

CHAPTER 33

How many times have you been sick in the past year?
Once, twice, three times?

What if I told you there are ways to keep from getting sick so many times? Would you do it?

Let's see if I can convince you...

First of all, many people get sick when they get bacteria inside their bodies.

Remember, not all bacteria is bad for you! Some of these little guys help you by hanging around in your intestines and digesting some of your food! Don't worry! This is a good thing!

But, as you learned in chapter 16, some bacteria are not as helpful. In fact, some bacteria get in or on your body and

starts to make many copies of itself (reproduction). They make so many copies that they are a threat to your safety! When this happens, your body tries to get rid of them!

Bacteria are everywhere!



BUT WE
HELP GET
RID OF
THEM!

How does your body do this?

Well, have you ever had a cold before? If you have, it may have been because you had too many bacteria growing inside you and your body wanted to get rid of them!

So how do bacteria get inside you?

Think of it this way...everything you touch may have some kind of bacteria on it. Whenever you:

Touch your eye

Pick at your ear

Put your fingers in your mouth

Pick your nose (don't do that, it's gross!!!)

and **Scratch your skin**

Most of the colds and upset stomachs people get come from bacteria that have found a way into their bodies! For example, whenever you touch something, your hands get covered with bacteria! If you don't get rid of these bacteria, and you put your hands in your mouth, all of those bacteria are now inside of your body!

So how do I keep from getting sick so often?

This is the easy part...


Wash your hands!

That's right... by washing your hands you can keep bacteria from getting inside you.

And when you wash your hands...

use soap!

Trust me... bacteria do not like soap!
It is poison for them!

A black and white photograph showing several hands of different people stacked together. The hands are positioned in a way that suggests they are being held or supported. A speech bubble is positioned above the hands, containing the text 'OKAY. EVERYONE WASHED THEIR HANDS, RIGHT?'. The hands are adorned with various pieces of jewelry, including rings and bracelets.

OKAY. EVERYONE
WASHED THEIR
HANDS, *RIGHT?*

You should always wash your hands and wrists with clean soap and water. Don't forget the back of your hands, in between your fingers and under your fingernails!

It is always a good idea to wash your hands:

- Before making or eating your food
- After handling any animals
- After using the toilet
- And if you have been around someone who has a cold or a cough

That brings up another issue...

Please... when you are sick and start to cough or sneeze...

COMING TO A STORE NEAR YOU...



SOAP

NO BACTERIA IS SAFE!

...cover your mouth!



Every time you cough or sneeze you are spreading bacteria all over the place! If you cover your mouth when you sneeze, you can keep those bacteria from spreading to others!! Nobody wants to get sick so please keep your bacteria from

reaching anyone else! And when you are done... **wash your hands!**

If you use a tissue, be certain it gets thrown away into the trash! If someone even picks up your used tissue (yuck!), they can get sick from the bacteria in your snotty goo!

No matter how hard you try, you are still going to have bacteria in your mouth. That is okay! There is one very good way of keeping bacteria from growing inside your mouth...

Brush your teeth!

Right now, you may have over 100 million bacteria hanging out in your mouth right now! It is warm, wet and has plenty of food for bacteria to grow!! Yikes!

