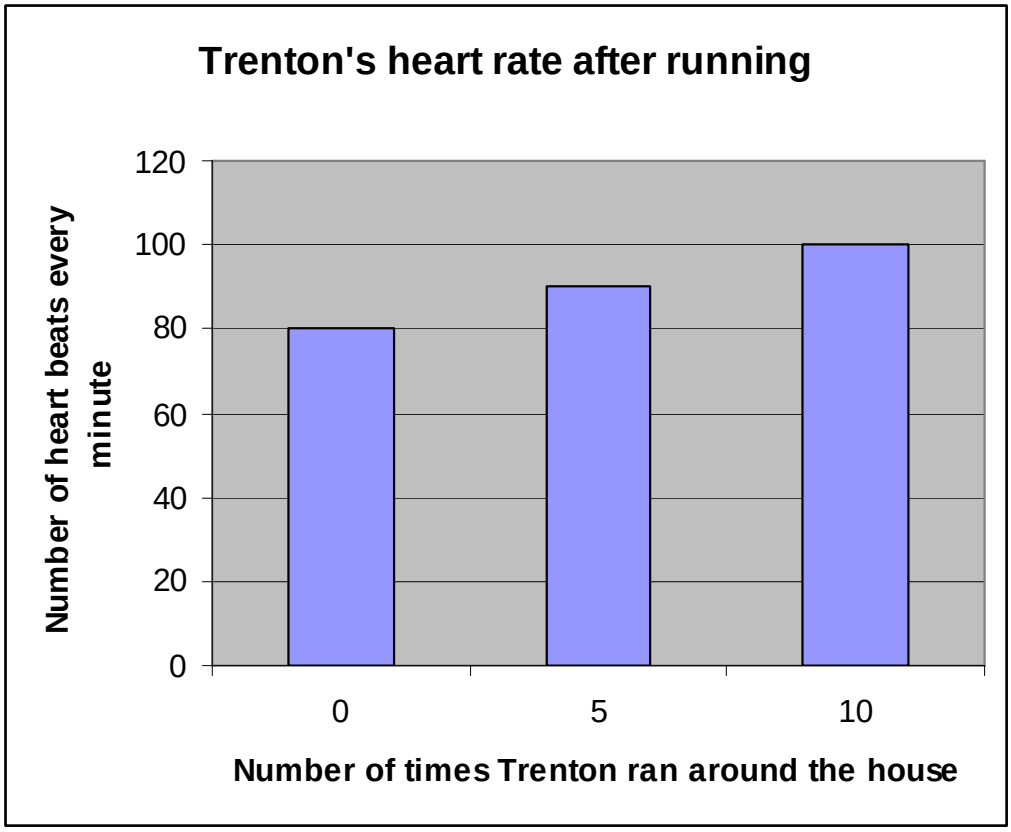
5. FOOD IS DIGESTED IN YOUR...

A. ESOPHAGUS
B. STOMACH
C. INTESTINES

6. THE AMOUNT OF SUGAR IN YOUR BLOOD IS WATCHED CAREFULLY BY YOUR...

A. PANCREAS
B. LIVER
C. KIDNEYS

TRENTON WANTED TO SEE HOW FAST HE COULD GET HIS HEART TO BEAT. HE RAN AN EXPERIMENT TO TEST HIS IDEA. HE RECORDED HIS HEART RATE AND THEN RAN AROUND THE HOUSE FIVE TIMES AND RECORDED IT AGAIN. HE THEN RAN AROUND THE HOUSE FIVE MORE TIMES AND RECORDED HIS HEART RATE ONE MORE TIME. HERE ARE HIS RESULTS:



DID TRENTON'S HEART RATE INCREASE OR DECREASE AFTER HE RAN AROUND THE HOUSE?

WHY DO YOU THINK THIS HAPPENED?

UNIT SEVEN TEST ANSWER KEY

MATCHING

4 MUSCLE
7 LIVER
12 RED BLOOD CELLS
6 STOMACH
1 PANCREAS
2 ESOPHAGUS
9 DIGESTING
10 PLASMA
3 SKIN
5 CARDIAC MUSCLE
8 CARTILAGE
11 VILLI

MULTIPLE CHOICE

1. B
2. A
3. B
4. A
5. C
6. A

GRAPH ANALYSIS

DID TRENTON'S HEART RATE INCREASE OR DECREASE AFTER HE RAN AROUND THE HOUSE?
INCREASE

WHY DO YOU THINK THIS HAPPENED?
TRENTON'S MUSCLES NEEDED MORE OXYGEN FOR HIM TO KEEP RUNNING. IN ORDER TO GET MORE OXYGEN, HE NEEDED HIS HEART TO PUMP MORE BLOOD SO THAT MORE OXYGEN CAN BE CARRIED TO THESE MUSCLES.

WEEK 29: CELLS 101

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

ALL ORGANISMS ARE COMPOSED OF CELLS, THE FUNDAMENTAL UNIT OF LIFE. MOST ORGANISMS ARE MADE OF SINGLE CELLS CALLED PROKARYOTIC CELLS OR BACTERIA. SOME ORGANISMS, INCLUDING HUMANS, ARE MULTICELLULAR AND ARE CALLED EUKARYOTIC CELLS.

ALL CELLS CONTAIN A MEMBRANE, CYTOPLASM AND DNA; HOWEVER, ONLY EUKARYOTIC CELLS CONTAIN ORGANELLES, WHICH ARE SPECIALIZED STRUCTURES WITHIN THE CELL THAT PERFORM A UNIQUE TASK.

CELLS CARRY ON THE MANY FUNCTIONS NEEDED TO SUSTAIN LIFE. THEY GROW AND DIVIDE, THEREBY PRODUCING MORE CELLS. THIS REQUIRES THAT THEY TAKE IN NUTRIENTS, WHICH THEY USE TO PROVIDE ENERGY FOR THE WORK THAT CELLS DO AND TO MAKE THE MATERIALS THAT A CELL OR AN ORGANISM NEEDS.

DEFINITIONS:

PROKARYOTIC	"PRO-CARRY-OT-IK"; CELLS OR ORGANISMS THAT BELONG TO THE KINGDOMS ARCHAEBACTERIA OR EUBACTERIA
EUKARYOTIC	"U-CARRY-OT-IK"; CELLS OR ORGANISMS THAT BELONG TO THE KINGDOMS ANIMAL, PLANT, PROTIST OR FUNGI
MEMBRANE	A COVERING THAT SURROUNDS THE CELL AND PROTECTS IT
DNA	A GROUP OF CHEMICALS THAT CONTAIN ALL OF THE INSTRUCTIONS FOR MAKING ALL THE STRUCTURES AND MATERIALS THE ORGANISM NEEDS TO SURVIVE
CYTOPLASM	"SIGHT-O-PLAZ-M"; A GOOEY FLUID THAT FILLS UP THE INSIDE OF A CELL
ORGANELLES	"OR-GA-NELLS"; SMALL STRUCTURES INSIDE OF CELLS THAT HAVE A SPECIFIC JOB

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

HOW ARE PROKARYOTIC CELLS AND EUKARYOTIC CELLS ALIKE?

THEY BOTH USE FOOD, GROW, REPRODUCE, REACT TO CHANGES IN THE ENVIRONMENT AND "BREATHE". THEY ALSO CONTAIN DNA, CYTOPLASM AND A CELL MEMBRANE.

WHAT KINGDOMS WOULD YOU FIND ORGANISMS THAT HAVE PROKARYOTIC CELLS?

KINGDOMS ARCHAEBACTERIA AND EUBACTERIA

WHAT KINGDOMS CONTAIN ORGANISMS MADE UP OF CELLS THAT DO NOT HAVE ORGANELLES?

KINGDOMS ARCHAEBACTERIA AND EUBACTERIA

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 29:

PAGE ONE:

ACROSS:
1. PROKARYOTIC
5. ORGANELLES

DOWN:
2. CYTOPLASM
3. DNA
4. MEMBRANE
6. EUKARYOTIC

PAGE TWO:

3 - PROKARYOTIC
2 - EUKARYOTIC
1 - MEMBRANE
4 - DNA
6 - CYTOPLASM
5 – ORGANELLES

PAGE THREE:

1. A
2. B
3. A
4. C
5. B
6. B

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE INCREDIBLE EDIBLE CELL"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

MOST PICTURES OF CELLS GIVE THE ILLUSION THAT THESE SMALL STRUCTURES DO NOT HAVE ANY THICKNESS TO THEM. THIS IS NOT TRUE.

PLANT, ANIMAL AND BACTERIAL CELLS ARE THREE DIMENSIONAL STRUCTURES. MODELING THIS FACT CAN HELP A CHILD UNDERSTAND THE ABSTRACT VISION OF THE WORKINGS OF A CELL.

THE INCREDIBLE EDIBLE CELL

CHILDREN WILL MODEL A 3D CELL.

Materials:

PACKAGE OF FLAVORED GELATIN (LIGHT-COLORED FLAVORS WORK BEST)
KNOX GELATIN
PLASTIC CUP/CONTAINER TO HOLD THE GELATIN
VARIOUS EDIBLE CANDIES TO REPRESENT ORGANELLES (I.E. FRUIT ROLL UPS, CAKE SPRINKLES, HOT TAMALES, CHOCOLATE COVERED RAISINS, GUMBALL, ETC.)
PLATE
KNIFE
SPOON

Activity:

FOLLOW THE DIRECTIONS ON THE BOX TO MAKE THE GELATIN. POUR THE LIQUID INTO THE PLASTIC CONTAINER AND ALLOW IT TO SET UP UNTIL IT IS FIRM.

REMOVE THE GELATIN FROM THE PLASTIC CONTAINER...YOU MAY NEED A KNIFE TO CUT AWAY THE SIDES OF IT FIRST!

CUT THE GELATIN IN HALF AND PLACE BOTH HALVES ONTO THE PLATE.

USE THE SPOON TO DIG OUT A SMALL AREA TO INSERT YOUR EDIBLE CANDIES (ORGANELLES).

PLACE THE OTHER HALF OF THE "CELL" ON TOP OF YOUR "ORGANELLES".

Explanation:

IT IS DIFFICULT FOR SOME CHILDREN TO IMAGINE WHAT A CELL LOOKS LIKE. SPEND SOME TIME SHOWING YOUR CHILD HOW ALL OF THE "ORGANELLES" INSIDE THEIR CELL ARE SPREAD OUT. THIS IS VERY SIMILAR TO A REAL CELL; HOWEVER, THE GEL THAT HOLDS ALL OF THE ORGANELLES IN A REAL CELL IS NOT AS FIRM (IT ACTUALLY IS CLOSER TO THE CONSISTENCY OF SYRUP). IN THE NEXT THREE WEEKS, YOUR CHILD WILL BE EXPLORING EACH OF THESE ORGANELLES IN MORE DETAIL. REFER BACK TO THIS ACTIVITY DURING THIS UNIT.

ENJOY YOUR TASTY TREAT! DIG IN!!!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "TEA BAG DIFFUSION"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE WARMER AN OBJECT IS, THE FASTER ITS MOLECULES WILL MOVE. THIS EXPLAINS WHY A WARMED LIQUID IS CHANGED INTO A GAS WHICH CAN ESCAPE ITS CONTAINER.

MOLECULES CAN MOVE THROUGH GAS, SOLIDS AND LIQUIDS.

MOLECULES THAT ARE MOVING FASTER HAVE A BETTER CHANCE OF ENTERING A CELL MEMBRANE THAN THOSE WHICH ARE MOVING SLOWER.

ESP ACTIVITY: TEA BAG DIFFUSION

TEA BAGS ARE USED TO DEMONSTRATE THE IMPORTANCE OF HEAT AROUND A CELL MEMBRANE.

Materials:

TEA BAGS
PAPER TOWELS
WATER
CONTAINER TO WATER
MEASURING TAPE

Activity:

HEAT 2 CUPS OF WATER TO A BOIL.

FOLD A PAPER TOWEL INTO FOURTHS.

PLACE THE TEA BAG INTO THE HOT WATER FOR 15 SECONDS. REMOVE TEA BAG FROM THE WATER AND PLACE IT ONTO THE CENTER OF A PAPER TOWEL FOR 15 SECONDS.

REMOVE TEA BAG AND RECORD THE DIAMETER OF THE WATER STAIN REMAINING ON THE PAPER TOWEL.

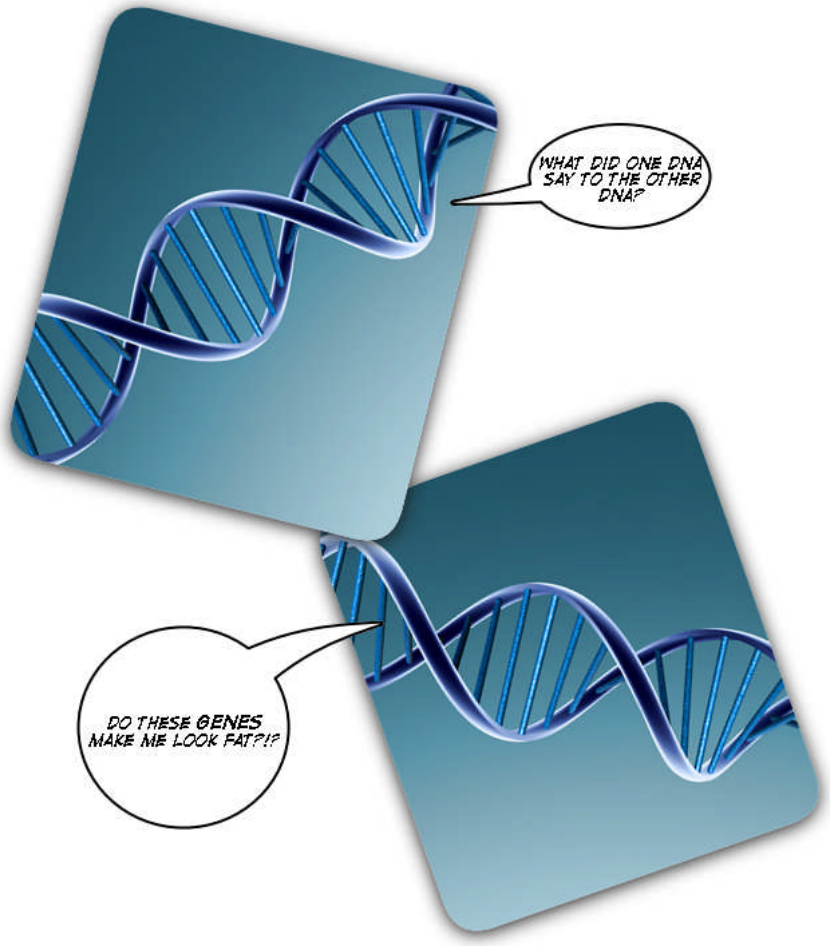
USE ROOM TEMPERATURE WATER AND ICE COLD WATER FOR EXPERIMENTATION.

Explanation:

TEMPERATURE AFFECTS THE RATE OF DIFFUSION THROUGH A CELL MEMBRANE THE SAME WAY IT DOES THROUGH A TEA BAG. THE SIZE OF THE WATER STAIN SHOULD BE NOTICEABLY GREATER WITH THE WARMER WATER. THE ADDITION OF HEAT TO THE TEA BAG CAUSES ITS MOLECULES TO MOVE MUCH FASTER THAN AT ROOM TEMPERATURE. THIS ENERGY IS MORE READILY RELEASED IN A SHORTER PERIOD OF TIME THAN A TEA BAG FILLED WITH ROOM TEMPERATURE OR COLD WATER.

Independent variable: TEMPERATURE OF THE WATER
dependent variable: SIZE OF THE WATER STAIN
hypothesis:
IF THE TEMPERATURE OF THE WATER IS (INCREASED/DECREASED), THEN SIZE OF THE WATER STAIN WILL (INCREASE/DECREASE).

WEEK 30: ORGANELLES PART I



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

CELLS HAVE ORGANELLES THAT PERFORM SPECIFIC TASKS WITHIN THE CELL. EVERY CELL IS SURROUNDED BY A MEMBRANE THAT SEPARATES IT FROM THE OUTSIDE WORLD. INSIDE THE CELL IS A CONCENTRATED MIXTURE OF THOUSANDS OF DIFFERENT MOLECULES WHICH FORM A VARIETY OF SPECIALIZED STRUCTURES THAT CARRY OUT SUCH CELL FUNCTIONS AS ENERGY PRODUCTION (MITOCHONDRIA), TRANSPORT OF PROTEIN ("ER"), SYNTHESIS OF NEW CHEMICAL MESSENGERS (RIBOSOMES), AND THE STORAGE OF DNA.

DEFINITIONS:

NUCLEUS	"NEW-KLEE-US"; THE LARGEST ORGANELLE IN A PLANT OR ANIMAL CELL; CONTAINS THE DNA
RIBOSOMES	"RI-BOW-SO-M"; MAKE PROTEIN FOR THE CELL
ER	QUICKLY SENDS PROTEIN MESSAGES TO ORGANELLES
RNA	"MESSAGES" SENT BY DNA THAT ARE READ BY RIBOSOMES
MITOCHONDRIA	"MIGHT-O-CON-DREE-ON"; AN ORGANELLE THAT TAKES NUTRIENTS FROM PLANTS AND ANIMALS AND CHANGES IT INTO ENERGY FOR THE CELL

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT IS THE MOST IMPORTANT JOB OF THE NUCLEUS?

