

# Back-to-School Activity Guide



## Fourth Grade

## About This Guide

Are you concerned that over the summer your child will forget everything he or she learned in the third grade? This packet of fun activities and skill-builders will help prepare your child for the new school year. Each activity has been selected to draw on prior knowledge and is a sneak peek of what he or she will learn in the fourth grade. Enjoy these worksheets with your son or daughter during the summer months, and once it's time to go back to school, your child will feel well-rested and equipped for the upcoming year.

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## Fourth Grade: What Will They Learn?

School changes quite dramatically for students in fourth grade. Your child will be applying reading skills in content-area subjects such as social studies, science, and health. Study skills will become very important, as kids will now be asked to write reports and handle long-term assignments. Find out what else your child will learn this year!

- Divide by one- and two-digit numbers.
- Use calculators and computers.
- Add and subtract fractions.
- Use contextual clues to discover the meaning of words.
- Understand and use the steps of the writing process, from pre-writing to the final draft.



- Write research reports.
- Locate information in the library.
- Use encyclopedias, newspapers, atlases, and magazines as resources.
- Understand the history and geography of their state.
- Recognize how science is at work in the world around them, especially through technology.

# Division Facts

Danielle has 20 figurines. She wants to put the figurines in equal numbers on four shelves. How many figurines can she put on a shelf?

We use division to show how many equal groups or how many items are in each group.

Think: 20 figurines divided among 4 shelves =  $n$ .  $20 \div 4 = n$

You know that  $4 \times 5 = 20$ , so  $20 \div 4 = 5$ .  $n = 5$

Danielle can put 5 figurines on each shelf.

A **fact family** shows all the related multiplication and division facts for a set of numbers. This is the fact family for 4, 5, and 20.

$4 \times 5 = 20$

$5 \times 4 = 20$

$20 \div 4 = 5$

$20 \div 5 = 4$

**1.**  $25 \div 5$

---

**2.**  $16 \div 4$

---

**3.**  $10 \div 2$

---

**4.**  $42 \div 6$

---

**5.**  $45 \div 9$

---

**6.**  $2 \overline{)8}$

---

**7.**  $6 \overline{)30}$

---

**8.**  $4 \overline{)12}$

---

**9.**  $7 \overline{)28}$

---

**10.**  $5 \overline{)35}$

---

Write the family of facts for each set of numbers.

**11.** 2, 8, 16

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**12.** 3, 6, 18

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**13.** 3, 9, 27

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**Algebra** Find each missing number.

**14.**  $27 \div 3 = n$

---

**15.**  $a \times 3 = 6$

---

**16.**  $10 \times m = 50$

---

**17.**  $64 \div u = 8$

---

# Answer Key

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**7.**  $6 \overline{)30}$

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**8.**  $4 \overline{)12}$

3

**9.**  $7 \overline{)28}$

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Write the family of facts for each set of numbers.

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$8 \times 2 = 16$

$16 \div 8 = 2$

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$3 \times 6 = 18$

$6 \times 3 = 18$

$18 \div 3 = 6$

$18 \div 6 = 3$

**13.** 3, 9, 27

$3 \times 9 = 27$

$9 \times 3 = 27$

$27 \div 3 = 9$

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**15.**  $a \times 3 = 6$

 $a = 2$ 

**16.**  $10 \times m = 50$

 $m = 5$ 

**17.**  $64 \div u = 8$

 $u = 8$

# Home Activities: Fractions and Measurement

We have been learning about Fractions and Measurement.

Here is a list of some of the concepts and skills we have studied.

- ◆ Name and write fractions
- ◆ Mixed numbers
- ◆ Equivalent fractions
- ◆ Compare and order fractions
- ◆ Fractions of a set
- ◆ Inches, feet, yards, and miles

## Home Activities

Here are some activities you can do with your child that use these math skills and concepts.