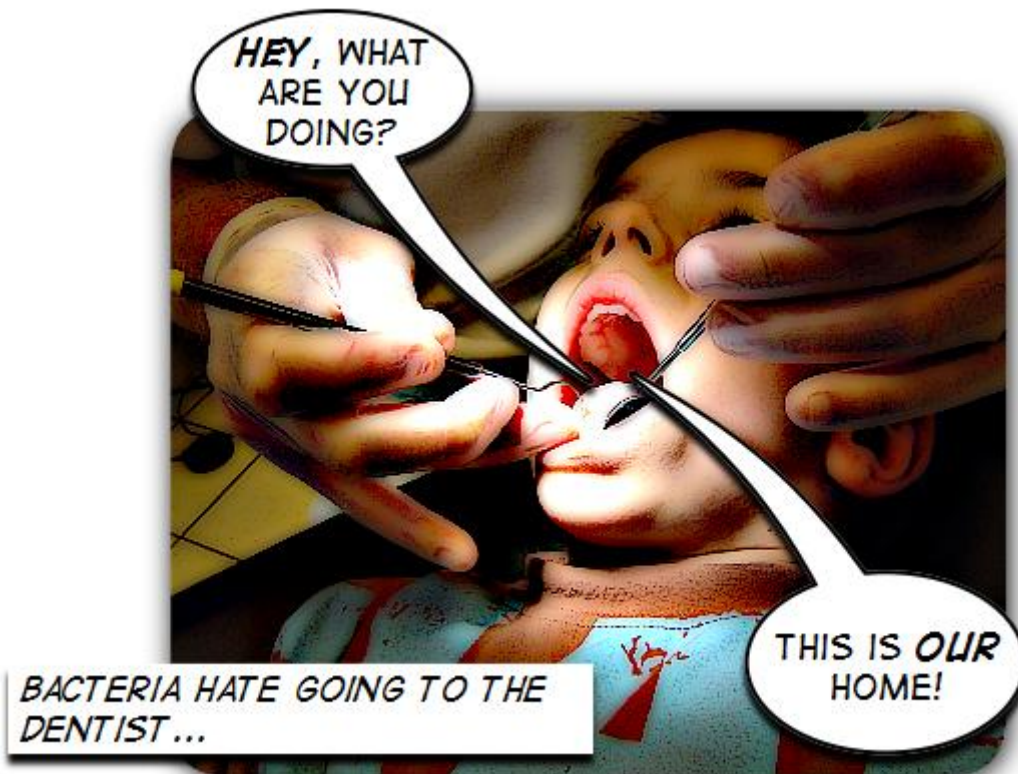
Every time you brush your teeth, you are scrubbing off millions of these little critters! And you are keeping your teeth staying nice and white.

Have ever woke up in the morning and found a sticky layer over your teeth before? That is called **plaque** ("plak") and

it is a mixture of leftover food, bacteria and bacteria waste! Yuck!

If plaque is not brushed off of your teeth, it can get pretty hard and turn yellow or brown in color! This

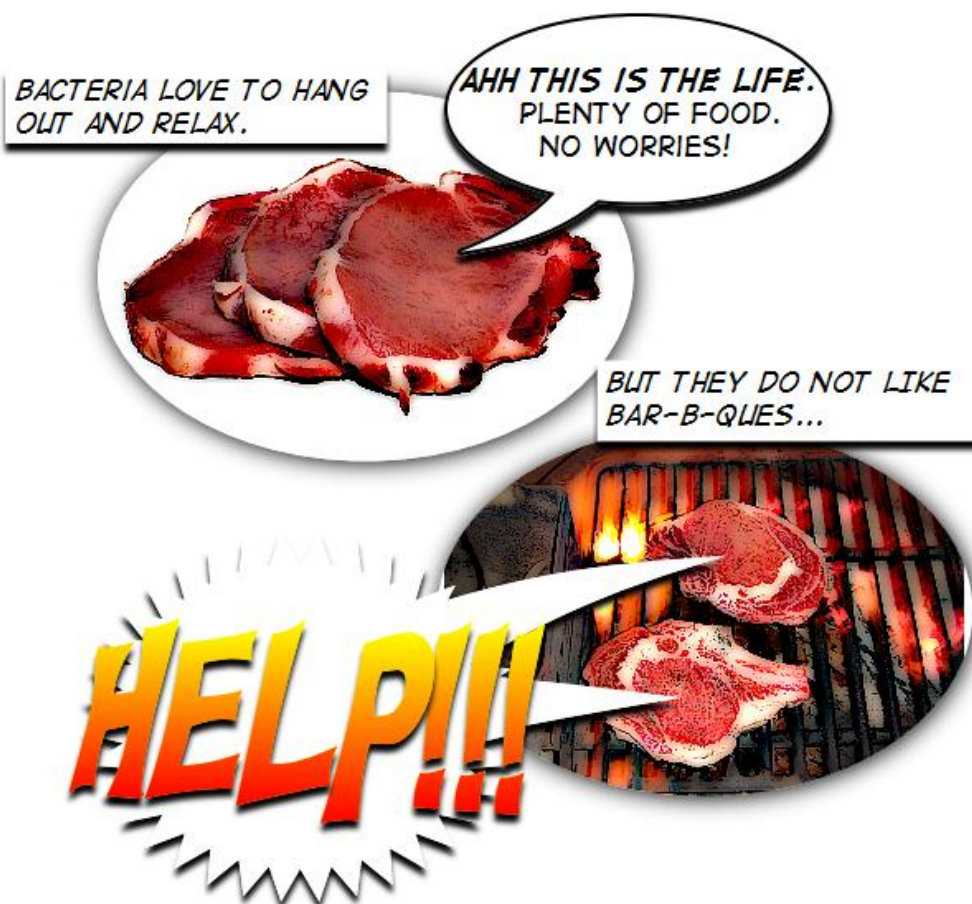
hardened plaque is called **tartar** and you will need a dentist to remove it from your teeth!