THE MOST IMPORTANT JOB OF THE NUCLEUS IS TO HOLD ONTO THE DNA.

DOES DNA MAKE PROTEIN FOR THE CELL?

NOT REALLY. IT SENDS OUT "ORDERS" TO THE RIBOSOMES SO THEY CAN MAKE PROTEINS.

WHAT IS THE GOOEY FLUID THAT CONTAINS ALL OF A CELL'S ORGANELLES?

THE GOOEY FLUID IS CYTOPLASM.

WHY IS IT SO IMPORTANT THAT YOU EAT A LOT OF PROTEIN IN YOUR FOOD?

PROTEIN IS DIGESTED BY YOUR BODY AND RECYCLED TO MAKE NEW PROTEIN FOR YOUR CELLS.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 30:

PAGE ONE:

NUCLEUS
ER
MITOCHONDRIA
RIBOSOMES

PAGE TWO:

4 – NUCLEUS
1 – RIBOSOMES
2 – ER
3 – MITOCHONDRIA

PAGE THREE:

"COLOR THE ANIMAL CELL..."

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE HIDDEN CODE OF CELLS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

DNA INSIDE THE NUCLEUS OF A CELL SENDS OUT "ORDERS" TO RIBOSOMES WITHIN THE CYTOPLASM TO MAKE SPECIFIC PROTEINS.

THESE "ORDERS" ARE ACTUALLY SMALL COPIES OF THE DNA ITSELF WHICH ARE MADE IN THE NUCLEUS AND THEN SENT THROUGH THE CYTOPLASM. THESE COPIES ACT AS BLUEPRINTS FOR MAKING SPECIFIC PROTEINS. THE RIBOSOMES "READ" THESE COPIES AND DECODE THE BLUEPRINTS TO MAKE SPECIFIC PROTEINS THAT WILL BE NEEDED BY THE CELL.

THE HIDDEN CODE OF CELLS

CHILDREN WILL EXPLORE HOW DNA SENDS ORDERS THROUGH A SPECIAL CODE.

MATERIALS:

POPSICLE STICKS/GLUE *OR* GUMDROPS/TOOTHPICKS *OR* CLAY/TOOTHPICKS *OR* SOME KIND OF CONSTRUCTION TOYS
HIDDEN CODE CHART AND SECRET CODE (SEE ATTACHED)

ACTIVITY:

INFORM THE CHILD THAT THE DNA INSIDE THE NUCLEUS OF A CELL SENDS OUT MESSAGES THAT ARE "DE-CODED" BY RIBOSOMES. THE CODE THAT DNA USES IS VERY GOOD; HOWEVER, SOMETIMES MISTAKES ARE MADE THAT CAN BE GOOD, BAD OR NOT IMPORTANT TO THE CELL.

IN THIS ACTIVITY, THE CHILD WILL BE PLAYING THE PART OF A RIBOSOME, DE-CODING A MESSAGE FROM THE DNA. IT IS UP TO THE CHILD TO FOLLOW THE INSTRUCTIONS THE DNA IS ASKING THEM TO DO! YOU MAY GIVE THEM A HINT...

THE CHILD IS GOING TO BE BUILDING SOMETHING!

PROVIDE THE CHILD WITH THE "HIDDEN CODE CHART". THE "SECRET CODE" CAN BE FOUND ON THE FOLLOWING PAGE.

ONCE THE CHILD DE-CODES THE MESSAGE, PROVIDE THEM WITH THE NECESSARY MATERIALS TO BUILD THEIR OBJECT.

FOR THE PARENTS: THE OBJECT THAT IS TO BE BUILT IS A CUBE WITH A FOUR-SIDED "ROOF".

EXPLANATION:
WHEN THE CHILD HAS FINISHED BUILDING THEIR HOME, INFORM THEM:

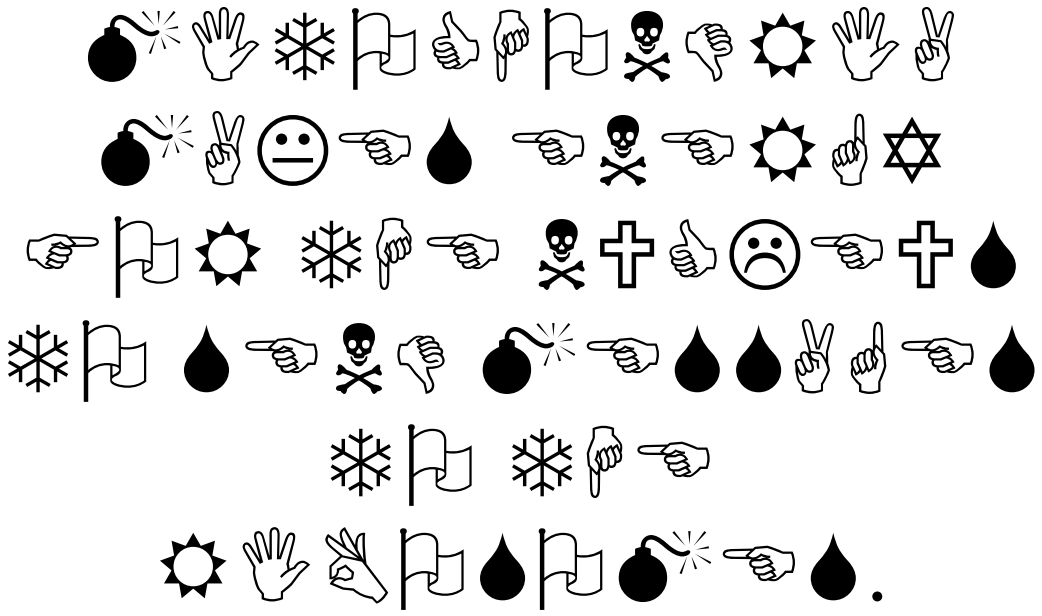
THE CODED MESSAGE WAS THE DNA,
THE RIBOSOME WAS THE CHILD,
AND THE PROTEIN WAS THE HOME.

THIS ACTION TAKES PLACE EVERY TIME THAT DNA NEEDS TO SEND A MESSAGE TO THE ORGANELLES IN THE CELL. A CODED MESSAGE IS SENT OUT THAT IS READ BY THE RIBOSOMES. THE RIBOSOMES THEN SEND THE MESSAGE TO THE ORGANELLES IN THE FORM OF PROTEIN!

HIDDEN CODE CHART

A		N	
B		O	
C		P	
D		Q	
E		R	
F		S	
G		T	
H		U	
I		V	
J		W	
K		X	
L		Y	
M		Z	

SECRET CODE:



DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "CRACKING OPEN THE NUCLEUS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

REMOVING DNA FROM CELLS IS THE PRIMARY JOB FOR SCIENTISTS WHO STUDY MOLECULAR GENETICS.

EXPENSIVE EQUIPMENT IS NOT NEEDED TO OBTAIN A SAMPLE OF DNA FROM AN ORGANISM.

CRACKING OPEN THE NUCLEUS

CHILDREN WILL TAKE THE DNA OUT OF A BANANA.

MATERIALS:

BANANA
SALT
WARM WATER
BLENDER
LIQUID SOAP
TOOTHPICKS
STRAINER
GLASS JAR
RUBBING ALCOHOL

ACTIVITY:

CUT THE BANANA INTO SMALL PIECES.

PLACE THE PIECES INTO A BLENDER. ADD A TEASPOON OF SALT AND COVER THE MIXTURE WITH WARM WATER.

MIX IN THE BLENDER FOR 10 SECONDS.

POUR THE BLENDED MIXTURE THROUGH THE STRAINER AND COLLECT THE LIQUID IN THE GLASS JAR. YOU SHOULD RECEIVE A GENEROUS AMOUNT OF LIQUID!

ADD TWO TEASPOONS OF LIQUID SOAP TO THE LIQUID AND SLOWLY MIX IT IN! DO NOT CREATE BUBBLES WHILE YOU STIR!

CAREFULLY POUR AN EQUAL AMOUNT OF RUBBING ALCOHOL DOWN THE SIDE OF THE GLASS. ALLOW THE MIXTURE TO STAND FOR AT LEAST FIVE MINUTES. DO NOT MIX!!!

USE THE TOOTHPICK TO SCOOP UP THE WHITE/MILKY-LOOKING SUBSTANCE THAT IS FLOATING IN THE RUBBING ALCOHOL. THIS SUBSTANCE IS YOUR DNA!

Explanation:

THE MATERIAL YOUR CHILD REMOVED FROM THE BANANA WAS THE BLUEPRINTS FOR A BANANA TREE TO STAY ALIVE. THE DNA YOU TOOK FROM THIS FRUIT, AT ONE TIME, WAS CONTAINED INSIDE OF THE PLANT CELL'S NUCLEUS. THIS IS THE MATERIAL THAT SENT MESSAGES THROUGHOUT THE CYTOPLASM FOR THE RIBOSOMES TO READ AND MAKE PROTEIN.

WHY LIQUID SOAP? THE CELL MEMBRANE AND NUCLEAR MEMBRANE OF ANY PLANT IS MADE UP OF FATS CALLED LIPIDS. WE USE SOAP EVERYDAY (HOPEFULLY) TO BREAK APART THINGS LIKE DIRT AND GRIME. BUT SOAP ALSO BREAKS APART OILS AND FATS TOO. SO, ALL OF THOSE LIPIDS THAT ARE USED TO PROTECT THE CELL IN ITS MEMBRANE CANNOT STAY TOGETHER WHEN YOU PUT A LOT OF SOAP ON THEM! THE SOAP ACTUALLY BREAKS APART THE MEMBRANES OF THE CELL, WITHOUT HURTING THE ORGANELLES INSIDE! COOL, HUH?!?!

WEEK 31: ORGANELLES PART II

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

CELLS HAVE STORAGE AREAS, CALLED VACUOLES, WHERE EXTRA WATER AND NUTRIENTS CAN BE FOUND. IN ADDITION, OTHER ORGANELLES, KNOWN AS GOLGI BODIES, PACKAGE CHEMICAL MESSENGERS TO BE SENT OUTSIDE THE CELL MEMBRANE TO OTHER CELLS. SPECIAL ORGANELLES CALLED LYSOSOMES REMOVE WASTE FROM INSIDE THE CELL.

PLANT CELLS CONTAIN CHLOROPLASTS, THE SITE OF PHOTOSYNTHESIS. PLANTS USE SOLAR ENERGY TO COMBINE CARBON DIOXIDE AND WATER INTO FOOD THEY CAN USE. THIS PROCESS OF PHOTOSYNTHESIS PROVIDES A VITAL CONNECTION BETWEEN THE SUN AND THE ENERGY NEEDS OF LIVING SYSTEMS.

DEFINITIONS:

LYSOSOME	"LIE-SO-SO-M"; AND ORGANELLE THAT GETS RID OF THE WASTE INSIDE A CELL
GOLGI BODY	AN ORGANELLE THAT WRAPS UP PROTEINS INTO A BUNDLE INSIDE A CELL
VACUOLE	AN ORGANELLE THAT STORES EXTRA WATER AND NUTRIENTS
CELL WALL	A STIFF STRUCTURE THAT SURROUNDS A PLANT CELL AND PROTECTS IT FROM HARM
CHLOROPLAST	SPECIAL ORGANELLES THAT CONTAIN CHLOROPHYLL
CHLORPHYLL	"KLOR-O-FILL"; AN ORGANELLE FOUND INSIDE CHLOROPLASTS THAT USES SUNLIGHT TO MAKE FOOD FOR THE CELL

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT ARE TWO ORGANELLES YOU WOULD NEVER FIND IN AN ANIMAL CELL?

CELL WALL AND CHOLORPLASTS

WHAT ORGANELLE IS VERY IMPORTANT IN SENDING MESSAGES TO OTHER CELLS? WHAT DOES THIS ORGANELLE DO?

GOLGI BODY; THIS ORGANELLE WRAPS UP MESSAGES TO BE SENT TO OTHER CELLS AND SHIPS THEM OUT OF THE MEMBRANE.

WHAT IS THE DIFFERENCE BETWEEN THE GOLGI BODY AND THE "ER"?

ALTHOUGH BOTH OF THESE ORGANELLES MOVE PROTEIN MESSAGES FOR THE CELL, THE "ER" SENDS MESSAGES WITHIN THE CELL ONLY. THE GOLGI BODY SENDS PROTEN MESSAGES OUTSIDE OF THE CELL.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 31:

PAGE ONE:

GOLGI BODY - AN ORGANELLE THAT WRAPS UP PROTEINS INTO A BUNDLE INSIDE A CELL

CHLOROPHYLL - AN ORGANELLE FOUND INSIDE CHLOROPLASTS THAT USES SUNLIGHT TO MAKE FOOD FOR THE CELL

VACUOLE - AN ORGANELLE THAT STORES EXTRA WATER AND NUTRIENTS

CHLOROPLAST - SPECIAL ORGANELLES THAT CONTAIN CHLOROPHYLL

CELL WALL - A STIFF STRUCTURE THAT SURROUNDS A PLANT CELL AND PROTECTS IT FROM HARM

LYSOSOME - AN ORGANELLE THAT GETS RID OF THE WASTE INSIDE A CELL

PAGE TWO:

2 - LYSOSOME
4 - GOLGI BODY
1 - VACUOLE
6 - CELL WALL
3 - CHLOROPLAST
5 – CHLOROPHYLL

PAGE THREE:

"COLOR THE PLANT CELL..."

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "WHO TURNED OUT THE LIGHTS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE CHLOROPLASTS WITHIN PLANT CELLS CONTAIN A GREEN CHEMICAL CALLED CHLOROPHYLL WHICH IS USED TO MAKE FOOD FOR ITSELF THROUGH A PROCESS CALLED PHOTOSYNTHESIS.

WHEN THE CHLOROPLASTS ARE BLOCKED FROM A LIGHT SOURCE, THEIR CELLS CANNOT PRODUCE FOOD FOR THEMSELVES AND THEY WILL PERISH.

WHO TURNED OUT THE LIGHTS?

CHILDREN WILL CHANGE THE PATTERNS OF A PLANT'S LIGHT SOURCE.

MATERIALS:

SMALL SHRUB, TREE OR HOUSEPLANT
ALUMINUM FOIL OR CARDBOARD
PAPERCLIPS
SCISSORS

ACTIVITY:

FIND A PLANT YOU CAN USE FOR AN EXPERIMENT.

CUT OUT RANDOM SHAPES OUT OF THE CARDBOARD OR ALUMINUM FOIL THAT ARE BIG ENOUGH TO COVER NEARLY HALF OF THE PLANT LEAF.

PAPERCLIP EACH SHAPE ONTO A DIFFERENT LEAF.

HAVE THE CHILD PREDICT WHAT WILL HAPPEN TO THE LEAF WITH THESE SHAPES ON THEM.

AFTER THREE-FOUR DAYS, REMOVE THE SHAPES FROM THE LEAVES AND COMPARE THE COVERED AREAS WITH THE NON-COVERED AREAS. WHERE THE CHILD'S PREDICTIONS CORRECT?

EXPLANATION:

GREEN PLANTS HAVE THE ABILITY TO MAKE THEIR OWN FOOD IN A PROCESS CALLED PHOTOSYNTHESIS. WHEN LIGHT STRIKES THE PLANT LEAVES, A GREEN PIGMENT CALLED CHLOROPHYLL (WHICH IS FOUND INSIDE OF THE CHLOROPLASTS) STARTS MAKING FOOD FOR THE PLANT.

BLOCKING THE SUNLIGHT FROM A PLANT'S LEAVES WILL KEEP THE CELLS IN THESE AREAS FROM MAKING FOOD. WITHOUT FOOD, THE CELLS WILL DIE. THIS IS WHAT YOU PROBABLY WITNESSED UNDERNEATH THE SHAPES ATTACHED TO THE LEAVES. THE COLOR CHANGE IS DUE TO THE HUGE NUMBERS OF DEAD CELLS THAT COULD NOT GET THE RESOURCES THEY NEED TO SURVIVE!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "RAISING AND LOWERING YOUR VITAMIN C"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE PROTECTIVE PEEL SURROUNDING AN ORANGE IS SIMILAR TO THE PROTECTIVE WALL THAT IS FOUND SURROUNDING A PLANT CELL.

BOTH AN ORANGE PEEL AND A CELL WALL ALLOWS WATER AND NUTRIENTS TO ENTER AND LEAVE THE STRUCTURE.

ESP ACTIVITY: RAISING AND LOWERING YOUR VITAMIN C

STUDENTS WILL IDENTIFY HOW AN ORANGE CAN FLOAT AND SINK IN WATER.

MATERIALS:

SEVERAL ORANGES (OTHER CITRUS FRUIT WILL DO AS WELL)
CONTAINER OF WATER (LARGE ENOUGH TO HOLD THE ORANGE)
KNIFE (OPTIONAL)

ACTIVITY:

PLACE AN ORANGE INTO THE CONTAINER OF WATER. RECORD WHETHER IT SINKS OR FLOATS.

REMOVE A PORTION OF THE SKIN FROM THE ORANGE.

PLACE THE ORANGE INTO THE WATER AND RECORD WHETHER IT SINKS OR FLOATS.

FOR EXPERIMENTATION, REMOVE MORE OF THE PEEL AND TEST THE ORANGE'S ABILITY TO SINK OR FLOAT.