You can write a fraction to show parts of a whole. For example, 1 slice of pizza would be  $\frac{1}{8}$  of an 8-slice pizza. A fraction has two parts, a **numerator** and a **denominator**. The denominator is the number under the bar and tells the number of parts a whole is divided into. The numerator is the number above the bar and tells the number of parts of the whole that are being counted.

Newspapers contain stories, or articles, and advertisements. The pages are divided into columns. These columns are then divided into fractional parts. Different businesses buy space to advertise their products. The cost of the ad depends on the size of the advertisement.

- ◆ Look at a page in your local newspaper.
- ◆ Use a marker to draw a line around each article and each advertisement.
- ◆ Estimate the fraction of the page each article and each advertisement uses. Write 2 equivalent fractions for each fractional part of the newspaper page.

Type of Article or Advertisement	Fractional Part of Page	Equivalent Fractions



## Summer Reading Suggestions

Grades 3-5



*Camp Confidential: Natalie's Secret* by Melissa J. Morgan  
Natalie Goode makes the leap from city life to Camp Lakeview, where the secret she's been keeping might get in the way of making new friends. It's the first book in the hilarious series about life at summer camp.



*Pedro's Journal* by Pam Conrad

This novel tells the story of a ship's boy who accompanies Christopher Columbus on his journey to find the New World. Pedro sees Columbus as egotistical and hot-tempered. He describes the native people as peaceful and unfairly terrorized by the Spanish.

*Adam Canfield, Watch Your Back!* by Michael Winerip

The star reporter is caught up in a big scoop—but this time it's about him. This savvy, engaging story takes on school bullies and other tyrants.

*Diary of a Wimpy Kid* by Jeff Kinney

In this laugh-out-loud “novel in cartoons,” seventh-grader Greg Heffley chronicles the horrors of middle school, his escapades with best friend Rowley, and the ups and downs common in most families. This is the first book in a five-part series.

*Callahan Cousins: Summer Begins* by Elizabeth Doyle Carey

Follow four preteen girls who are having the adventure of a lifetime while spending the summer with their grandmother on Gull Island. This book celebrates family ties, loyalty, and the wisdom of children.

*How to Eat Fried Worms* by Thomas Rockwell

This is the story of Billy, a 10 year old who takes a bet that he can eat 15 worms in 15 days—for \$50. Billy's friends try to make the task more appealing by cooking up and dressing up the worms. Yum!

*The Tale of Despereaux* by Kate DiCamillo

This is the story of Despereaux Tilling, a mouse who is in love with music, stories, and a princess named Pea. Despereaux and his friends embark on a journey that includes castles, dungeons, and lessons in friendship.



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## ABC CATEGORIES

Think of a topic that is of special interest to you, or choose one from the list below.

animals

items that you can buy,  
other than food

foods

things in the classroom

words that go with  
sports

words that describe a  
person



Write your topic in the box. Then think of words that begin with each letter of the alphabet and that go with your topic. Use these words to fill in as many spaces as you can. For example, if your topic were space, you might write: "A is for astronaut, B is for booster . . ."