If you do not brush your teeth, the bacteria in your mouth will grow a lot! In fact, the bacteria will grow so much that they will start to eat part of your teeth! Yikes! When this happens, you have a **cavity**! Ouch!

It is a fact that the food you eat is loaded with bacteria!! That is why it is very important that you wash your fruits and vegetables before you eat them. It is also important to cook all of your meat before you eat it!

But why do we have to cook our food?



We must cook our meat to make certain that all of the bacteria inside it are killed! meat must be cooked at a high temperature and for a long enough time so that it kills all of the bacteria.

But how do I know how long and how hot I should cook the food?

Every kind of food is different, but most of the bacteria that is hanging out in your refrigerator can not live beyond 140°F. (How hot is that? Well, your body temperature right now should be around 98.6°F). Some food, like chicken and large pieces of beef need to be cooked until they are close to 165°F. Just to be certain that no little critters are still around!

With so many bacteria around us, inside us and on us, how do we keep from getting sick all the time?

That is a good question! And you are going to explore the answer in the next chapter!

Fill in the blanks with the correct words from the bank at the bottom of the page.

_____ is a sticky

_____ that _____

over your _____ .

_____ is _____ mixture

_____ _____ food,

bacteria and _____ waste.

Word Bank:

Leftover

layer

bacterial

Teeth

a

it

Plaque

forms

of

Fill in the blanks with the correct words from the bank at the bottom of the page.

_____ is _____ plaque that forms
_____ your _____ .

Word Bank:

teeth
hardened
on
tartar

Which one is right? Circle the correct answer.

1. Ways you can keep from getting sick include:

- a. washing your hands
- b. eating a lot of chocolate
- c. not getting enough sleep

2. Washing your hands with soap is important because:

- a. soap makes the skin on your hands become dry
- b. soap is poisonous to bacteria
- c. bacteria love to eat soap

3. Which of the following does not help bacteria get inside you:

- a. rubbing your eyes
- b. sharing a drink with someone
- c. brushing your teeth

4. I should always wash my hands _____.

- a. before going to bed
- b. before and after going to the supermarket
- c. before and after preparing a meal

5. Brushing your teeth...

- a. gets rid of all bacteria in your mouth
- b. increases the number of bacteria in your mouth
- c. keeps plaque from forming on your teeth

6. One way to get rid of the bacteria in my food is to...

- a. keep it in the refrigerator
- b. wash my hands before I prepare the meal
- c. heat the food at least to 140°F to 165°F

CHAPTER 34

Okay... before we get started, I told yOu not to panic about all of the bacteria that you touch every day! This week, you are going to learn **why** your body is so good at keeping bacteria from hurting you!

Right now, as you read this sentence, you are breathing in bacteria from the air.

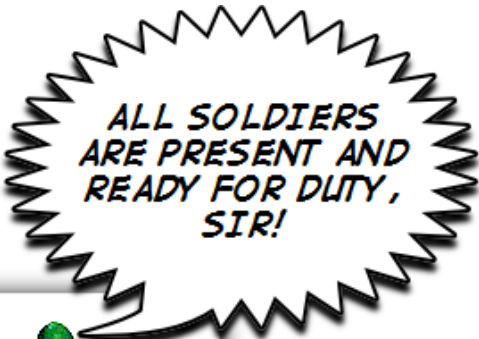
That's right! These bacteria would love to get inside your body and take over!