EXPLANATION:

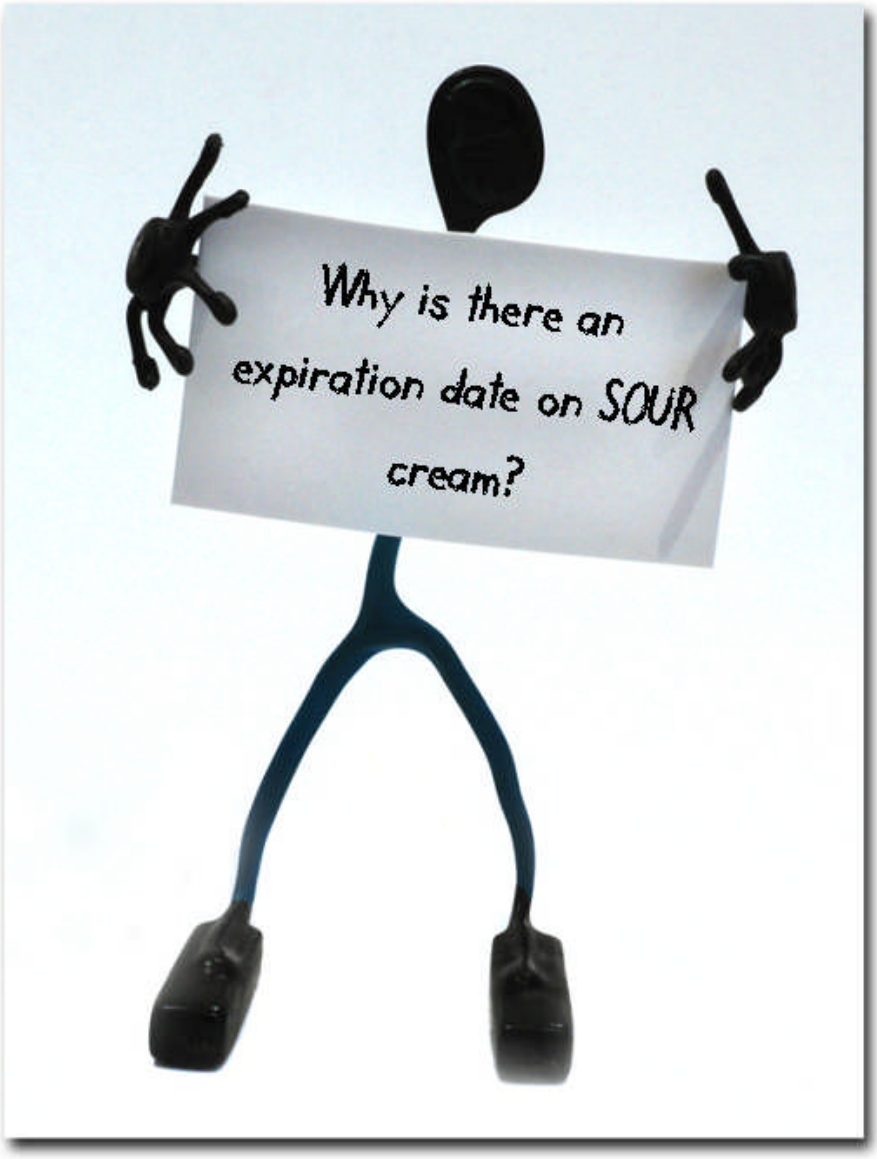
AN ORANGE IS MORE BUOYANT AS ITS SKIN PROVIDES A WATER-TIGHT BOUNDARY BETWEEN THE ORANGE AND THE WATER. THE INSIDE OF THE ORANGE (WHICH IS MOSTLY A MIXTURE OF SUGARY, PULP-FILLED WATER) IS MORE DENSE THAN THE WATER IN THE CONTAINER. WITHOUT IT'S SKIN TO ACT AS A LIFE-PRESERVER, IT SINKS TO THE BOTTOM.

THIS OUTER PROTECTION IS SIMILAR TO HOW A CELL WALL PROTECTS THE INSIDE OF A PLANT CELL. EVERY ORANGE HAS A STEM ON ITS TOP. THIS IS WHERE THE NUTRIENTS FROM AN ORANGE TREE CAN BE SENT INTO THE ORANGE ITSELF! A CELL WALL HAS MANY SIMILAR OPENINGS, ALLOWING MATERIALS INTO AND OUT OF, THE CELL!

INDEPENDENT VARIABLE: AMOUNT OF SKIN ON THE ORANGE
DEPENDENT VARIABLE: ABILITY OF THE ORANGE TO FLOAT
HYPOTHESIS:

IF THE AMOUNT OF SKIN ON THE ORANGE IS (INCREASED/DECREASED), THEN THE ABILITY OF THE ORANGE TO FLOAT WILL (INCREASE/DECREASE).

WEEK 32: BACTERIAL CELLS



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

PROKARYOTIC/BACTERIAL CELLS REQUIRE NUTRIENTS AND WATER IN ORDER TO SURVIVE. HOWEVER, THESE ORGANISMS DO NOT CONTAIN ORGANELLES TO HELP WITH THIS TASK. THEREFORE, SOME BACTERIA USE FLAGELLA TO MOVE THEM TOWARDS THESE RESOURCES WHILE OTHERS MAKE THEIR OWN FOOD THROUGH PHOTOSYNTHESIS. IN ADDITION, BACTERIAL CELLS PROTECT THEMSELVES, MUCH LIKE PLANT CELLS, WITH THE USE OF A CELL WALL.

THERE ARE NO NEW DEFINITIONS FOR THIS CHAPTER. IT IS INTENDED TO BE A REVIEW OF THE CELL ORGANELLES AND A BRIEF BACKGROUND INTO THE STRUCTURE OF A BACTERIAL CELL.

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT ARE SOME WAYS THAT BACTERIA CAN GET THE NUTRIENTS THEY NEED TO SURVIVE?

Some bacteria can move towards a food source through the use of a flagella. Other bacteria can make their own with the help of chloroplasts.

WHICH KINDS OF CELLS HAVE A CELL WALL TO PROTECT THEM?

Plant cells and bacteria have cell walls

WHAT IS THE MAIN DIFFERENCE BETWEEN BACTERIAL CELLS AND ALL OTHER KINDS OF CELLS?

Bacterial cells do not contain organelles. This is not the case for all other kinds of cells.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 32:

PAGE ONE:

A FLAGELLA IS A LONG WHIP-LIKE TAIL THAT HELPS TO PUSH THE BACTERIA THROUGH A LIQUID.

PAGE TWO:

	PLANT CELL	ANIMAL CELL	BACTERIAL CELL
CELL PARTS			
DNA	YES	YES	YES
CELL MEMBRANE	YES	YES	YES
CYTOPLASM	YES	YES	YES
NUCLEUS	YES	YES	NO
RIBOSOMES	YES	YES	NO
"ER"	YES	YES	NO
MITOCHONDRIA	YES	YES	NO
LYSOSOME	YES	YES	NO
GOLGI BODY	YES	YES	NO
VACUOLE	YES	YES	NO
CELL WALL	YES	NO	YES
CHLOROPLAST	YES	NO	NO
CHLOROPHYLL	YES	NO	SOME DO

UNIT EIGHT REVIEW
ANSWER KEY

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

3 - MITOCHONDRIA
5 - ER
6 - VACUOLE
1 - NUCLEUS
4- GOLGI BODY
2 - LYSOSOME

FILL IN THE MISSLING BOXES WITH "YES" OR "NO".

	PLANT CELL	ANIMAL CELL	BACTERIAL CELL
CELL PARTS			
DNA	YES	YES	YES
CELL MEMBRANE	YES	YES	YES
CYTOPLASM	YES	YES	YES
NUCLEUS	YES	YES	NO
CHOLORPLAST	YES	NO	NO
CELL WALL	YES	NO	YES

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "CELL MOBILE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE USE OF ANALOGIES IS AN EFFECTIVE WAY FOR CHILDREN TO IDENTIFY THE FUNCTIONS OF CELLULAR ORGANELLES.

THE RELATIONSHIP BETWEEN THE ORGANELLES IS THE MOST IMPORTANT PART OF LEARNING ABOUT THESE STRUCTURES. IN FACT, NON OF THESE STRUCTURES CAN SURVIVE WITHOUT ALL OF THEM WORKING TOGETHER!

CELL MOBILE

CHILDREN WILL REVIEW THE FUNCTIONS OF CELL ORGANELLES THROUGH THE CONSTRUCTION OF A 3D MOBILE.

MATERIALS:

CARDBOARD SHEET (5"X36")
FISHING LINE
DUCT TAPE
SCISSORS
SEVERAL DIFFERENT ITEMS CHOSEN BY THE CHILD
ORGANELLE REVIEW SHEET (SEE ATTACHED)

ACTIVITY:

BEND THE CARDBOARD SHEET AROUND AND OVERLAP THE ENDS BY THREE TO FOUR INCHES. DUCT TAPE THESE ENDS TOGETHER TO FORM A LARGE HOOP OF CARDBOARD. POKE A HOLE IN THE TOP OF THE HOOP AND ATTACH A LONG PIECE OF FISHING LINE TO THE STRUCTURE SO THAT IT CAN BE HUNG FROM A STURDY STRUCTURE. DO NOT HANG IT UP AT THIS TIME!!!

USE THE ATTACHED SHEET TO REVIEW THE ORGANELLES THEY HAVE BEEN STUDYING. THE CHILD WILL NEED TO FIND SMALL OBJECTS THAT CAN FIT INTO THEIR "HOOP" THAT MAY HAVE SIMILAR FUNCTIONS. FOR EXAMPLE:

"ER" – TOY CAR

THE TOY CAR MOVES PEOPLE AROUND LIKE THE "ER" MOVES PROTEIN AROUND

MITOCHONDRIA – CANDY BAR

THE CANDY BAR GIVES US ENERGY JUST LIKE THE MITOCHONDRA GIVES ENERGY TO THE CELL

ONCE THE CHILD FINDS ALL THE MATERIALS FOR EACH OF THE FOLLOWING ORGANELLES, THEY CAN START ATTACHING THEM TO THE FISHING LINE. THE FISHING LINE IS THEN ATTACHED TO THE TOP OF THE CARDBOARD LOOP WITH DUCT TAPE.

THE MOBILE CAN THEN BE HUNG FROM A STABLE STRUCTURE SO THAT THE SMALLER OBJECTS ARE ALL CONTAINED WITHIN THE CARDBOARD HOOP ("CELL MEMBRANE")

ORGANELLE REVIEW SHEET

ORGANELLE	FUNCTION	OBJECT CHOSEN
NUCLEUS	PROTECTS THE DNA	
RIBOSOMES	MAKES PROTEINS FOR THE CELL	
"ER"	SENDS PROTEIN MESSAGES TO THE ORGANELLES	
MITOCHONDRIA	MAKES ENERGY FOR THE CELL	
LYSOSOME	GETS RID OF WASTES	
GOLGI BODY	WRAPS UP PROTEINS FOR THE CELL	
VACUOLE	STORES EXTRA WATER AND NUTRIENTS	
CHLOROPHYLL	MAKES FOOD FOR A PLANT CELL	
FLAGELLA	HELPS SOME CELLS MOVE	
CELL WALL	PROTECTS A PLANT CELL	

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "A BEDTIME STORY"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

CHILDREN LEARN BY DIFFERENT MEANS AND THE LARGE AMOUNT OF INFORMATION THAT EXISTS WITHIN THIS UNIT REQUIRES PRACTICE IN ORDER TO UNDERSTAND.

A CREATIVE WRITING EXERCISE PROVIDES A BREAK FROM THE TYPICAL SCIENCE ACTIVITY AND ALLOWS A CHILD TO EXPRESS THEMSELVES IN OTHER WAYS WHILE STILL REFLECTING UPON THE SCIENTIFIC CONTENT.

A BEDTIME STORY...

CHILDREN WILL WRITE A BEDTIME STORY ABOUT ALL OF THE ORGANELLES THEY HAVE STUDIED SO FAR.

MATERIALS:

PAPER AND PENCIL

ACTIVITY:

REVIEW THE FOLLOWING ORGANELLES WITH YOUR CHILD:

NUCLEUS	VACUOLE
RIBOSOMES	CELL WALL
ER	CHLOROPLAST
MITOCHONDRIA	CHLOROPHYLL
NUCLEAR MEMBRANE	LYSOSOME
GOLGI BODY	

INSTRUCT THEM TO USE THE ANALOGIES THAT HAVE BEEN PROVIDED, OR MAKE NEW ONES UP, TO WRITE A BEDTIME STORY.

YOU MAY NEED TO PROVIDE THEM A POSSIBLE BEGINNING TO THE STORY SUCH AS...

ONCE UPON A TIME, THERE WAS AN EVIL RULER NAMED NUCLEUS, WHO DID NOTHING ALL DAY LONG BUT DEMAND THINGS BE DONE FOR HIM...

OR...

ONCE UPON A TIME, THERE WAS A HAPPY LITTLE CANDY MAKER NAMED CHLOROPHYLL WHO SPENT ALL DAY LONG MAKING SUGARY SWEETS FOR HIS TOWN...

REVIEW OF ANALOGIES FROM CHAPTERS 29-32:

THE DNA **(THE BOSS)** WANTS TO SEND OUT MESSAGES BUT IT CANNOT LEAVE ITS OFFICE **(THE NUCLEUS).** SO IT MAKES RNA **(THE MESSAGE)** AND SENDS IT OUT INTO THE CYTOPLASM FOR THE RIBOSOMES **(THE DECODERS)** TO READ. THE RIBOSOMES READ THE MESSAGE **(RNA)** AND MAKE NEW MESSAGES **(PROTEINS)** THAT CAN BE READ BY THE OTHER ORGANELLES. THESE NEW MESSAGES WILL TELL THE ORGANELLES WHAT TO DO AND WHEN TO DO IT.

SOMETIMES, THESE MESSAGES **(PROTEINS)** ARE DELIVERED FASTER BY TRAVELING ON THE "ER" **(THE HIGHWAY).**

OTHER TIMES, THESE PROTEINS ARE SENT OUTSIDE OF THE CELL AFTER THEY ARE BUNDLED UP IN THE GOLGI BODY **(PACKING STATION).**

IF ANY EXTRA PROTEIN, NUTRIENTS OR WATER IS NEEDED TO BE STORED, IT GOES INTO THE VACUOLE **(THE WAREHOUSE).**

WHEN THERE IS ANY WASTE THAT THE CELL MAKES, IT GOES TO THE LYSOSOME **(GARBAGE DISPOSAL)** TO BE BROKEN DOWN INTO SMALLER PIECES.

UNIT EIGHT TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	MITOCHONDRIA	1. AN ORGANELLE FOUND INSIDE CHLOROPLASTS THAT USES SUNLIGHT TO MAKE FOOD FOR THE CELL
____	ER	2. ORGANISMS BELONGING TO THE KINGDOMS ARCHAEBACTERIA OR EUBACTERIA
____	MEMBRANE	3. BODY PART THAT ACTS LIKE A TAIL TO MOVE BACTERIA THROUGH A LIQUID
____	NUCLEUS	4. ORGANELLE THAT SENDS PROTEIN MESSAGES TO OTHER ORGANELLES
____	VACUOLE	5. THE LARGEST ORGANELLE IN A PLANT OR ANIMAL CELL; CONTAINS THE DNA
____	CHLOROPHYLL	6. A COVERING THAT SURROUNDS ANIMAL CELLS
____	LYSOSOME	7. AN ORGANELLE THAT STORES EXTRA WATER AND NUTRIENTS
____	EUKARYOTIC	8. AN ORGANELLE THAT TURNS NUTRIENTS INTO ENERGY FOR THE CELL
____	FLAGELLA	9. AN ORGANELLE THAT GETS RID OF THE WASTE INSIDE A CELL
____	CELL WALL	10. CELLS OR ORGANISMS THAT BELONG TO ANY KINGDOM EXCEPT ARCHAEBACTERIA AND EUBACTERIA
____	PROKARYOTIC	11. AN ORGANELLE THAT WRAPS UP PROTEINS INTO A BUNDLE INSIDE A CELL
____	GOLGI BODY	12. A STIFF STRUCTURE THAT SURROUNDS AND PROTECTS A PLANT CELL

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. THE MAIN DIFFERENCE BETWEEN PROKARYOTIC AND EUKARYOTIC CELLS IS...