A is for \_\_\_\_\_

B is for \_\_\_\_\_

C is for \_\_\_\_\_

D is for \_\_\_\_\_

E is for \_\_\_\_\_

F is for \_\_\_\_\_

G is for \_\_\_\_\_

H is for \_\_\_\_\_

I is for \_\_\_\_\_

J is for \_\_\_\_\_

K is for \_\_\_\_\_

L is for \_\_\_\_\_

M is for \_\_\_\_\_

N is for \_\_\_\_\_

O is for \_\_\_\_\_

P is for \_\_\_\_\_

Q is for \_\_\_\_\_

R is for \_\_\_\_\_

S is for \_\_\_\_\_

T is for \_\_\_\_\_

U is for \_\_\_\_\_

V is for \_\_\_\_\_

W is for \_\_\_\_\_

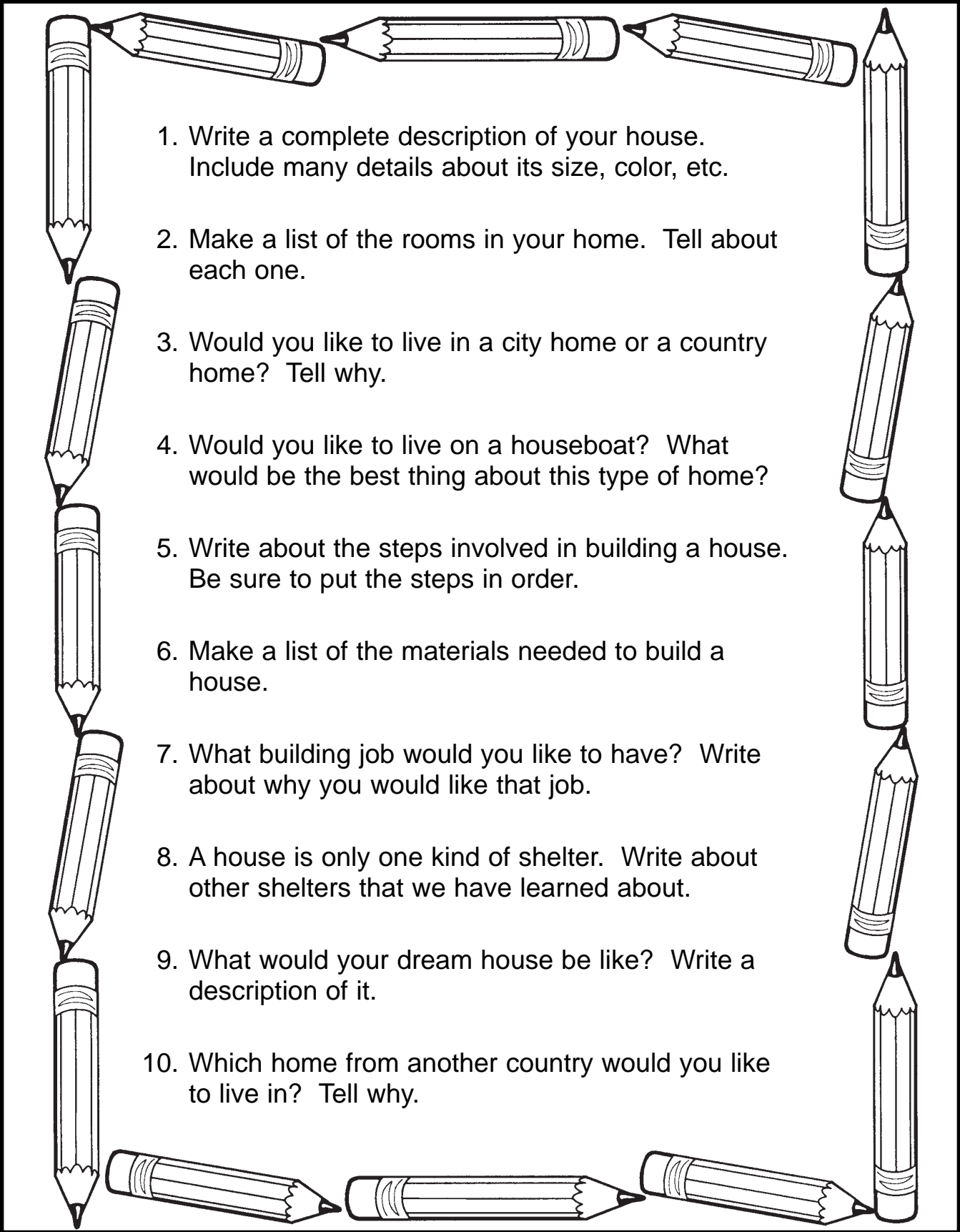
X is for \_\_\_\_\_

Y is for \_\_\_\_\_

Z is for \_\_\_\_\_



# Daily Journal Topics: Shelter

- 
1. Write a complete description of your house. Include many details about its size, color, etc.
  2. Make a list of the rooms in your home. Tell about each one.
  3. Would you like to live in a city home or a country home? Tell why.
  4. Would you like to live on a houseboat? What would be the best thing about this type of home?
  5. Write about the steps involved in building a house. Be sure to put the steps in order.
  6. Make a list of the materials needed to build a house.
  7. What building job would you like to have? Write about why you would like that job.