However...

Your body is protected very well by something called your...

Immune system

Think of your immune system as a well-trained army that protects you from things that can hurt you! This army never stops attacking things that get into or onto your body.



*ALL SOLDIERS
ARE PRESENT AND
READY FOR DUTY,
SIR!*



Without your immune system, you would not be able to survive in this world!


So who is in this "army"?

Your immune system has a lot of different parts that work together to protect you. You have already learned about one of them...

Your skin!

If you remember from chapter 25, you learned that your skin protects you from diseases by keeping bacteria outside of your body...

...unless you have a cut in your skin!



DOES ANYONE
HAVE SOME
CHAPSTICK? MY
LIPS ARE SO
DRY.

Every time you cut yourself, all kinds of things (even bacteria) get into your body through the opening!

Your immune system attacks everything that doesn't belong inside you while your skin works to close up the cut!

But you still want to help keep bacteria from getting into your body! That's why you always wash your cuts with soap and water before you put on a bandage!

There is another part of your immune system that helps to keep you healthy. The gooey mucus that is in your nose and your throat trap bacteria and keep them from getting into your body. It acts like glue to bacteria! Inside this mucus you will find an enzyme called **lysozyme** ("lie-so-zime") that destroys bacteria very well!

**But what if the bacteria get through my skin?
What makes up the "army" inside my body?**

When something dangerous gets **into** your body, your immune system uses millions of powerful cells called...

**White
blood cells**



There are many different kinds of white blood cells, but nearly all of them have the same job...

Find anything in your body that doesn't belong and get rid of it!

You can feel what happens when your white blood cells get to work...

If you are bitten by a **mosquito** ("mo-skee-toe"), you get a red bump that itches a lot! That red bump is filled with your white blood cells attacking the chemicals and bacteria that may have entered your body. While your white blood

cells work to get rid of the chemicals and bacteria, your skin works to close up the hole that the mosquito made!



**Immune system
Battleground**

Your skin and your white blood cells work together every day!

Even a splinter in your skin will cause your immune system to attack!

Sometimes, your immune system misses some bacteria or other harmful items and the cut gets **infected**. When a cut gets infected it normally gets very warm, turns red and fills with a gooey liquid. The gooey liquid is filled with white blood cells attacking the objects that do not belong in your body (like the splinter!) If your immune system cannot get all of the harmful items out of your body, you have a problem!

Most of the time, you know when this is happening because you may feel very sick. This is when a doctor can give you something called **antibiotics** ("an-ti-bi-ot-icks"). Antibiotics are chemicals that are made to attack bacteria and get rid of them without hurting you in the process!

For example, some antibiotics attack and destroy cell walls in your body. Since you are not a plant or bacteria, every cell in your body is safe! However, if you are a bacteria, this is bad news. The antibiotic will quickly break you apart!

So how do my white blood cells know what they need to get rid of?

That is a very good question. Your white blood cells do not attack every bite of food you eat! And your food does get inside of your body very easily. So here is how your white blood cells figure it out...

Every cell in your body has special chemicals attached to them. Think of these chemicals as "your name" printed on each cell. When white blood cells touch each cell, they can read the name printed on the cell. If your name is not on that cell, the white blood cells begin to attack it!

In some people, an immune system may attack something that does not belong in their body with more of its "army" than is needed! This is called an **allergy**. If any of you have an allergy, you know what I am talking about! When your immune system works too hard to get rid of something, you may have itchy eyes, a sore throat, a runny nose or a huge list of other things. They can be very annoying and harmful for some people.



As you learned in the last chapter, staying clean is a great way to keep your body (and your immune system) healthy. You will learn about another good way to keep your body healthy in the next chapter...