A. PROKARYOTIC CELLS HAVE ORGANELLES
B. EUKARYOTIC CELLS HAVE DNA
C. EUKARYOTIC CELLS HAVE ORGANELLES

2. THE DIFFERENCE BETWEEN THE "ER" AND RIBOSOMES IS:

A. "ER" MAKES THE PROTEINS THAT THE RIBOSOMES SEND
B. RIBOSOMES MAKE THE PROTEINS THAT THE "ER" SENDS TO OTHER ORGANELLES
C. THE RIBOSOMES ARE FOUND INSIDE THE NUCLEUS

3. PLANT CELLS ARE PROTECTED BY:

A. A CELL WALL
B. A CELL MEMBRANE
C. A CELL WALL AND A CELL MEMBRANE

4. CELL WALLS CAN BE FOUND AROUND...

A. BACTERIA
B. ANIMAL AND PLANT CELLS
C. PLANT CELLS AND BACTERIA

5. "THE BOSS" OF A CELL IS THE:

A. NUCLEUS
B. DNA
C. MITOCHONDRIA

6. DNA SENDS MESSAGES TO OTHER CELLS BY THE USE OF:

A. GOLGI BODIES
B. ER
C. CYTOPLASM

IMAGINE YOU ARE THE DNA INSIDE AN ANIMAL CELL. TELL ME HOW YOU ARE GOING TO SEND A MESSAGE TO ANOTHER CELL THAT IS FAR AWAY FROM YOU. INSIDE YOUR STORY, YOU WILL NEED TO USE THE FOLLOWING CELL PARTS:

NUCLEUS
RIBOSOME
GOLGI BODY
CELL MEMBRANE

UNIT EIGHT TEST ANSWER KEY

MATCHING

8 MITOCHONDRIA
4 ER
6 MEMBRANE
5 NUCLEUS
7 VACUOLE
1 CHLOROPHYLL
9 LYSOSOME
10 EUKARYOTIC
3 FLAGELLA
12 CELL WALL
2 PROKARYOTIC
11 GOLGI BODY

MULTIPLE CHOICE

1. C
2. B
3. A
4. C
5. A
6. A

WRITE A STORY...

ANSWERS WILL VARY. HOWEVER, THE CHILD MUST USE THE WORDS NUCLEUS, RIBOSOME, GOLGI BODY AND CELL MEMBRANE WITHIN THEIR DESCRIPTION OF HOW THEY (AS A NUCLEUS) WILL BE SENDING A MESSAGE TO ANOTHER CELL.

WEEK 33: HYGIENE AND HEALTH

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

INDIVIDUALS HAVE SOME RESPONSIBILITY FOR THEIR OWN HEALTH. STUDENTS SHOULD ENGAGE IN PERSONAL CARE SUCH AS DENTAL HYGIENE AND CLEANLINESS WHICH WILL MAINTAIN AND IMPROVE HEALTH.

IN ADDITION, WASHING HANDS WITH SOAP AND COOKING FOOD THOROUGHLY IMPROVES THE LIKELIHOOD THAT YOU WILL REMAIN HEALTHY.

DEFINITIONS:

PLAQUE	"PLAK"; A STICKY LAYER THAT FORMS OVER YOUR TEETH; IT IS A MIXTURE OF LEFTOVER FOOD, BACTERIA AND BACTERIA WASTE
TARTAR	HARDENED PLAQUE THAT FORMS ON YOUR TEETH
CAVITY	A PLACE WHERE BACTERIA HAVE EATEN A PART OF YOUR TEETH

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHY SHOULD YOU USE SOAP WHEN WASHING YOUR HANDS?

SOAP IS POISONOUS FOR BACTERIA AND IT HELPS TO REMOVE DIRT AND OTHER ITEMS FROM YOUR SKIN.

WHY SHOULD YOU COVER YOUR MOUTH WHEN YOU SNEEZE?

EVERY TIME YOU SNEEZE YOU ARE SPRAYING THE AIR WITH ANY BACTERIA THAT MAY BE INSIDE OF YOU. THIS CAN CAUSE OTHER PEOPLE TO GET SICK IF THE BACTERIA GETS INTO THEIR BODIES.

WHY IS IT IMPORTANT TO WASH YOUR FRUITS AND VEGETABLES BEFORE YOU EAT THEM?

FRUITS AND VEGETABLES ARE COVERED IN BACTERIA. IT IS ALWAYS BEST TO MAKE CERTAIN TO REMOVE AS MANY BACTERIA AS POSSIBLE FROM YOUR FOOD BEFORE YOU EAT.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 33:

PAGE ONE:

PLAQUE IS A STICKY LAYER THAT FORMS OVER YOUR TEETH.

IT IS A MIXTURE OF LEFTOVER FOOD, BACTERIA AND BACTERIAL WASTE.

PAGE TWO:

TARTAR IS HARDENED PLAQUE THAT FORMS ON YOUR TEETH.

PAGE THREE:

1. A
2. B
3. C
4. C
5. C
6. C

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "STAINED TEETH"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE CONSEQUENCES OF NOT BRUSHING YOUR TEETH CAN INCLUDE STAINING OR DECAY.

ALTHOUGH YOUR TEETH ARE VERY STRONG AND CAN WITHSTAND A LOT OF ABUSE FROM THE ACIDS IN SOFT DRINKS, DAMAGE CAN OCCUR IF PROPER HYGIENE IS NOT ADMINISTERED.

STAINED TEETH

CHILDREN WILL OBSERVE THE EFFECTS OF SOFT DRINKS ON YOUR TEETH.

Materials:

ANY BROWN SOFT DRINK (COLA, ROOT BEER, ETC...)
WATER
TWO RAW OR HARD-BOILED EGGS
TWO DRINKING GLASSES

Activity:

THIS IS A SIMPLE ACTIVITY YOU CAN DO WITH YOUR CHILD TO SEE THE HARMFUL EFFECTS OF ACIDS ON YOUR TEETH.

INFORM THE CHILD THAT SOFT DRINKS CONTAIN A LARGE AMOUNT OF ACID THAT CAN CAUSE DAMAGE TO THE PROTECTIVE COVERING OF YOUR TEETH.

HAVE THE CHILD POUR A GLASSFUL OF BROWN SODA INTO A DRINKING GLASS AND INSERT AN EGG INTO THE LIQUID. HAVE THE CHILD PREDICT WHAT WILL HAPPEN TO THE EGG IF IT IS ALLOWED TO STAY IN THE LIQUID FOR ONE FULL DAY.

AS A CONTROL, POUR AN EQUAL AMOUNT OF WATER INTO ANOTHER DRINKING GLASS AND INSERT ANOTHER EGG INTO THIS LIQUID.

POUR OUT THE LIQUIDS THE NEXT DAY AND HAVE THE CHILD OBSERVE THE EGGS. WHAT DIFFERENCES CAN BE SEEN?

Explanation:

BOTH EGG SHELLS AND THE OUTER PART OF YOUR TEETH ARE MADE UP OF VARIOUS KINDS OF CALCIUM. HOWEVER, THEY ARE NOT IDENTICAL CHEMICALLY. THEY MAY BOTH APPEAR SMOOTH AND HARD, BUT THE DO HAVE MANY DIFFERENCES CHEMICALLY. NEVERTHELESS, THE USE OF EGG SHELLS IN THIS EXPERIMENT IS NECESSARY TO SEE THE LASTING EFFECTS OF NOT TAKING CARE OF YOUR TEETH. YOU SHOULD SEE THAT THE EGG PLACED INTO THE SOFT DRINK HAS BEEN PARTIALLY STAINED A BROWN COLOR. IN REALITY, YOUR TEETH ARE VERY STRONG AND CAN TAKE A LOT OF PUNISHMENT FROM THE ACIDS INSIDE SOFT DRINKS.

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE POWER OF FLUORIDE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE PREVENTION OF TOOTH DECAY CAN TAKE PLACE THROUGH DAILY BRUSHING WITH TOOTHPASTE AND THE USE OF MOUTHWASHES THAT CONTAINS FLUORIDE.

FLUORIDE STRENGTHENS THE CHEMICALS THAT MAKE UP YOUR TEETH. STRENGTHENING YOUR TEETH PREVENTS STAINING AND DECAY.

THE POWER OF FLUORIDE

CHILDREN WILL EXPERIMENT WITH THE EFFECTIVENESS OF FLUORIDE TO PREVENT TOOTH DECAY.

MATERIALS:

MOUTHWASH WITH FLUORIDE
TWO EGGS
TWO DRINKING GLASSES
VINEGAR
WATER

ACTIVITY:

TAKE ONE EGG AND PUT IT IN A DRINKING GLASS WITH WATER. PLACE ANOTHER EGG IN A DIFFERENT DRINKING GLASS THAT CONTAINS MOUTHWASH WITH FLUORIDE.

YOU MAY NEED TO USE A FORK OR SPOON TO KEEP THE EGGS COMPLETELY SUBMERGED.

ALLOW THEM TO SIT, UNDISTURBED, FOR ONE FULL DAY.

REMOVE THE EGGS FROM THE LIQUIDS AND INFORM THE CHILD THAT YOU ARE GOING TO PLACE BOTH EGGS IN GLASSES FILLED WITH VINEGAR.

ONE OF THE EGGS IS GOING TO START TO BUBBLE, ALMOST INSTANTLY. THE OTHER EGG WILL NOT BUBBLE. ASK THE CHILD TO PREDICT WHICH ONE IS GOING TO BUBBLE.

FILL BOTH GLASSES WITH VINEGAR AND INSERT ONE EGG INTO EACH CONTAINER.

THE EGG THAT WAS PLACED INSIDE WATER WILL START TO BUBBLE ALMOST INSTANTLY, WHILE THE ONE SOAKED IN FLUORIDE WILL NOT BUBBLE FOR SOME TIME!

Explanation:

WHEN AN ACID (LIKE VINEGAR) COMES INTO CONTACT WITH A SOURCE OF CALCIUM (THE EGG SHELL), A REACTION OCCURS THAT INVOLVES THE PRODUCTION OF A GAS. THE BUBBLES OF GAS THAT ARE FORMED ON THE EGG SHELL AFTER YOU PLACE THE WATER-SOAKED EGG INTO THE VINEGAR DEMONSTRATE THIS REACTION.

THE SHELL SOAKED IN FLUORIDE WILL BE HARDENED BY THIS CHEMICAL. THE USE OF FLUORIDE IN YOUR TOOTHPASTE AND MOUTHWASH HELP TO PREVENT YOUR TEETH FROM DECAY BY HARDENING THE CALCIUM INSIDE YOUR TEETH! KEEP BRUSHING!

WEEK 34:
THE IMMUNE SYSTEM

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

YOUR IMMUNE SYSTEM IS COMPRISED OF YOUR SKIN AND WHITE BLOOD CELLS. BOTH OF THESE STRUCTURES ACT TO PREVENT YOU FROM GETTING SICK. SHOULD ANY BACTERIA OR OTHER FOREIGN SUBSTANCE GET THROUGH YOUR SKIN, YOUR WHITE BLOOD CELLS ACT QUICKLY TO ATTACK AND DESTROY THIS SUBSTANCE.

WHEN YOUR BODY WORKS TOO HARD TO GET RID OF A FOREIGN SUBSTANCE, THE IMMUNE SYSTEM MAY CAUSE REACTIONS THAT ARE KNOWN AS ALLERGIES. THE USE OF ANTIBIOTICS IS INTENDED TO ATTACK HARMFUL BACTERIA WHILE NOT HARMING THE BODY OR ANY OF ITS ORGANS.

DEFINITIONS:

IMMUNE SYSTEM	THE ACTIONS OF YOUR SKIN AND WHITE BLOOD CELLS THAT PROTECT YOUR BODY FROM INFECTIONS
INFECTED	THE RESULT OF YOUR IMMUNE SYSTEM THAT MISSES SOME BACTERIA OR OTHER ITEM THAT GETS INTO YOUR BODY; THIS MAKES A CUT WARM, RED IN COLOR AND FILLED WITH A GOOEY LIQUID
LYSOZYME	"LIE-SO-ZIME"; AN ENZYME FOUND IN YOUR BODY THAT DESTROYS BACTERIA
WHITE BLOOD CELL	BLOOD CELLS THAT ACT TO DESTROY ANYTHING THAT GETS INTO YOUR BODY THAT MAY BE HARMFUL
ALLERGY	RESULT OF YOUR IMMUNE SYSTEM WORKING TOO HARD TO GET RID OF THINGS IN YOUR BODY; ITCHY AND WATERY EYES, SORE THROATS AND A RUNNY NOSE ARE SOME SIGNS OF AN ALLERGY
ANTIBIOTICS	"AN-TI-BI-OT-ICKS"; CHEMICALS THAT ARE MADE TO ATTACK BACTERIA AND GET RID OF THEM WITHOUT HURTING YOU IN THE PROCESS

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT CAUSES YOUR IMMUNE SYSTEM TO START WORKING?

ANYTIME SOMETHING GETS INTO YOUR BODY THAT DOES NOT BELONG, THE IMMUNE SYSTEM STARTS TO REMOVE IT IMMEDIATELY.

HOW MAY YOU FEEL IF YOUR IMMUNE SYSTEM TRIES TOO HARD TO GET RID OF THINGS IN YOUR BODY?

WHEN THIS HAPPENS, YOU ARE SAID TO HAVE AN ALLERGY. ALLERGIC REACTIONS CAN INCLUDE ANY KIND OF IRRITATING OR POTENTIALLY DANGEROUS REACTION THAT MAY INCLUDE ITCHY EYES, A SORE THROAT, A RUNNY NOSE, VOMITING, ETC.

HOW DO ANTIBIOTICS WORK?

ANTIBIOTICS ARE CHEMICALS THAT ARE MADE TO ATTACK BACTERIA AND GET RID OF THEM WITHOUT HURTING YOU IN THE PROCESS.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 34:

PAGE ONE:

(WORD SEARCH)

PAGE TWO:

2 - IMMUNE SYSTEM
4 - INFECTED
1 - LYSOZYME
3 - WHITE BLOOD CELL
5 - ALLERGY
6 - ANTIBIOTICS

PAGE THREE:

"COMPARE AND CONTRAST THE RED BLOOD CELLS AND THE WHITE BLOOD CELLS"

BOTH ARE CELLS THAT CAN BE FOUND IN THE PLASMA OF BLOOD. THEY ARE BOTH PUMPED BY THE HEART AND THEY BOTH HELP ORGANISMS TO SURVIVE.

RED BLOOD CELLS ARE USED TO TRANSPORT OXYGEN THROUGHOUT THE BODY WHILE WHITE BLOOD CELLS ATTACK THINGS THAT GET INTO OUR BODIES. THE WHITE BLOOD CELLS, UNLIKE THE RED BLOOD CELLS, ARE A PART OF THE IMMUNE SYSTEM.

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "CASE STUDY SCIENCE"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE USE OF CASE STUDIES IS COMMONLY USED BY MEDICAL STUDENTS TO PREPARE THEM FOR THE REAL-LIFE SCENARIOS IN THEIR PROFESSION.

IN ORDER TO BE PRODUCTIVE, THE CHILD MUST UNDERSTAND THE BACKGROUND INFORMATION ON THE IMMUNE SYSTEM SINCE THEY WILL BE APPLYING THIS KNOWLEDGE IN THIS ACTIVITY.

CASE STUDY SCIENCE

CHILDREN WILL APPLY THE INFORMATION THEY HAVE STUDIED ON THE IMMUNE SYSTEM TO REAL-LIFE SCENARIOS.

MATERIALS:

CASE STUDIES (SEE ATTACHED)
PAPER/PENCIL

ACTIVITY:

REVIEW THE DEFINITIONS OF THE FOLLOWING WORDS FROM THEIR STUDY OF CHAPTER 34:

IMMUNE SYSTEM
INFECTED
WHITE BLOOD CELL
ALLERGY
ANTIBIOTICS

INFORM THE CHILD THAT THEY WILL BE ACTING AS DOCTORS. THEY WILL BE GIVEN A REAL-LIFE SCENARIO ABOUT A PATIENT. THEIR JOB WILL BE TO EXPLAIN WHAT IS HAPPENING TO THE PATIENT THAT IS MAKING THEM SICK.

THEIR EXPLANATIONS WILL NEED TO BE IN WRITTEN FORM AND WILL NEED TO INCLUDE AT LEAST ONE OF THE DEFINITIONS LISTED ABOVE.

EXPLANATION:

THE CHILD'S ACTIONS ARE VERY SIMILAR TO WHAT A DOCTOR MUST DO EVERYDAY. IN FACT, PEOPLE WHO STUDY TO BECOME A DOCTOR GO THROUGH THESE CASE STUDIES ALL THE TIME. THIS METHOD OF LEARNING IS VERY HELPFUL FOR PEOPLE IN THE HEALTH-RELATED FIELDS.

CASE STUDIES

YOU ARE HURRYING TO FINISH YOUR SCIENCE PROJECT AND...OOPS! A SPLINTER FROM YOUR TABLE GETS STUCK IN YOUR HAND. YOU PULL IT OUT, BUT LATER THAT NIGHT YOUR FINGER GETS RED AND STARTS TO SWELL (GET LARGER). A FEW DAYS LATER YOUR ENTIRE HAND IS RED AND IT IS HURTING VERY BADLY. WHAT IS GOING ON?

THIS IS THE THIRD DAY IN A ROW THAT YOUR THROAT HAS BEEN VERY SORE! YOUR PARENTS TAKE YOU TO A DOCTOR WHO GIVES YOU SOME MEDICINE. AFTER A COUPLE OF DAYS, YOU START TO FEEL BETTER. WHAT IS GOING ON?

YOU DECIDE TO HELP OUT YOUR PARENTS BY SWEEPING UP THE DIRT FROM THE GARAGE. YOU SPEND HALF THE DAY IN THE GARAGE SWEEPING, BUT YOU DO NOT OPEN A DOOR. THE AIR IS FILLED WITH DUST! LATER THAT NIGHT, YOUR EYES ARE ITCHY, YOU START TO GET A SORE THROAT AND YOU HAVE A RUNNY NOSE. WHAT IS GOING ON?

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "HOMEMADE MICROBE FOOD: PART TWO"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE PRODUCTION OF AGAR PLATES IS AN IMPORTANT INDUSTRY FOR A SCIENTIST WHO STUDIES BACTERIA. THESE INDIVIDUALS ARE KNOWN AS MICROBIOLOGISTS.