  8. A house is only one kind of shelter. Write about other shelters that we have learned about.
  9. What would your dream house be like? Write a description of it.
  10. Which home from another country would you like to live in? Tell why.

## LIBRARY SEARCH



Libraries are divided into two major sections: *fiction* (pretend stories) and *nonfiction* (factual books). Fiction books are put on the shelves in alphabetical order, according to the author's last name. Nonfiction books are grouped by category. Therefore, all the books about animals are together. Then these are subdivided by specific groups: insects, reptiles, birds, etc.

Listed below are some of the nonfiction sections in libraries.

SPORTS	ANIMALS	ASTRONOMY	RECREATIONAL SPORTS	HOBBIES/ COLLECTIONS	TALES
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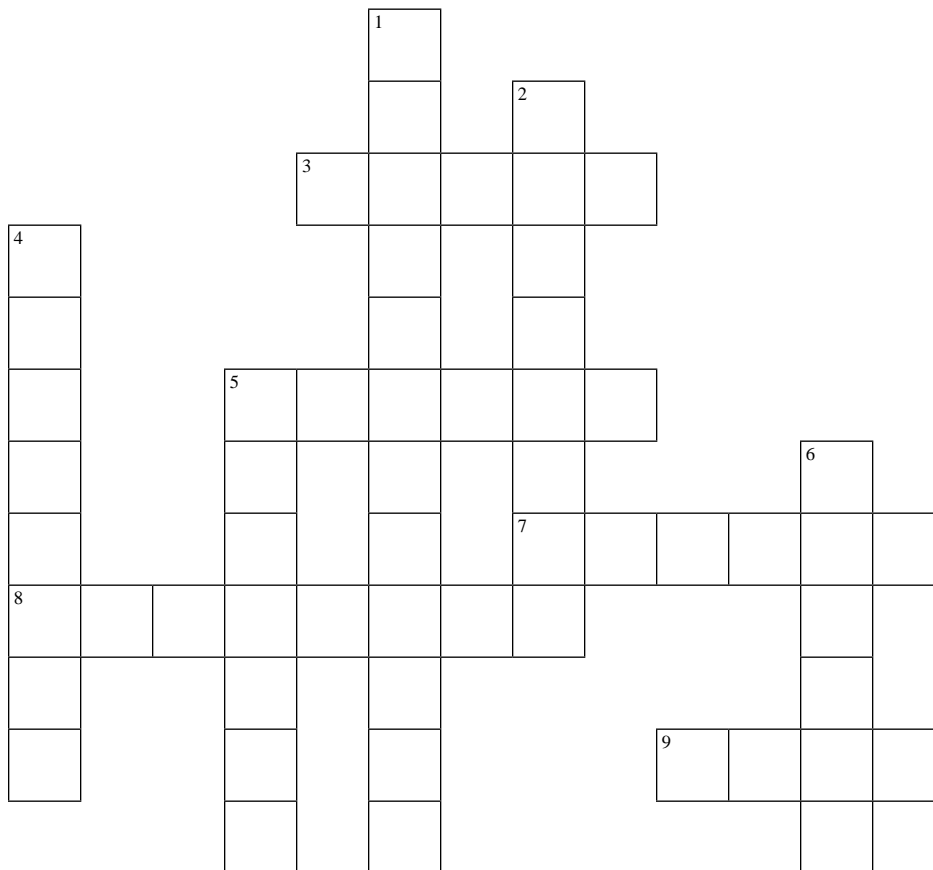
Read each book topic in the chart below. Write the name of the major section where books of this type would be found. Then write two kinds of books that you think would be grouped with it. For instance, the major section for a book about hummingbirds would be animals and it would be placed on the shelf with other books about birds. Nearby would be books about mammals, insects, etc.