Circle the hidden words from below:

A S T E L G P L I I E X M M M
 F N V W D R Y S N K D C M L E
 G H T J Q S P U F E K B Z C T
 T Q P I O D A V E J N F B I S
 A T X Z B M W W C Y J U K S Y
 J C Y T Q I E W T T F A M S S
 B M E B L O O D E C F T I M K
 E G A L U L A T D F B U L Z I
 E P W L L R O T I R M U I H V
 Y G R E L L A K P C W Q F Y E
 O P O M Q V V W Z L S I Q T G
 I Y J Q R Q L A S D A E I W Z
 Y M W M I S G M E A G H W C K
 U M T E Q N X X B W W J I M S
 S W O S K B K A G M E T D U T

ALLERGY
CELL
LYSOZYME

ANTIBIOTICS
IMMUNE
SYSTEM

BLOOD
INFECTED
WHITE

Match the words in the first column to the best available answer in the second column.

- | | |
|------------------------|---|
| _____ Immune system | 1) an enzyme found in your body that destroys bacteria |
| _____ Infection | 2) the actions of your skin and white blood cells that protect your body from infections |
| _____ Lysozyme | 3) blood cells that act to destroy anything that gets into your body that may be harmful |
| _____ White blood cell | 4) chemicals that are made to attack bacteria and get rid of them without hurting you in the process |
| _____ Allergy | 5) a result of your immune system working too hard to get rid of things in your body; itchy and watery eyes and sore throats and a runny nose are some signs of an allergy |
| _____ Antibiotics | 6) the result of your immune system that misses some bacteria or other item that gets into your body; this makes a cut warm and red in color; it may also be filled with a gooey liquid |

Compare and Contrast

the

Red blood cells and the White blood cells

Compare (things that are the same between the two cells)	Contrast (things that are different between the two cells)

CHAPTER 35

In the last chapter, you learned how important your immune system is to your survival. This week, you are going to learn how to keep your immune system strong and ready to protect you!

By far, the best way to keep a machine running is to give it the right kind of fuel. And since your body acts very much like a machine, it is your job to put the right kind of fuel into your body!

Your **diet** (all of the stuff you eat and drink) should contain everything your body needs to keep it healthy and happy!

But what does my body need?

(No...it is not just candy and soda!)



Your body needs a **well-balanced diet** of healthy foods. A well-balanced diet contains the right amount of foods your body needs to survive.

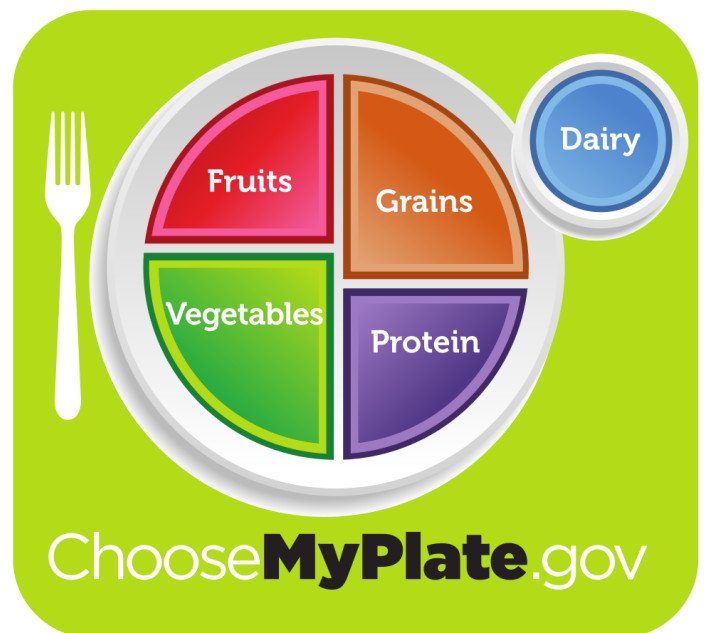
A well-balanced diet does not mean you can eat a bowl of candy and then eat the same amount of fruit to be “balanced”...

It does not work this way!

Scientists have given us a list of what our bodies need to stay healthy. This is a diet that is known as the **MyPlate guide**. This guide contains a list of healthy foods (and their amounts) you should eat every day.