TRUE "AGAR" IS DEVELOPED FROM A PLANT AND IS USED AS A FOOD SOURCE FOR GROWING BACTERIA. THERE ARE PLENTY OF ALTERNATIVES TO CREATE HOMEMADE FOOD SOURCES FOR THE GROWTH OF BACTERIA.

CARE MUST ALWAYS BE TAKEN WHEN GROWING BACTERIA, ESPECIALLY WHEN THERE IS SUFFICIENT GROWTH ON THE FOOD SOURCE. BE CERTAIN NOT TO TOUCH, TASTE OR SMELL THE FOOD SOURCE AFTER YOU BEGIN TO GROW YOUR BACTERIA. WHEN YOU ARE COMPLETED, BE CERTAIN TO DISPOSE THE CONTAINER INTO THE TRASH!

HOMEMADE MICROBE FOOD: PART TWO

CHILDREN WILL USE THEIR OWN GROWTH MEDIUM TO TEST THE EFFECTIVENESS OF ANTIBACTERIAL SOAPS.

Materials:

SAUCEPAN AND STOVE
PACKET OF UNFLAVORED GELATIN
WATER
SUGAR
BEEF BOUILLON
FOUR FOIL MUFFIN CUPS
MUFFIN PAN
MEASURING SPOONS
FOUR SEALABLE SANDWICH BAGGIES
ANTIBACTERIAL SOAPS, LOTIONS, ETC.
RAW MEAT
COTTON SWAB
DATA CHART (SEE ATTACHED)

Activity:

IN THE SAUCEPAN, MIX TOGETHER ONE PACKAGE OF UNFLAVORED GELATIN, ONE CUP OF COLD WATER, 2 TEASPOONS OF SUGAR AND ONE TEASPOON OF BEEF BOUILLON.

BRING SLOWLY TO A BOIL, STIRRING CONSTANTLY.

ALLOW THE MIXTURE TO COOL A LITTLE BIT AND POUR INTO FOIL MUFFIN CUPS PLACED INSIDE OF THE MUFFIN PAN FOR SUPPORT. FILL EACH CUP ABOUT HALFWAY WITH THE MIXTURE.

PLACE THE MUFFIN PAN IN THE REFRIGERATOR UNTIL THE GELATIN HARDENS. REMOVE THE FOIL CUPS FROM THE PAN AND PLACE ONE OF THEM IN A SEALABLE SANDWICH BAGGIE. BE CERTAIN NOT TO TOUCH THE SURFACE OF THE GELATIN!!!

TAKE A COTTON SWAB AND GENTLY ROLL IT OVER A PIECE OF RAW MEAT. NOW SMEAR THE COTTON SWAB OVER THE SURFACE OF THE GELATIN IN ONE OF THE CUPS. PLACE THE CUP INTO A SEALABLE SANDWICH BAGGIE.

TAKE ANOTHER COTTON SWAB AND COVER THE END WITH AN ANTIBACTERIAL SOAP, LOTION, ETC. SMEAR THE CONTENTS OVER THE SURFACE OF A FRESH GELATIN CUP AND PLACE IT INTO A BAGGIE.

FOR THE FINAL CUP, USE A CLEAN COTTON SWAB TO SMEAR THE ANTIBACTERIAL SOAP, LOTION, ETC. OVER ONE HALF OF THE SURFACE OF THE GELATIN. THEN, WITH ONE MORE CLEAN SWAB, ROLL IT OVER THE RAW MEAT AND SMEAR THE CONTENTS OVER THE ENTIRE SURFACE OF THE GELATIN. YOU WILL BE MIXING THE RAW MEAT "GOO" WITH THE ANTIBACTERIAL SOAP. THIS IS WHAT YOU WANT!!! PLACE IT INSIDE THE BAGGIE AND MAKE CERTAIN ALL OF THE BAGGIES ARE SEALED TIGHT!

GO WASH YOUR HANDS THOROUGHLY AND PLACE ALL OF THE BAGGIES IN A WARM AREA, BUT NOT IN DIRECT SUNLIGHT! CHECK ON THEM PERIODICALLY FOR 2-3 DAYS.

ASK THE CHILD TO PREDICT WHAT WILL HAPPEN. WILL THERE BE A LOT OF GROWTH? IF SO, WHICH ONE WILL GROW THE MOST BACTERIA? THE LEAST?

Explanation:

YOU SHOULD NOTICE THAT THE CUP WITH THE RAW MEAT ONLY WILL HAVE THE LARGEST COLLECTION OF BACTERIAL GROWTH. YOU SHOULD NOT SEE NEARLY ANY GROWTH FROM THE CUP THAT WAS UNTOUCHED OR THAT CONTAINED ONLY THE ANTIBACTERIAL AGENT.

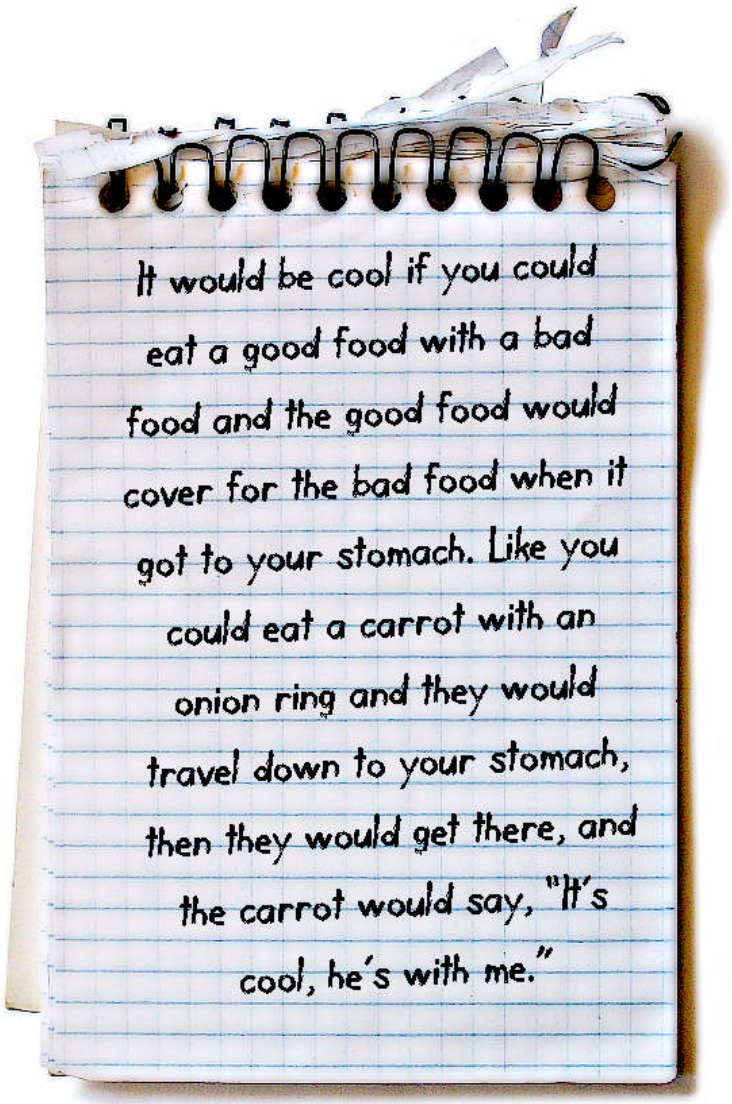
THE LAST CUP, WITH THE ANTIBACTERIAL AGENT AND THE MEAT, IS THE MOST IMPORTANT CUP TO OBSERVE. YOU SHOULD NOTICE THAT VERY FEW BACTERIAL COLONIES HAVE DEVELOPED ON THE SIDE WITH THE ANTIBACTERIAL AGENT. THERE WILL INEVITABLY BE SOME, BUT IF YOU COMPARE IT WITH THE CUP WITH ONLY THE MEAT ADDED, YOU SHOULD BE ABLE TO SEE A COMPARABLE DIFFERENCE.

NATURALLY, DIFFERENT BRANDS OF ANTIBACTERIAL AGENTS, THEIR RELATIVE AGE AND CONCENTRATIONS WILL AFFECT THE GROWTH RATE OF BACTERIA. A GOOD ANTIBACTERIAL AGENT SHOULD KEEP THE MAJORITY OF CRITTERS FROM GROWING IN YOUR MEDIA!

HOMEMADE MICROBE FOOD DATA CHART

GELATIN CUP	CONTENTS	PREDICTION	ACTUAL RESULTS
CUP #1	NOTHING		
CUP #2	MEAT ONLY		
CUP #3	ANTIBACTERIAL AGENT ONLY		
CUP #4	BOTH MEAT AND ANTIBACTERIAL AGENT		

WEEK 35: NUTRITION



DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

NUTRITION IS ESSENTIAL TO HEALTH. RECOMMENDATIONS FOR GOOD NUTRITION INCLUDE EATING A VARIETY OF FOODS, EATING LESS SUGAR, AND EATING LESS FAT.

DEFINITIONS:

DIET	THE STUFF YOU EAT AND DRINK
WELL-BALANCED DIET	THE RIGHT AMOUNT OF FOODS YOUR BODY NEEDS TO SURVIVE
FOOD PYRAMID	A LIST OF HEALTHY FOODS (AND THEIR AMOUNTS) YOU SHOULD EAT EVERY DAY
POULTRY	CHICKEN, TURKEY OR OTHER BIRDS
SERVING	A CERTAIN MEASUREMENT OF FOOD OR DRINK THAT YOU SHOULD EAT IN ONE MEAL
OUNCE	A WAY TO MEASURE THE WEIGHT OF AN OBJECT

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

WHAT THINGS SHOULD YOU NOT EAT A LOT OF EVERY DAY?

FATS, SALT AND SUGAR SHOULD ONLY BE EATEN IN SMALL AMOUNTS.

WHAT DOES THE FOOD PYRAMID TELL US ABOUT OUR DIET?

THE FOOD PYRAMID CONTAINS THE SUGGESTED FOODS TO EAT IN A GIVEN DAY TO MAINTAIN A HEALTHY AND WELL-BALANCED DIET.

WHY IS THE FOOD PYRAMID A "PYRAMID"?

THE FOOD PYRAMID HAS BEEN PUT TOGETHER WITH THE SMALLEST AMOUNT OF FOODS YOU SHOULD EAT (FATS, OILS AND SWEETS) ON THE TOP OF THE PYRAMID. THE LARGEST PART OF THE PYRAMID IS ON THE BOTTOM...HERE YOU WILL FIND THE LARGEST NUMBER OF FOODS YOU SHOULD EAT EVERYDAY (GRAIN PRODUCTS). THIS ARRANGEMENT GIVES THIS DIET A "PYRAMID" STRUCTURE.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 35:

PAGE ONE:

ACROSS:
3. POULTRY
4. WELL-BALANCED DIET
6. SERVING

DOWN:
1. OUNCE
2. FOOD PYRAMID
5. DIET

PAGE TWO:

3 - DIET
1 - WELL-BALANCED DIET
4 - FOOD PYRAMID
6 - POULTRY
2 - SERVING
5 – OUNCE

PAGE THREE:

"IS THIS A WELL-BALANCED DIET? IF NOT, LIST WHAT SHOULD BE ADDED OR TAKEN AWAY MAKE IT A WELL-BALANCED DIET."

FOOD TO BE ADDED	FOOD TO BE TAKEN AWAY
ONE SERVING OF DAIRY	ONE SERVING OF MEAT, POULTRY, FISH, BEANS, EGGS, AND NUTS
ONE SERVING OF VEGETABLES	
ONE-TO-THREE SERVINGS OF FRUITS	

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "CHEF FOR A DAY!"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

PLANNING FOR A MEAL CAN BE A CHALLENGE. IT IS EVEN MORE CHALLENGING WHEN YOU HAVE A GUIDE THAT IS TO BE FOLLOWED!

PROPER PLANNING IS CRUCIAL FOR THE SUCCESS OF NEARLY ANY EVENT. THE SKILLS GAINED IN PREPARING FOR A DAILY MEAL ALLOWS THE CHILD TO HAVE OWNERSHIP IN THE DECISION AND AN AWARENESS OF THE IMPORTANCE OF A WELL-BALANCED DIET.

CHEF FOR A DAY!

CHILDREN WILL USE THE FOOD GUIDE PYRAMID TO PREPARE A HEALTHY MEAL IN THEIR "RESTAURANT".

MATERIALS:

SERVING SIZES AND DAILY SERVINGS FROM THE FOOD PYRAMID (SEE ATTACHED)
PAPER/PENCIL

ACTIVITY:

INFORM THE CHILDREN THAT THEY ARE GOING TO PRETEND THEY OWN THEIR OWN RESTAURANT! UNFORTUNATELY, THEY CANNOT ONLY SERVE CANDY, PIZZA AND ICE CREAM! THEY HAVE TO CREATE A HEALTHY BALANCE OF MEALS EVERY DAY!

IN THIS ACTIVITY, YOUR CHILD WILL NEED TO PREPARE THREE MEALS FOR ONE DAY IN THEIR RESTAURANT. THEY WILL BE RESPONSIBLE FOR OFFERING BREAKFAST, LUNCH AND DINNER TO THEIR CLIENTS.

EXPLANATION:

THE CHILD MAY BECOME MORE AWARE OF HOW TO EAT HEALTHY IF THEY ARE RESPONSIBLE FOR CREATING THEIR OWN MENU IN THIS MANNER. IN ADDITION, THEY WILL ACQUIRE OWNERSHIP OVER THIS VERY IMPORTANT TASK WHICH MAY CARRY OVER INTO THEIR LIVES!

DAILY SERVINGS FROM THE FOOD PYRAMID

YOU ARE RESPONSIBLE FOR CREATING BREAKFAST, LUNCH AND DINNER FOR ONE DAY IN YOUR RESTAURANT. HERE ARE THE SERVINGS YOU MUST HAVE FOR THE ENTIRE DAY!!!

SMALL AMOUNT OF FATS, OILS + SWEETS

2 TO 3 SERVINGS OF MILK, YOGURT + CHEESE

2 TO 3 SERVINGS OF MEAT, POULTRY (THIS MEANS CHICKEN, TURKEY OR OTHER BIRDS), FISH, BEANS, EGGS AND NUTS

3 TO 5 SERVINGS OF VEGETABLES

2 TO 4 SERVINGS OF FRUITS

6 TO 11 SERVINGS OF BREAD, CEREAL, RICE, + PASTA

SERVING SIZES FOR FOODS TO BE EATEN EVERY DAY

FATS, OILS AND SWEETS

TRY TO EAT ONLY A SMALL AMOUNT OF BUTTER, GRAVY, SALAD DRESSING, SUGAR, JELLY, CANDY AND SODA

MILK, YOGURT, AND CHEESE (2 TO 3 SERVINGS PER DAY)

ONE SERVING OF THESE FOODS IS...

1 CUP OF MILK OR YOGURT
OR
1-2OUNCES OF CHEESE

MEAT, POULTRY, FISH, BEANS, EGGS AND NUTS (2 TO 3 SERVINGS PER DAY)

ONE SERVING OF THESE FOODS IS...

2-3 OUNCES OF COOKED MEAT, POULTRY, OR FISH
OR
1/2 CUP OF COOKED DRY BEANS
OR
1 EGG
OR
4 TABLESPOONS OF PEANUT BUTTER

VEGETABLES (3 TO 5 SERVINGS PER DAY)

ONE SERVING OF THESE FOODS IS...

1 CUP OF RAW LEAFY VEGETABLES (LIKE SPINACH!!!)
OR
1/2 CUP OF OTHER VEGETABLES, COOKED OR RAW
OR
3/4 CUP OF FRUIT JUICE
OR
3/4 CUP OF VEGETABLE JUICE

FRUITS (2 TO 4 SERVINGS PER DAY)

ONE SERVING OF THESE FOODS IS...

1 MEDIUM APPLE, BANANA, ORANGE
OR
1/2 CUP OF CHOPPED, COOKED, OR CANNED FRUIT

GRAIN PRODUCTS (6 TO 11 SERVINGS PER DAY)

ONE SERVING OF THESE FOODS IS...

1 SLICE OF BREAD
OR
1 OUNCE OF COLD CEREAL
OR
1/2 CUP OF COOKED CEREAL, RICE, OR PASTA

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "FOOD GROUP RIDDLES"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

CLASSIFYING FOODS IN TO GROUPS CAN BE EASY FOR MOST ITEMS. HOWEVER, IT CAN BE CONFUSING AT TIMES.

BY PRACTICING SIMPLE PROBLEM-SOLVING RIDDLES, CHILDREN WILL EXPLORE THE VARIOUS FOODS THAT ARE CONTAINED IN THE FOOD PYRAMID.

FOOD GROUP RIDDLES

CHILDREN WILL SOLVE BASIC RIDDLES THAT ARE LINKED TO THE FOOD PYRAMID.

MATERIALS:
LIST O' RIDDLES (SEE ATTACHED)
PAPER/PENCIL

ACTIVITY:
INFORM THE CHILD THAT THEY WILL BE ATTEMPTING TO SOLVE THE FOLLOWING RIDDLES. IN ORDER TO MAKE THIS MORE CHALLENGING, HOWEVER, THEY WILL HAVE TO TAKE NOTES OF THEIR IDEAS AS THEY HEAR EVERY CLUE.

FOR EXAMPLE:

THE CLUE FOR THE FIRST FOOD IS...I AM ROUND AND RED.

THE CHILD CAN RIGHT DOWN TOMATO, RADISH, CHERRY, ETC...WHATEVER COMES TO MIND IS OKAY!

NOW GIVE THE CHILD THE SECOND CLUE...SOME PEOPLE THINK I AM A VEGETABLE, BUT I AM REALLY A FRUIT.

THE CHILD CAN NOW RETURN TO THE LIST AND SEE IF ONE OF THEIR IDEAS MATCH. IF SO, THEY CAN CIRCLE IT; IF NOT, THEY MAY WANT TO CROSS IT OUT. IF NONE OF THE FOODS ON THE LIST MATCH THE CLUES, YOU MAY WANT TO REPEAT ALL OF THE CLUES ONCE AGAIN...OR MOVE ON TO THE THIRD CLUE!

CLUE #3: PEOPLE LIKE TO USE ME IN A SALAD.

IF YOUR CHILD GUESSES THAT YOUR MYSTERY FOOD IS A TOMATO, THEY ARE CORRECT!!!

LIST O' RIDDLES

CLUE #1	CLUE #2	CLUE #3	ANSWER
I AM WHITE.	YOU CAN DRINK ME.	I AM IN THE DAIRY GROUP.	MILK
I AM YELLOW AND LONG.	I AM A FRUIT.	MONKEYS EAT ME.	BANANA
I AM GREEN BUT WHEN YOU CUT ME OPEN I AM RED.	YOU EAT ME IN THE SUMMER TIME.	I AM A FRUIT.	WATERMELON
I AM IN THE GRAIN GROUP.	I AM LONG AND STRINGY.	YOU CAN PUT SAUCE ON ME.	SPAGHETTI
I AM GREEN.	I LOOK LIKE A TREE.	I AM A VEGETABLE.	BROCCOLI
I AM VERY SOFT AND I CAN BE SWEET.	I AM COLD.	I AM IN THE DAIRY GROUP.	ICE CREAM
I CAN SOMETIMES BE LIGHT BROWN OR WHITE.	I HAVE YELLOW STUFF INSIDE ME.	I AM A PROTEIN.	EGGS

I AM GREEN OR RED.	I AM SPICY AND HOT.	I AM IN THE VEGETABLE GROUP.	PEPPERS
I AM MADE OF FLOUR.	YOU CAN MAKE SANDWICHES WITH ME.	I AM A GRAIN.	BREAD
I AM SOME PEOPLE'S FAVORITE FOOD.	I AM BAD FOR YOU.	YOU GET ME AT HALLOWEEN.	CANDY
I AM ORANGE.	MY TOP IS GREEN.	I AM A VEGETABLE.	CARROT
I AM LITTLE, BLUE AND ROUND.	A LOT OF CHILDREN EAT ME.	I AM IN THE FRUIT GROUP.	BLUEBERRY

WEEK 36:
DRUGS AND YOUR BODY

"HOWEVER MANY WAYS THERE MAY BE OF BEING ALIVE, IT IS CERTAIN THAT THERE ARE VASTLY MORE WAYS OF BEING DEAD."

– RICHARD DAWKINS

DAY ONE

TODAY, YOU AND YOUR CHILD WILL:

1. READ THE TEXT
2. REVIEW THE TEXT WITH YOUR CHILD
3. COMPLETE THE STUDENT WORKSHEETS
4. FIND THE MATERIALS YOU WILL NEED FOR DAYS TWO AND THREE

DURING YOUR REVIEW, THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT PARTS OF YOUR CHILD'S READING FOR THIS WEEK.

DIFFERENT SUBSTANCES CAN DAMAGE THE BODY AND HOW IT FUNCTIONS. SUCH SUBSTANCES INCLUDE TOBACCO, ALCOHOL, OVER-THE-COUNTER MEDICINES, AND ILLICIT DRUGS. EVERYONE SHOULD UNDERSTAND THAT SOME SUBSTANCES, SUCH AS PRESCRIPTION DRUGS, CAN BE BENEFICIAL, BUT THAT ANY SUBSTANCE CAN BE HARMFUL IF USED INAPPROPRIATELY.

DEFINITIONS:

ADDICTED	A TIME WHEN YOUR BODY IS TRICKED INTO BELIEVING THAT IT NEEDS A DRUG TO SURVIVE

SAMPLE QUESTIONS TO ASK AFTER YOUR CHILD FINISHES THEIR READING FOR DAY ONE:

IS IT POSSIBLE FOR SOMEONE TO STOP BEING ADDICTED TO A DRUG?

YES. IT IS HARD TO GET RID OF AN ADDICTION AND SOMETIMES PEOPLE NEED HELP TO DO THIS.

WHAT DO DRUGS DO TO YOUR BRAIN?

DRUGS TRICK YOUR BRAIN INTO SENSING THINGS THAT ARE NOT REALLY THERE.

ANSWERS TO WORKSHEET QUESTIONS FOR WEEK 36:

PAGE ONE:

WHAT DOES IT MEAN TO BE ADDICTED?

BEING ADDICTED MEANS THAT YOUR BODY IS TRICKED INTO BELIEVING THAT IT NEEDS A DRUG IN ORDER TO SURVIVE.

WHAT DO DRUGS DO TO YOUR BRAIN?

DRUGS MAKE YOUR BODY SENSE THINGS THAT ARE NOT ALWAYS THERE.

WHAT DO DRUGS DO TO YOUR LUNGS?

SOME DRUGS CAN HURT YOUR LUNGS SO BAD THAT YOU CANNOT USE THEM TO BREATHE ANY MORE!

WHAT DO DRUGS DO TO YOUR LIVER?

DRUGS, LIKE ALCOHOL, CAN KEEP YOUR LIVER FROM CLEANING YOUR BLOOD. WITHOUT YOUR LIVER, YOUR BODY WOULD BECOME POISONED!

PAGE TWO:

ANSWERS WILL VARY

UNIT NINE REVIEW
ANSWER KEY

NAME THREE WAYS TO KEEP BACTERIA FROM GETTING INSIDE YOUR BODY:

WASH YOUR HANDS
BRUSH YOUR TEETH
CLEAN/COOK YOUR FOOD

LIST THE TWO MAIN PARTS OF YOUR IMMUNE SYSTEM:

SKIN
WHITE BLOOD CELLS

TRUE OR FALSE:

TRUE- INFECTION
TRUE - ANTIBIOTICS
FALSE - ALLERGY

BE CERTAIN TO GO OVER YOUR DEFINITIONS FOR THE TEST!!!

DAY TWO

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "THE DANGERS OF SMOKING"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

THE HAZARDS OF SMOKING ARE EVIDENT IN NEARLY EVERY TEST THAT IS ADMINISTERED WITH THEM. ONE OF THE MOST LASTING EFFECTS IS THE PRESENCE OF TAR WITHIN EACH CIGARETTE.

TAR AND THE COLLECTION OF OTHER CHEMICALS THAT ARE INHALED WITH CIGARETTE SMOKE CAN BE TRAPPED EASILY AND OBSERVED IN A SAFE AND NON-THREATENING ENVIRONMENT.

THIS ACTIVITY WILL REQUIRE THE USE OF A REAL CIGARETTE...

YES, I KNOW MANY OF YOU (INCLUDING MYSELF) ARE OPPOSED TO PURCHASING THIS ITEM; HOWEVER, I BELIEVE THAT THIS SMALL INVESTMENT WILL HAVE A LASTING EFFECT ON THE MINDS OF CHILDREN...ESPECIALLY WHEN THEY SEE THE NASTY JUNK THAT CAN BE FOUND INSIDE ONE OF THESE THINGS...IF YOU KNOW SOMEONE WHO SMOKES, ASK THEM FOR ONE – AND BE CERTAIN TO EXPLAIN WHY!!!

THE DANGERS OF SMOKING...

CHILDREN WILL OBSERVE A DEMONSTRATION OF THE TAR THAT IS LEFT FROM A CIGARETTE WITH THIS DEMONSTRATION.

MATERIALS:

ONE UNFILTERED CIGARETTE
EMPTY SODA BOTTLE
MODELING CLAY
PENCIL
ONE COTTON BALL

ACTIVITY:

BE CERTAIN TO DO THIS DEMO OUTSIDE FOR THE CHILDREN TO SEE.

PLACE A COTTON BALL INTO A DRY SODA BOTTLE.

COVER THE OPENING OF THE BOTTLE WITH A LARGE PIECE OF MODELING CLAY AND USE A PENCIL TO DRIVE A HOLE THROUGH IT. YOU SHOULD HAVE A SMALL TUNNEL THROUGH THE MODELING CLAY.

INSERT AN UNFILTERED CIGARETTE ONTO THE TOP OF THE HOLE IN THE CLAY.

INFORM THE CHILD THAT YOU ARE GOING TO LIGHT THE CIGARETTE AND FORCE AIR THROUGH IT AND INTO THE BOTTLE. HAVE THEM PREDICT WHAT IS GOING TO HAPPEN TO THE COTTON BALL.

GENTLY SQUEEZE THE BOTTLE AND LIGHT THE CIGARETTE. RELEASE THE BOTTLE AND THE CIGARETTE SHOULD BECOME LIT.

CONTINUE TO GENTLY SQUEEZE THE BOTTLE TO FORCE AIR THROUGH THE CIGARETTE AND INTO THE BOTTLE.

AFTER A COUPLE DOZEN SQUEEZES, EXTINGUISH THE CIGARETTE AND HAVE THE CHILDREN EXAMINE THE COTTON BALL INSIDE THE BOTTLE. THEY SHOULD FIND A DARK COLORED RESIDUE ALL OVER ITS SURFACE.

Explanation:
THE GENTLE SQUEEZING OF THE BOTTLE SIMULATES THE ACT OF INHALING CIGARETTE SMOKE INTO YOUR LUNGS.

THE DARK RESIDUE LEFT ON THE COTTON BALLS IS THE TAR, NICOTINE AND OTHER HARMFUL CHEMICALS THAT ARE USED INSIDE THE CIGARETTE. EVERY DRAG OF A CIGARETTE DRAWS THESE CHEMICAL INTO YOUR LUNGS. NOW, HAVE THE CHILDREN IMAGINE SQUEEZING THE BOTTLE UNTIL THAT CIGARETTE IS COMPLETELY GONE. WOULD THERE BE MORE OR LESS "JUNK" ON THE COTTON BALL? NOW ASK THEM TO IMAGINE WHAT A PERSON'S LUNGS WOULD LOOK LIKE IF THEY SMOKED SEVERAL OF THESE A DAY...YUCK!!!

DAY THREE

TODAY, YOU AND YOUR CHILD WILL:

1. REVIEW DAY ONE USING THE FOLLOWING TEXT
2. RUN THE ACTIVITY: "DEEP BREATHS"

THE FOLLOWING LIST WILL GIVE YOU THE MOST IMPORTANT ITEMS TO REVIEW FOR YOUR ACTIVITY TODAY!

A SPIROMETER IS A DEVICE THAT MEASURES THE AMOUNT OF AIR ONE CAN HOLD IN THEIR LUNGS. THIS MECHANISM CAN BE CRUDELY CONSTRUCTED AT HOME TO DEMONSTRATE ITS EFFECTIVENESS IN MEASURING OUR LUNG CAPACITY.

AS A PERSON EXERCISES, OUR MUSCLES REQUIRE MORE OXYGEN TO MAINTAIN OUR EFFORT. THEREFORE, OUR LUNGS MAY NOT CHANGE IN SIZE, BUT THEY MAY BECOME DEPLETED OF THEIR OXYGEN IN MUCH SHORTER PERIOD OF TIME WHILE EXERCISING!

ESP ACTIVITY: DEEP BREATHS

HOW MUCH AIR CAN YOU HOLD WITHIN YOUR LUNGS?

MATERIALS:

GALLON MILK JUG WITH THE CAP
LARGE BUCKET OF WATER
MEASURING CUPS
TUBING (SECTION OF HOSE WILL WORK)

ACTIVITY:

TAKE THE MILK JUG AND FILL IT WITH WATER.

PLACE THE OPEN END OF THE MILK JUG INTO A BUCKET FILLED WITH WATER. YOU WILL WANT PLENTY OF ROOM REMAINING IN THE BUCKET AS THE WATER FROM THE GALLON JUG WILL SOON EMPTY INTO THE BUCKET.

PLACE THE TUBING INTO THE OPEN END OF THE MILK JUG THAT IS NOW UPSIDE DOWN IN THE BUCKET OF WATER.

WITH ONE DEEP BREATH, BLOW INTO THE TUBING. THIS WILL PUSH THE WATER OUT OF THE JUG.

MEASURE THE AMOUNT OF WATER THAT REMAINS IN THE JUG BY PLACING THE CAP ON THE JUG WHILE IT IS STILL UNDER WATER, REMOVING IT FROM THE BUCKET AND POURING IT INTO THE MEASURING CUPS. SUBTRACT THE AMOUNT OF WATER REMAINING FROM ONE GALLON.

FOR EXPERIMENTATION, REPEAT THIS EXPERIMENT AFTER THE CHILD HAS RUN IN PLACE FOR SEVERAL MINUTES.

EXPLANATION:
THE NORMAL AMOUNT OF AIR WITHIN A PAIR OF ADULT HUMAN LUNGS IS THREE TO FIVE LITERS. LUNG CAPACITY IS TYPICALLY CALCULATED WITH FORMULAS (WHICH I WILL SPARE YOU FROM) THAT PERTAIN TO A PERSON'S VOLUME OF AIR WITHIN THEIR LUNGS AND THEIR BODY WEIGHT. THIS FORMULA CHANGES BETWEEN MEN AND WOMEN, AS WELL AS WITH THE AGE OF THE PARTICIPANT AND THEIR PHYSICAL FITNESS.

INDEPENDENT VARIABLE: AMOUNT OF EXERCISE
DEPENDENT VARIABLE: VOLUME OF WATER REMAINING
HYPOTHESIS:
IF THE AMOUNT OF EXERCISE IS (INCREASED/DECREASED), THEN THE VOLUME OF WATER REMAINING WILL (INCREASE/DECREASE).

UNIT NINE TEST

MATCH THE WORDS IN THE FIRST COLUMN TO THE BEST AVAILABLE ANSWER IN THE SECOND COLUMN.

____	PLAQUE	1. HARDENED PLAQUE
____	INFECTION	2. A RESULT OF YOUR IMMUNE SYSTEM WORKING TOO HARD TO GET RID OF THINGS IN YOUR BODY
____	ANTIBIOTICS	3. A STICKY LAYER THAT FORMS OVER YOUR TEETH
____	FOOD PYRAMID	4. THE RESULT OF YOUR IMMUNE SYSTEM THAT MISSES SOME BACTERIA OR OTHER ITEM THAT GETS INTO YOUR BODY
____	WELL-BALANCED DIET	5. THE STUFF YOU EAT AND DRINK
____	TARTAR	6. THE ACTIONS OF YOUR SKIN AND WHITE BLOOD CELLS THAT PROTECT YOUR BODY FROM INFECTIONS
____	DIET	7. A LIST OF HEALTHY FOODS (AND THEIR AMOUNTS) YOU SHOULD EAT EVERY DAY
____	IMMUNE SYSTEM	8. A TIME WHEN YOUR BODY IS TRICKED INTO BELIEVING THAT IT NEEDS THE DRUG TO SURVIVE
____	ADDICTED	9. CHEMICALS THAT ARE MADE TO ATTACK BACTERIA AND GET RID OF THEM WITHOUT HURTING YOU IN THE PROCESS
____	ALLERGY	10. THE RIGHT AMOUNT OF FOODS YOUR BODY NEEDS TO SURVIVE

WHICH ONE IS RIGHT? CIRCLE THE CORRECT ANSWER.

1. THE USE OF SOAP WHEN WASHING YOUR HANDS...

A. IS POISON TO BACTERIA
B. IS FOOD FOR BACTERIA
C. HELPS BACTERIA TO SPREAD

2. YOUR IMMUNE SYSTEM IS MADE UP OF:

A. RED AND WHITE BLOOD CELLS
B. SKIN AND RED BLOOD CELLS
C. WHITE BLOOD CELLS AND SKIN

3. THE TYPES OF FOOD THAT SHOULD BE EATEN IN SMALL AMOUNTS IS:

A. VEGETABLES AND FRUITS
B. BREADS AND MEATS
C. SUGARS AND FATS

4. DRUGS ARE HARMFUL BECAUSE THEY CAN AFFECT YOUR...

A. IMMUNE SYSTEM
B. BRAIN
C. DIET

5. YOU SHOULD COOK OR CLEAN YOUR FOOD BEFORE YOU EAT BECAUSE...

A. IT IS FILLED WITH BACTERIA
B. IT TASTES BETTER THIS WAY
C. COOKING AND CLEANING YOUR FOOD MAKES IT EASIER TO EAT

6. A RED BUMP ON YOUR SKIN WHERE A MOSQUITO BIT YOU MEANS...

A. YOU HAVE AN ALLERGY TO MOSQUITO BITES
B. YOU NEED TO TAKE ANTIBIOTICS TO KEEP YOU FROM GETTING SICK
C. YOUR IMMUNE SYSTEM IS GETTING RID OF THE CHEMICALS AND BACTERIA FROM THE BITE

BESIDES HAVING YOUR BREATH SMELLING REALLY BAD, WHAT WOULD HAPPEN IF YOU DID NOT BRUSH YOUR TEETH FOR A MONTH? IN YOUR ANSWER, YOU MUST USE THE FOLLOWING WORDS:

PLAQUE
TARTAR
IMMUNE SYSTEM
INFECTED

UNIT NINE TEST ANSWER KEY

MATCHING

3 PLAQUE
4 INFECTION
9 ANTIBIOTICS
7 FOOD PYRAMID
10 WELL-BALANCED DIET
1 TARTAR
5 DIET
6 IMMUNE SYSTEM
8 ADDICTED
2 ALLERGY

MULTIPLE CHOICE

1. A
2. C
3. C
4. B
5. A
6. CA

WRITE A STORY...