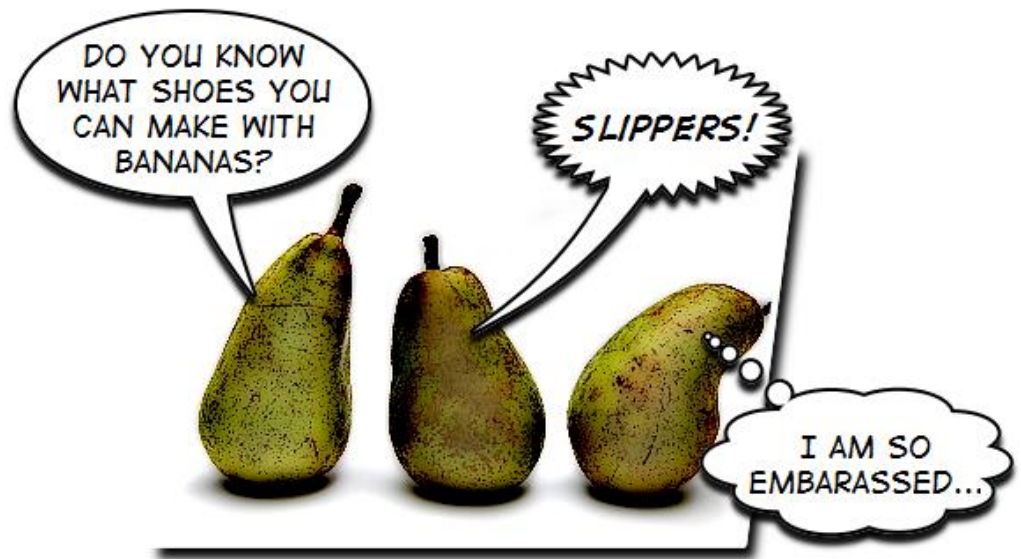
As you can see, it is in the shape of a plate with four different areas:

Fruits, Vegetables, Grains, and Proteins. A small cup has been added that includes a small amount of dairy that should also be with your meal. When food scientists created MyPlate they included a few simple rules for you to follow:



Half of your plate at each meal should be made up of fruits and vegetables

Every food we eat has different kinds of nutrients in them. And many of the nutrients your body needs can be found in



fruits and vegetables. So you have a better chance of getting all of the nutrients you need if you eat a lot of different types of these foods.

A small amount of dairy should be eaten with each plate

Dairy products include milk, yogurt, or cheese. Much like with your fruits and vegetables, MyPlate suggests that you change the types of dairy you eat often and to watch out for dairy products with a lot of fat. This leads us to our next section...

About half of your plate that is left over should include a grain and a protein

Grains include pasta, rice and whole grain breads. Protein can be found in meats, seafood, peanut butter, eggs, and other good things you will learn about real soon.



Do not eat much fat, salt and sugar

A diet low in fat can help you keep a healthy weight. Too much salt and fat in your diet is not good for you. It can damage your heart and blood. And, I'm sorry to tell you this, but...Sugar is also not good for your body. Sugar does not have many nutrients for your body to use!

So what is a "serving"?

One **serving** is a certain measurement of food or drink that you should eat in one meal. For example, a large plate of spaghetti may count as two or three servings of pasta. On the next page you will find the servings for many different kinds of foods that are measured in cups or **ounces**.

Before you read the servings list, you will need to know what an ounce means. An ounce is a way to measure the weight of an object. For example, a single slice of bread weighs one ounce.

While you are reading these servings, you will find foods that are measured in ounces.

Be prepared for Apple Gangs



MOST GANGS OF APPLES ARE FLIN, EASY GOING BAGS OF FRUIT. HOWEVER, WHEN THEY BECOME ANGRY YOU SHOULD KNOW HOW THEY ATTACK!



IF THEY BEGIN TO SURROUND YOU, THERE IS NOT MUCH YOU CAN DO...



MyPlate Daily Food Plan for Kids (ages 9-13)

Protein (5 ounces per day)

Servings of protein may include:

1 ounce cooked/canned lean meats, poultry, or seafood; or 1 egg; or 1 tablespoon peanut butter; or $\frac{1}{4}$ cup cooked beans or peas; or $\frac{1}{2}$ ounce nuts or seeds

Dairy (3 cups per day)

Servings of dairy may include:

1 cup milk; or 1 cup yogurt; or 1 cup fortified soy beverage; or $1\frac{1}{2}$ ounces natural cheese or 2 ounces processed cheese

Vegetables (2-2½ cups per day)

Servings of vegetables may include:

1 cup raw or cooked/canned vegetables; or 2 cups leafy salad greens; or 1 cup 100% vegetable juice

Fruits (1½ cups per day)

Servings of fruit may include:

1 cup raw, frozen, or cooked/canned fruit; or $\frac{1}{2}$ cup dried fruit; or 1 cup 100% fruit juice

Grain products (5-6 servings per day)

Servings of grains may include:

1 slice bread; or 1 ounce ready-to-eat cereal; or $\frac{1}{2}$ cup cooked rice, pasta, or cereal

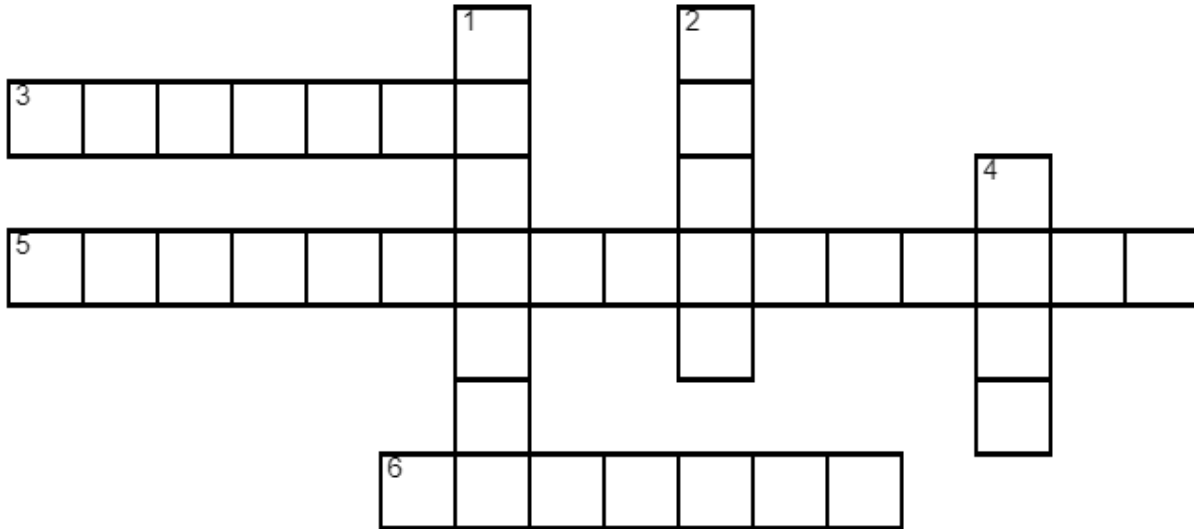
Fats, oils and sweets

Try to eat only a small amount of butter, gravy, creamy salad dressings, sugar, jelly, candy and soda

A balanced diet of these foods every day will keep your body healthy. So far, you have learned about what is good to put into your body.

In the next chapter, you are going to learn about things that hurt you if they get into your body.

Place the answers to the following clues in the boxes below. Each box should contain one letter.



Across

3. chicken, turkey or other birds
5. the right amount of foods your body needs to survive
6. a certain measurement of food or drink that you should eat in one meal

Down

1. this guide contains the best information to follow when you want to eat healthy
2. a way to measure the weight of an object
4. the stuff you eat and drink

Match the words in the first column to the best available answer in the second column.

- | | |
|--------------------------|--|
| _____ Diet | 1) the right amount of foods your body needs to survive |
| _____ Well-balanced diet | 2) a certain measurement of food or drink that you should eat in one meal |
| _____ MyPlate guide | 3) the stuff you eat and drink |
| _____ Poultry | 4) this guide contains the best information to follow when you want to eat healthy |
| _____ Serving | 5) a way to measure the weight of an object |
| _____ Ounce | 6) chicken/turkey or other birds |

Is this a well-balanced diet? If not, list what should be added or taken away make it a well-balanced diet.