ANSWERS WILL VARY. HOWEVER, THE CHILD MUST USE THE WORDS PLAQUE, TARTAR, IMMUNE SYSTEM AND INFECTED WITHIN THEIR DESCRIPTION OF WHAT WOULD HAPPEN IF THEY DID NOT BRUSH THEIR TEETH FOR A MONTH.

DEFINITIONS

ABIOTIC	NONLIVING THINGS
ACID	A DANGEROUS CHEMICAL INSIDE YOUR STOMACH THAT KILLS ANY BACTERIA THAT MAY BE ON THE FOOD YOU EAT
ADDICTED	A TIME WHEN YOUR BODY IS TRICKED INTO BELIEVING THAT IT NEEDS A DRUG TO SURVIVE
ALGAE	"AL-GEE"; PLANT-LIKE PROTESTS
ALLERGY	RESULT OF YOUR IMMUNE SYSTEM WORKING TOO HARD TO GET RID OF THINGS IN YOUR BODY; ITCHY AND WATERY EYES, SORE THROATS AND A RUNNY NOSE ARE SOME SIGNS OF AN ALLERGY
ALPINE TUNDRA	A TUNDRA THAT IS FOUND ON THE TOPS OF MOUNTAINS
AMPHIBIANS	"AM-FIB-EE-ANZ"; COLD-BLOODED VERTEBRATES WITH SMOOTH WET SKIN
ANIMAL KINGDOM	MOST ORGANISMS IN THIS KINGDOM CAN MOVE ON THEIR OWN AND ARE HETEROTROPHIC
ANTIBIOTICS	"AN-TI-BI-OT-ICKS"; CHEMICALS THAT ARE MADE TO ATTACK BACTERIA AND GET RID OF THEM WITHOUT HURTING YOU IN THE PROCESS
AQUATIC BIOME	A BIOME THAT INCLUDES ALL ORGANISMS THAT LIVE WITHIN FRESH WATER OR SALT WATER
ARCTIC TUNDRA	A TUNDRA THAT IS FOUND AROUND THE NORTH POLE
ARTERIES	"PIPES" THAT ARE USED TO MOVE BLOOD OUT OF YOUR HEART TO YOUR BODY
ARTHROPODS	THE LARGEST GROUP OF INVERTEBRATES THAT INCLUDE SPIDERS, INSECTS AND CRUSTACEANS
AUTOTROPHIC	BEING ABLE TO MAKE YOUR OWN FOOD

BACTERIA	SINGLE CELLED ORGANISMS THAT LIVE IN SOIL, WATER, AND OTHER ORGANISMS
BILE	A LIQUID THAT IS MADE BY YOUR LIVER AND IS USED TO DIGEST ANY FAT THAT IS IN YOUR FOOD
BIODIVERSITY	"BIO-DI-VURS-ITY"; ALL OF THE DIFFERENT KINDS OF LIFE THAT EXIST ON THE WORLD
BIOMES	AREAS OF THE WORLD THAT HAVE THE SAME TEMPERATURE, AMOUNT OF RAINFALL, KIND OF SOIL AND HABITATS
BIOTIC	ALL LIVING OR DECEASED ORGANISMS
BIRDS	WARM-BLOODED VERTEBRATE ANIMALS WHICH ARE COVERED IN FEATHERS
BRAIN	AN ORGAN THAT CONTROLS WHAT YOUR BODY DOES
BRAINSTEM	FOUND BETWEEN YOUR SPINE AND THE CEREBRUM, THIS PART OF YOUR BRAIN HELPS YOU TO BREATH, SWALLOW, DIGEST FOOD AND ALSO CONTROLS HOW FAST YOUR HEART BEATS AND HOW IT PUMPS BLOOD THROUGH YOUR BODY
BURROW	TO DIG
CANALS	THREE CURVED TUBES IN YOUR EAR THAT ARE FILLED WITH FLUID; ACTS LIKE THE COCHLEA BUT WORKS TO KEEP YOU BALANCED
CAPILLARIES	"CAP-ILL-AIR-EZ"; THE SMALLEST POSSIBLE "PIPE" THAT CAN BE USED TO CARRY BLOOD
CARDIAC	ANYTHING RELATED TO THE HEART
CARDIAC MUSCLE	A KIND OF MUSCLE THAT IS ONLY FOUND IN THE HEART
CARNIVORES	THESE ARE THE ANIMALS THAT EAT OTHER ANIMALS (LIKE THE HERBIVORES) FOR FOOD

CARRYING CAPACITY	A BALANCE OF PREDATORS AND PREY IN A HABITAT
CARTILAGE	A "CUSHION" OF CELLS BETWEEN YOUR BONES TO KEEP THEM FROM RUBBING TOGETHER
CAVITY	A PLACE WHERE BACTERIA HAVE EATEN A PART OF YOUR TEETH
CELL WALL	A FIRM STRUCTURE THAT SURROUNDS A PLANT CELL AND PROTECTS IT FROM HARM
CELLS	THE SMALLEST PART OF A LIVING ORGANISM
CEREBELLUM	"SARAH-BELL-UM"; SMALLER THAN THE CEREBRUM; HELPS YOU TO KEEP YOUR BALANCE AND CONTROLS ALL OF YOUR REFLEXES
CEREBRUM	"SUH-REE-BRUM"; THE LARGEST PART OF YOUR BRAIN THAT CONTAINS FOUR LOBES
CETACEANS	"SEE-TAH-SEE-ANZ"; THESE WARM-BLOODED VERTEBRATES (SUCH AS WHALES AND DOLPHINS) BREATHE AIR ABOVE THE WATER
CHLOROPLAST	SPECIAL ORGANELLES THAT CONTAIN CHLOROPHYLL
CHLOROPHYLL	"KLOR-O-FILL"; A CHEMICAL FOUND INSIDE CHLOROPLASTS THAT USES SUNLIGHT TO MAKE FOOD FOR THE CELL
CLASSIFY	TO GROUP THINGS
COCHLEA	"COKE-LEE-AH"; LOOKS LIKE A SEASHELL AND IS FILLED WITH FLUID; WHEN SOUND WAVES VIBRATE THE EARDRUM, TINY HAIRS INSIDE THE COCHLEA VIBRATE TOO; EACH HAIR SENDS A DIFFERENT MESSAGE TO THE BRAIN
COCOON	THE NAME FOR THE PUPA OF A MOTH

COLD-BLOODED	AN ANIMAL WHOSE BODY STAYS ABOUT THE SAME TEMPERATURE AS THEIR HABITAT
CONIFEROUS FOREST BIOME	A BIOME THAT HAS LONG WINTERS AND IS FILLED WITH TREES KNOWN AS CONIFERS
CONIFERS	NONFLOWERING VASCULAR PLANTS WITH SHORT, WAXY NEEDLES INSTEAD OF LEAVES WHICH MAKE SEEDS THAT ARE CALLED "CONES" (LIKE PINECONES)
CONSERVATION	THE PROTECTION AND CAREFUL USE OF RESOURCES AND THE ENVIRONMENT
CONSUMERS	ANIMALS THAT GET ALL OF THEIR NUTRIENTS BY EATING (OR CONSUMING) OTHER ORGANISMS
CONTRACT	"TO SHORTEN"
CRUSTACEANS	"KRUS-TASE-SHUN"; CRUSTACEANS ARE ANIMALS LIKE LOBSTERS OR CRABS THAT HAVE AN EXOSKELETON AND PINCHERS
CYTOPLASM	"SIGHT-O-PLAZ-M"; A GOOEY FLUID THAT FILLS UP THE INSIDE OF A CELL
DECIDUOUS FOREST BIOME	A BIOME THAT IS FILLED WITH TREES THAT LOSE THEIR LEAVES IN THE FALL AND HAVE FOUR SEPARATE SEASONS (SUMMER, FALL, WINTER AND SPRING)
DECOMPOSERS	ORGANISMS THAT BREAK DOWN BIOTIC MATERIAL (LIKE DEAD PLANTS AND ANIMALS) INTO MORE USEFUL FORMS (LIKE NUTRIENTS FOR LIVING PLANTS)
DESERT BIOME	A BIOME THAT HAS VERY HOT DAYS AND COLD NIGHTS WITH VERY LITTLE WATER AND FEW ORGANISMS
DIABETES	"DI-A-BEET-EZ"; A COMMON DISEASE THAT OCCURS WHEN YOUR PANCREAS STOPS MAKING INSULIN
DIAPHRAGM	"DIE-A-FRAM"; A LARGE SKELETAL MUSCLE THAT PUSHES ON YOUR LUNGS TO HELP YOU BREATHE

DIET	THE STUFF YOU EAT AND DRINK
DIGESTING	TO BREAK DOWN YOUR FOOD INTO SMALLER, SOFTER AND MORE USABLE PIECES
DISEASE	A SICKNESS
DNA	A GROUP OF CHEMICALS THAT CONTAIN ALL OF THE INSTRUCTIONS FOR MAKING ALL THE STRUCTURES AND MATERIALS THE ORGANISM NEEDS TO SURVIVE
EARDRUM	PART OF YOUR EAR THAT VIBRATES WHEN SOUND WAVES HIT IT
ECHO	THE BOUNCING BACK OF A SOUND WAVE TO THE PERSON WHO MADE THE SOUND
ECHOLOCATION	"EK-O-LOW-KAY-SHUN"; A WAY FOR SOME ANIMALS (LIKE BATS AND DOLPHINS) TO KEEP FROM BUMPING INTO EVERYTHING BY GIVING OFF SOUNDS AND LISTENING FOR ECHOS
ELECTRIC SENSE	A WAY FOR SOME ANIMALS, LIKE THE ELECTRIC EEL, TO USE A STRONG ELECTRIC CHARGE TO SEE, MOVE AND TO KILL OTHER ANIMALS
ENDOSKELETON	HAVING YOUR SKELETON INSIDE YOUR BODY
ENVIRONMENT	EVERYTHING IN THE WORLD
ENZYMES	CHEMICALS MADE BY ORGANISMS THAT CAN HELP THE ORGANISM DO MANY DIFFERENT THINGS
EPIDERMIS	"EH-PIH-DUR-MISS"; THE OUTER LAYER OF SKIN CELLS THAT CAN BE SEEN OUTSIDE OF YOUR BODY
ER	QUICKLY SENDS PROTEIN MESSAGES TO ORGANELLES
ESOPHAGUS	"EE-SOF-AH-GUS"; A LONG TUBE THAT MOVES FOOD FROM YOUR THROAT INTO YOUR STOMACH
ESTUARIES	AREAS WHERE RIVERS AND STREAMS FLOW INTO SALTWATER HABITATS

EUKARYOTIC	"U-CARRY-OT-IK"; CELLS OR ORGANISMS THAT BELONG TO THE KINGDOMS ANIMAL, PLANT, PROTIST OR FUNGI
EVERGREENS	PLANTS WITH LEAVES THAT STAY GREEN THROUGHOUT THE WINTER
EXHALE	TO BREATHE OUT
EXOSKELETON	HAVING YOUR SKELETON OUTSIDE YOUR BODY
EXTERNAL SENSES	FEELINGS THAT GIVE US INFORMATION ABOUT WHAT IS GOING ON OUTSIDE OF OUR BODY
EXTINCT	"X-TINKT"; WHEN ALL OF THE ORGANISMS OF A SIMILAR KIND (POPULATION) ARE NO LONGER ALIVE THROUGHOUT THE WORLD
EYEBROWS	BUSHY STRIPS OF HAIR ABOVE YOUR EYES THAT HELP TO KEEP SWEAT FROM DRIPPING INTO YOUR EYES
EYELASHES	PROTECTIVE HAIRS THAT "SWEEP AWAY" ANY BAD STUFF IN THE AIR THAT MAY GET INTO YOUR EYES
EYELIDS	PROTECTIVE SKIN THAT CAN SURROUND THE EYE AND SWEEP AWAY DIRT AND OTHER JUNK THAT GETS ON YOUR EYEBALLS
FAMINE	A TIME WHEN LOTS OF PEOPLE GO HUNGRY AND DON'T HAVE ENOUGH FOOD TO EAT
FERNS	NONFLOWERING VASCULAR PLANTS WHICH NEVER PRODUCE FLOWERS
FERTILE	HAVING PLENTY OF NUTRIENTS IN THE SOIL
FISH	COLD-BLOODED VERTEBRATES THAT LIVE INSIDE THE AQUATIC BIOME
FLAGELLA	BODY PART OF A BACTERIA THAT ACTS LIKE A TAIL WHICH MOVES THE BACTERIA THROUGH A LIQUID
FLOWERING PLANTS	VASCULAR PLANTS THAT MAKE FLOWERS

FLOWERS	PARTS OF THE PLANT THAT MAKE ALL OF THE SEEDS
FOOD CHAIN	A RELATIONSHIP BETWEEN SPECIES THAT USE EACH OTHER FOR FOOD. IT IS CALLED A "CHAIN" BECAUSE NUTRIENTS ARE PASSED FROM ONE ORGANISM TO ANOTHER
FOOD PYRAMID	THE FOOD PYRAMID CONTAINS THE BEST INFORMATION TO FOLLOW WHEN YOU WANT TO EAT HEALTHY
FOOD WEB	A GROUP OF FOOD CHAINS LINKED TOGETHER
FRESHWATER	THESE HABITATS INCLUDE PONDS, STREAMS, LAKES, RIVERS AND WETLANDS; THEY ARE CALLED "FRESHWATER" BECAUSE OF THE LOW AMOUNT OF SALT IN THE WATER
FRONTAL LOBE	THIS LOBE CONTROLS YOUR ABILITY TO SPEAK, MOVEMENT, EMOTIONS AND PROBLEMS SOLVING
FRUITS	THE PARTS OF THE PLANT THAT HOLD THE SEEDS
GALLBLADDER	A STORAGE AREA FOR BILE
GERMINATE	TO BEGIN PLANT GROWTH
GILLS	SPECIAL BODY PARTS ON FISH THAT ALLOW THEM TO BREATHE AIR FROM THE WATER
GLUCAGON	A HORMONE MADE BY YOUR PANCREAS WHICH INFORMS THE LIVER TO SEND MORE SUGAR INTO YOUR BLOOD
GOLGI BODY	AN ORGANELLE THAT WRAPS UP PROTEINS INTO A BUNDLE INSIDE A CELL
GRASSLAND BIOME	A BIOME THAT HAS GOOD SOIL FOR MANY DIFFERENT KINDS OF GRASSES AND FEW TREES

HABITAT	THE PLACE WHERE AN ORGANISM LIVES IN THE ENVIRONMENT
HALOPHILES	"HAL-O-FILES"; ARCHAEBACTERIA THAT LIVE IN VERY SALTY WATER
HERBIVORES	THESE ANIMALS ONLY EAT PLANTS TO GET THEIR NUTRIENTS
HETEROTROPHIC	ORGANISMS THAT CANNOT MAKE THEIR OWN FOOD
HIBERNATE	TO SLEEP THROUGH THE WINTER
HORMONES	CHEMICAL MESSENGERS MADE BY YOUR BODY
HUMAN ANATOMY	"A-NAT-O-MEE";THE STUDY OF THE HUMAN BODY
HUMANS	A PERSON
IMMUNE SYSTEM	THE ACTIONS OF YOUR SKIN AND WHITE BLOOD CELLS THAT PROTECT YOUR BODY FROM INFECTIONS
INFECTED	THE RESULT OF YOUR IMMUNE SYSTEM THAT MISSES SOME BACTERIA OR OTHER ITEM THAT GETS INTO YOUR BODY; THIS MAKES A CUT WARM, RED IN COLOR AND FILLED WITH A GOOEY LIQUID
INFRARED	"IN-FRA-RED"; A WAY FOR ANIMALS (LIKE RATTLESNAKES) TO SEE THE HEAT COMING OFF OF THE BODY OF ANOTHER ANIMAL
INHALE	TO BREATHE IN
INHERITED TRAITS	"IN-HAIR-A-TED"; A FEATURE (LIKE EYE COLOR, HEIGHT, HAIR COLOR...) THAT YOU GET FROM YOUR PARENTS
INSECTS	SMALL ORGANISMS WITH SIX-LEGS AND AN EXOSKELETON
INSULIN	A HORMONE MADE BY YOUR PANCREAS WHICH

	INFORMS THE LIVER TO STOP SENDING SUGAR INTO YOUR BLOOD
INTERNAL SENSES	TYPES OF FEELINGS WE RECEIVE INSIDE OUR BODY LIKE HUNGER AND THIRST
INVERTEBRATES	ANIMALS THAT DO NOT HAVE A BACKBONE
IRIS	THE COLORFUL PORTION OF YOUR EYE THAT CHANGES THE SIZE OF THE PUPIL
KIDNEYS	TWO SMALL ORGANS IN YOUR BODY THAT CLEAN OUT THE WASTE PRODUCTS FROM YOUR BLOOD
KINGDOM ARCHAEBACTERIA	"ARK-EE-BAK-TEAR-E-AH"; BACTERIA THAT LIVE IN VERY DANGEROUS HABITATS
KINGDOM EUBACTERIA	"U-BAK-TEAR-E-AH"; COMMON BACTERIA THAT CAN LIVE IN EVERY BIOME OF THE WORLD
KINGDOM FUNGI	ORGANISMS, LIKE MUSHROOMS, THAT ACT AS DECOMPOSERS AND ABSORB THEIR FOOD THROUGH THEIR BODIES
KINGDOM PROTISTA	ORGANISMS THAT SHARE TRAITS WITH PLANTS, ANIMALS AND FUNGI
KINGDOMS	SIX DIFFERENT GROUPS THAT SCIENTISTS HAVE PLACED ALL LIVING ORGANISMS INTO
LAKES	LARGE BODIES OF WATER THAT ARE SURROUNDED BY LAND
LANDFILL	LANDFILLS ARE LARGE FIELDS WHERE TRASH IS DUMPED AND BURIED
LARGE INTESTINE	A LONG ORGAN IN YOUR BODY, ATTACHED TO THE SMALL INTESTINE, THAT ABSORBS ALL OF THE WATER OUT OF YOUR FOOD

LARVA	THE SECOND STAGE OF GROWTH IN AN INSECT'S LIFE CYCLE; FOR A MOTH, THIS WOULD BE THE CATERPILLAR
LEAVES	THIS PART OF A PLANT USE THE NUTRIENTS FROM THE ROOTS AND SUNLIGHT TO MAKE FOOD FOR THE PLANT
LEFT HEMISPHERE	ONE HALF OF YOUR BRAIN THAT TAKES CARE OF YOUR PROBLEM-SOLVING ABILITIES
LIFE CYCLES	A PATTERN FOR ALL ORGANISMS THAT INCLUDE BEING BORN, GROWING INTO ADULTS, REPRODUCING AND DYING
LIGAMENTS	BANDS OF CELLS THAT CONNECT YOUR BONES TOGETHER
LIVER	AN ORGAN OF THE BODY THAT FILTERS YOUR BLOOD, STORES SUGAR AND MAKES BILE
LOBES	PARTS OF THE HEMISPHERES OF YOUR BRAIN
LUNGS	ORGAN THAT TRAPS THE OXYGEN YOU BREATHE INTO YOUR BODY
LYSOSOME	"LIE-SO-SO-M"; AN ORGANELLE THAT GETS RID OF THE WASTE INSIDE A CELL
LYSOZYME	"LIE-SO-ZIME"; AN ENZYME FOUND IN YOUR BODY THAT DESTROYS BACTERIA
MAMMALS	WARM-BLOODED VERTEBRATES WITH FUR OR HAIR; A FEMALE MAMMAL MAKES MILK TO FEED HER YOUNG
MARINE	SALTWATER HABITATS
MARSUPIALS	"MAR-SOOP-EE-ALZ"; VERTEBRATE ANIMALS LIKE THE KANGAROO OR KOALA THAT HAVE A POUCH ON THEIR BODY FOR CARRYING THEIR CHILDREN

MATERIAL RESOURCES	RESOURCES YOU CAN TOUCH LIKE GAS, WOOD AND FOOD
MEMBRANE	A COVERING THAT SURROUNDS THE CELL AND PROTECTS IT
METHANOGENS	"METH-AN-O-GENS"; ARCHAEBACTERIA NAMED AFTER THE GAS THEY MAKE...METHANE
MIGRATION	AN ACTION BY ANIMALS IN WHICH THEY LEAVE A BIOME DURING THE WINTER MONTHS AND RETURN IN THE SPRING
MITOCHONDRIA	"MIGHT-O-CON-DREE-ON"; AN ORGANELLE THAT TAKES NUTRIENTS FROM PLANTS AND ANIMALS AND CHANGES IT INTO ENERGY FOR THE CELL
MOSS	ONE KIND OF NONVASCULAR PLANT THAT CAN ABSORB WATER, LIKE A SPONGE, WITH ITS ENTIRE BODY
MUCUS	"MEW-CUS"; A SLIMY, STICKY GOO THAT YOUR BODY PRODUCES
MUSCLE	AN ORGAN THAT HELPS YOU TO MOVE EVERYTHING IN YOUR BODY
NEED	SOMETHING YOU MUST HAVE IN ORDER TO STAY ALIVE LIKE AIR, WATER AND NUTRIENTS
NERVE ENDINGS	AREAS IN YOUR SKIN THAT SENSE THE FEELINGS OF HEAT, COLD, PRESSURE, PAIN AND TASTE
NERVES	SMALL FIBERS IN YOUR BODY THAT SEND MESSAGES FROM YOUR SENSE ORGANS TO YOUR SPINAL CORD
NICHE	"NITCH"; WHAT AN ORGANISM DOES IN ITS HABITAT
NOCTURNAL	BEING ABLE TO SLEEP DURING THE DAY AND WAKE UP AT NIGHT
NON-FLOWERING PLANTS	VASCULAR PLANTS THAT DO NOT MAKE FLOWERS

NONMATERIAL RESOURCES	RESOURCES THAT YOU CANNOT TOUCH LIKE HAPPINESS, PEACE, FEELINGS OF SAFETY
NONRENEWABLE RESOURCES	RESOURCES THAT CAN TAKE A LONG TIME TO BE MADE AGAIN (THOUSANDS OF YEARS!); SOMETIMES THESE RESOURCES CANNOT BE MADE AGAIN AT ALL
NONVASCULAR PLANTS	PLANTS WITHOUT BODY PARTS TO MOVE WATER FROM THEIR ROOTS TO THE STEM AND TO THE LEAVES
NUCLEUS	"NEW-KLEE-US"; THE LARGEST ORGANELLE IN A PLANT OR ANIMAL CELL; CONTAINS THE DNA
NUTRIENTS	ANOTHER WORD FOR "FOOD"
OCCIPITAL LOBE	"OCK-SIP-IT-AL"; THIS LOBE CONTROLS YOUR SENSE OF VISION
OCEANS	THE LARGEST MARINE BIOME IN THE WORLD
OFFSPRING	A PARENT'S BABY
OMNIVORES	OMNIVORES WILL EAT PLANTS OR ANIMALS
ORGANELLES	"OR-GA-NELLS"; SMALL STRUCTURES INSIDE OF CELLS THAT HAVE A SPECIFIC JOB
ORGANISM	ANY LIVING CREATURE ON THE PLANET
ORGANS	PARTS OF THE BODY THAT HAVE SPECIAL JOBS TO DO
OUNCE	A WAY TO MEASURE THE WEIGHT OF AN OBJECT
OXYGEN	"OX-E-GEN"; THE GAS HUMANS NEED TO BREATHE TO STAY ALIVE
PANCREAS	"PAN-KRE-AZ"; MAKES ENZYMES TO HELP BREAK DOWN THE FOOD THAT COMES INTO YOUR SMALL INTESTINE

PARIETAL LOBE	"PAH-RIE-A-TAL"; THIS LOBE CONTROLS YOUR FEELINGS OF PAIN, PRESSURE, TEMPERATURE, AND TOUCH
PERMAFROST	A LAYER OF FROZEN SOIL USUALLY FOUND IN THE TUNDRA
PHOTOSYNTHESIS	A WAY FOR PLANTS TO USE SUNLIGHT, NUTRIENTS AND WATER TO MAKE THEIR OWN FOOD
PHOTOTROPISM	"FOE-TOE-TRO-PIZM"; THE ABILITY OF A PLANT TO SENSE THE DIRECTION OF SUNLIGHT AND TO GROW TOWARDS IT
PLANT KINGDOM	A GROUP OF ORGANISMS THAT ARE AUTOTROPHIC AND HAVE SOME FORM OF LEAF, STEM AND ROOT
PLAQUE	"PLAK"; A STICKY LAYER THAT FORMS OVER YOUR TEETH; IT IS A MIXTURE OF LEFTOVER FOOD, BACTERIA AND BACTERIA WASTE
PLASMA	THE LIQUID PART OF YOUR BLOOD
PONDS	SMALL BODIES OF WATER THAT ARE SURROUNDED BY LAND
POPULATION	A GROUP OF SIMILAR ORGANISMS LIVING IN THE SAME AREA
POPULATION DENSITY	A SCIENTIFIC WAY OF SAYING "THE NUMBER OF INDIVIDUALS OF A SPECIES IN A CERTAIN AREA"
POULTRY	CHICKEN, TURKEY OR OTHER BIRDS
PREDATORS	ANIMALS THAT EAT OTHER ANIMALS FOR FOOD; ALSO KNOWN AS A CARNIVORE
PREY	ANIMALS THAT ARE EATEN BY PREDATORS

PRIMATES	VERTEBRATE ANIMALS LIKE THE MONKEY, BABOON, CHIMPANZEE AND GORILLA WHICH HAVE VERY STRONG HANDS AND FINGERS BECAUSE OF THE USE OF THUMBS
PRODUCERS	PLANTS; THEY ARE NAMED "PRODUCERS" BECAUSE THEY ARE AUTOTROPHIC AND PRODUCE THEIR OWN FOOD
PROKARYOTIC	"PRO-CARRY-OT-IK"; CELLS OR ORGANISMS THAT BELONG TO THE KINGDOMS ARCHAEBACTERIA OR EUBACTERIA
PROTEINS	THE BUILDING BLOCKS FOR MANY PARTS OF THE BODY
PROTOZOANS	ANIMAL-LIKE PROTISTS
PUPA	THE THIRD STAGE OF GROWTH IN AN INSECT'S LIFE CYCLE; FOR A MOTH, THIS WOULD BE THE COCOON
PUPIL	THE BLACK "DOT" IN YOUR EYE WHERE LIGHT ENTERS YOUR BODY
RECYCLE	USING YOUR RESOURCES AGAIN *AFTER* CHANGING THEM
RED BLOOD CELLS	PART OF THE BLOOD THAT CARRIES OXYGEN TO ALL OF THE MUSCLES AND ORGANS OF YOUR BODY
REDUCE	USING LESS RESOURCES
REFLEXES	ACTIONS YOUR BODY GOES THROUGH WITHOUT THINKING ABOUT THEM
REINTRODUCTION	RELOCATING ORGANISMS BACK INTO THEIR HABITATS
RENEWABLE RESOURCE	A RESOURCE THAT CAN BE MADE AGAIN LIKE LIVING ORGANISMS
REPRODUCE	THE ABILITY OF AN ORGANISM TO MAKE ANOTHER ORGANISM OF ITS OWN KIND

REPTILES	A COLD-BLOODED ANIMAL WITH ROUGH, DRY SKIN THAT IS COVERED IN SCALES; TURTLES, SNAKES AND ALLIGATORS ARE REPTILES
RESOURCES	THE BASIC THINGS THAT AN ORGANISM OR A GROUP OF SIMILAR ORGANISMS CAN USE EVERYDAY
RETINA	TAKES A PICTURE OF ANYTHING YOU SEE AND SENDS IT TO YOUR BRAIN
REUSE	USING YOUR RESOURCES AGAIN *WITHOUT* CHANGING THEM
RHIZOMES	"RI-ZOMES"; PART OF A PLANT'S ROOT THAT CAN GROW A NEW PLANT
RIBOSOMES	"RI-BOW-SO-M"; MAKE PROTEIN FOR THE CELL
RIGHT HEMISPHERE	ONE HALF OF YOUR BRAIN THAT TAKES CARE OF YOUR CREATIVE ABILITIES
RIVERS	LARGE BODIES OF FRESHWATER MOVING IN ONE DIRECTION
RNA	"MESSAGES" SENT BY DNA THAT ARE READ BY THE RIBOSOMES
RODENT	VERTEBRATE ANIMALS LIKE RATS, MICE AND SQUIRRELS WHO HAVE SHARP FRONT TEETH USED FOR GNAWING
ROOTS	THE PARTS OF A PLANT UNDER THE GROUND THAT SUPPORT THE PLANT AND SOAK UP ITS WATER AND NUTRIENTS FROM THE SOIL
SALIVA	A LIQUID CREATED IN YOUR MOUTH
SCALES	THIN, FLAT AND HARD PLATES ON THE SKIN OF A REPTILE
SEEDLING	A YOUNG, SMALL PLANT

SENSE ORGAN	ORGANS SUCH AS EYES, EARS AND SKIN THAT ARE USED TO COLLECT INFORMATION OUTSIDE OF OUR BODY.
SERVING	A CERTAIN MEASUREMENT OF FOOD OR DRINK THAT YOU SHOULD EAT IN ONE MEAL
SKELETAL MUSCLES	MUSCLES WHICH STRETCH TO ALLOW YOUR BONES TO MOVE
SKIN	THE LARGEST ORGAN OF THE HUMAN BODY THAT PROTECTS THE BODY
SLIME MOLDS	FUNGUS-LIKE PROTISTS
SMALL INTESTINE	A 20-FOOT LONG ORGAN THAT IS FILLED WITH VILLI AND IS THE PLACE WHERE YOU DIGEST YOUR FOOD
SOUND WAVES	VIBRATIONS THAT CAUSE ANY KIND OF NOISE
SPECIES	A GROUP OF SIMILAR AND RELATED ORGANISMS THAT MAY OR MAY NOT BE LIVING IN THE SAME AREA
SPINAL CORD	FOUND INSIDE YOUR SPINE; HELPS YOUR BRAIN BY SENDING MESSAGES THROUGHOUT YOUR BODY
SPINE	LONG STACK OF BONES THAT PROTECT YOUR SPINAL CORD
STEMS	PARTS OF A PLANT THAT CARRY ALL OF THE WATER AND NUTRIENTS FROM THE ROOTS TO THE LEAVES; THEY ALSO HELP THE PLANT STAY UPRIGHT
STOMACH	AN ACID-FILLED SACK THAT STORES YOUR FOOD BEFORE DIGESTION
STREAMS	SMALL BODIES OF FRESHWATER MOVING IN ONE DIRECTION
TADPOLE	A YOUNG FROG

TARTAR	HARDENED PLAQUE THAT FORMS ON YOUR TEETH
TASTE BUDS	PARTS OF THE TONGUE THAT ARE USED FOR THE SENSE OF TASTE
TAXONOMY	THE WAY SCIENTISTS PLACE ALL OF THE DIFFERENT ORGANISMS INTO GROUPS
TEARS	FLUID THAT IS MADE BY YOUR EYES TO KEEP THEM WET AND CLEAN
TEMPERATE GRASSLANDS	GRASSLANDS WHICH HAVE HOT SUMMERS AND COLD WINTERS
TEMPORAL LOBE	"TEM-POOR-AL"; THIS LOBE CONTROLS YOUR SENSES OF HEARING, SMELLING AND YOUR ABILITY TO UNDERSTAND SPEECH
TENDONS	GROUPS OF CELLS THAT ATTACH YOUR SKELETAL MUSCLES TO YOUR BONES
THERMOPHILES	"THERM-O-FILES"; ARCHAEBACTERIA THAT LIVE IN AREAS WITH VERY HIGH TEMPERATURES
TROPICAL GRASSLANDS	GRASSLANDS WHICH ARE HOT ALL YEAR LONG
TROPICAL RAIN FOREST BIOME	A BIOME THAT IS ALWAYS WARM, HAS A LOT OF RAINFALL AND CONTAINS A HUGE AMOUNT OF DIFFERENT KINDS OF PLANTS AND ANIMALS
TUNDRA BIOME	THE COLDEST BIOME ON THE PLANET; CONTAINS NO TREES AND VERY FEW DIFFERENT KINDS OF PLANTS AND ANIMALS
ULCER	A PAINFUL HOLE IN A PERSON'S STOMACH
VACUOLE	AN ORGANELLE THAT STORES EXTRA WATER AND NUTRIENTS

VASCULAR PLANTS	PLANTS WITH SPECIAL BODY PARTS THAT MOVE WATER FROM THEIR ROOTS TO THE STEM AND TO THE LEAVES
VEINS	LARGE "PIPES" THAT CARRY BLOOD BACK INTO THE HEART FROM THE BODY
VERTEBRATES	ANIMALS THAT CONTAIN A BACKBONE
VILLI	"VEE-LIE"; SMALL BUMPS INSIDE YOUR SMALL INTESTINE THAT PULLS OUT ALL OF THE NUTRIENTS FROM THE FOOD YOU EAT
VIRUSES	A SMALL ORGANISM THAT CAN SPREAD DISEASE
WANT	ANYTHING YOU FEEL LIKE HAVING THAT IS NOT A NEED
WARM-BLOODED	AN ORGANISM WHOSE BODY TEMPERATURE STAYS THE SAME, EVEN IF ITS HABITAT IS VERY COLD
WELL-BALANCED DIET	THE RIGHT AMOUNT OF FOODS YOUR BODY NEEDS TO SURVIVE
WETLANDS	LARGE AREAS OF SHALLOW WATER; ALSO KNOWN AS SWAMPS
WHITE BLOOD CELL	BLOOD CELLS THAT ACT TO DESTROY ANYTHING THAT GETS INTO YOUR BODY THAT MAY BE HARMFUL