Breakfast

One cup of milk
 Three ounces of cold cereal
 (with one cup of milk)

Lunch

One peanut butter sandwich
 (with four tablespoons of peanut butter)
 One banana
 1/2 cup of fruit juice

Dinner

Three ounces of cooked chicken
 One cup of cooked vegetables
 One cup of cooked pasta

Servings to be added	Servings to be removed

CHAPTER 36

For the past three chapters you have explored what good things you can do for your body to keep it healthy. This week, you are going to look at something that can hurt your body...

Drugs

Putting a drug into your body is the same thing as putting poison into your body...



...and your immune system tries to get rid of these drugs as fast as it can!

Sometimes, your immune system can get rid of these drugs quickly! But other times, these drugs can stay in your body for a long time!

Different drugs do different things to your body. And, there are a lot of different kinds of drugs out there! But all of them do one thing...

Drugs affect your body in some way!

Let's start with how drugs affect your brain...

When you put a drug into your body, the chemicals in the drug trick your brain into feeling things that you are not used to...

They may also trick your brain into thinking you are feeling something that is not there!



That can be pretty scary!

If you remember from chapter 24, your brain is made up of four different parts (called **lobes**) that each have their own job to do.

Your frontal lobe, parietal lobe, occipital lobe and temporal lobe control everything in your body! When you put drugs into your body, they can:

Slow down your frontal lobe so that you cannot solve problems very fast.

or

Make your temporal lobe believe you smell something when you are not.

or

Block your parietal lobe, which causes you not to feel any pain. This could be a big problem because you may not know when you are hurt.



Drugs can affect other parts of your body too...

Smoking can harm your lungs. Every time you smoke, your lungs fill up with very hot chemicals that can hurt you very badly. These chemicals destroy the cells in your lungs very easily. One of these chemicals is known as tar. This tar gets stuck in your lungs and keeps you from being able to breathe.

Alcohol is a poison to your body. Not only does alcohol damage your brain, it also hurts your liver too. It keeps your liver from cleaning your blood. If your blood is not cleaned, your body will become poisoned. This can be very harmful to you!

Drugs do not only affect your organs, they can also cause you to...

- not be able to sleep
- gain or lose a lot of weight
- get glassy, itchy eyes
- make your heart beat very fast
- sweat a lot!
- have diarrhea ("di-a-ree-ah")

And these are just the calm effects that can happen within one day of putting the drugs into your body...

Some drugs are much more dangerous and can cause your heart or brain to stop working. If this happens, you are no longer alive!

Even though drugs are bad for you, some people need help to stop using these drugs.

Why?

Because they are addicted to the drug!

Being **addicted** means that your body is tricked into believing that it needs the drug to survive. This may sound strange, but it is very true...

It is very hard for people who are addicted to drugs to stop using them. This is because they believe they must have the drug in order to survive. Why? Because, when a person uses drugs, they change the way their brain works. These changes make addicted people think they need drugs even more. So, instead of them stopping their use of drugs they take more and more drugs.

Fortunately, addicted people can learn to control their use of drugs and to stop using them at all! This is easier for some people than for others. There are many different programs out there that can help people stop their addictions and become healthier.



**DON'T BE AFRAID
TO ASK FOR HELP!**

Answer the following questions:

What does it mean to be addicted?

What do drugs do to your brain?

What do drugs do to your lungs?

What do drugs do to your liver?

Write a letter to your parents telling them why you would never put drugs into your body that you know may hurt you.

Unit Nine review

Name three ways to keep bacteria from getting inside your body:

1. _____
2. _____
3. _____

List the two main parts of your immune system:

1. _____
2. _____

True or False:

_____ An infection is the result of your immune system that misses some bacteria or other item that gets into your body.

_____ Antibiotics are chemicals that are made to attack bacteria and get rid of them without hurting you in the process

_____ An allergy is the result of your immune system that does not work to get rid of things in your body

Be certain to go over your definitions for the test!