Since the number of books in a library makes a slight difference in how books are arranged, you may want to go to your own library to check your answers.

BOOK TOPIC	MAJOR SECTION	OTHER BOOKS THAT WOULD BE GROUPED NEAR THIS BOOK
1. lacrosse	sports	hockey, football
2. Saturn		
3. fables		
4. knitting		
5. whales		
6. horseback riding		
7. candle making		
8. baseball		

# Criss-Cross Puzzle: United States

Fill in the criss-cross puzzle with the names of ten political and physical features of the United States. Clues to the names are found below the puzzle.



## *Across*

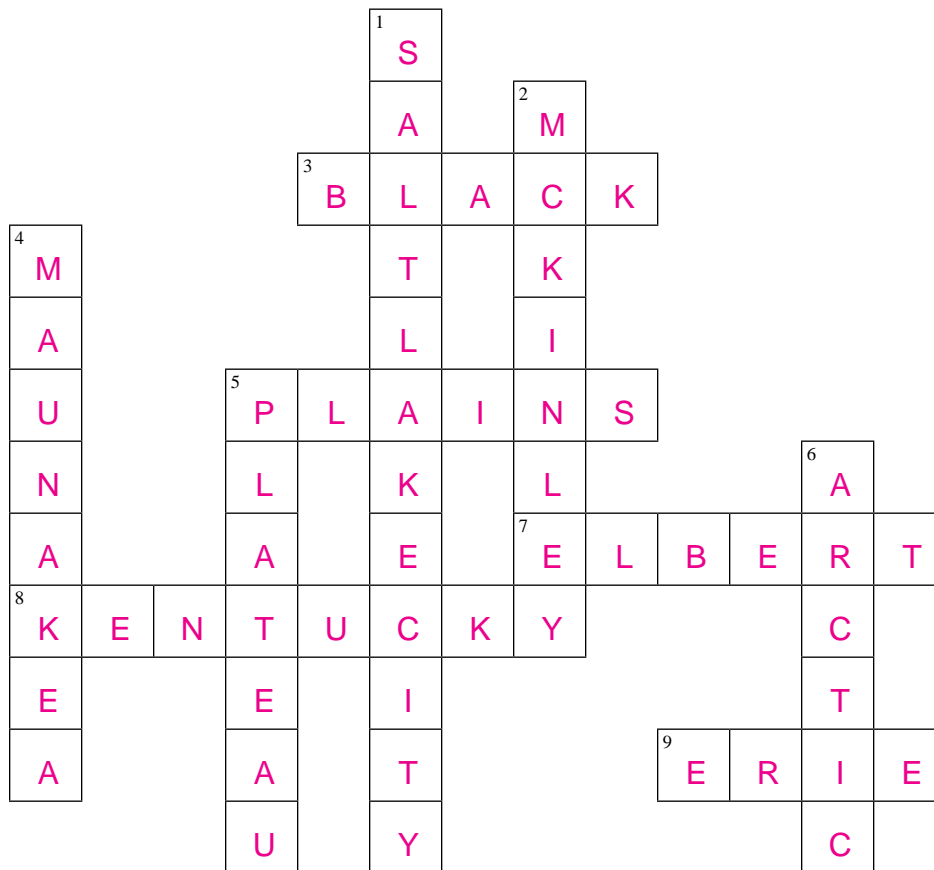
3. \_\_\_\_\_ Hills
5. Central or Interior
7. Colorado mountain
8. State east of Missouri
9. Great Lake

## *Down*

1. Capital city near a lake
2. Tallest mountain
4. Hawaiian mountain
5. Ozark or Colorado
6. Circle through Alaska

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## Across

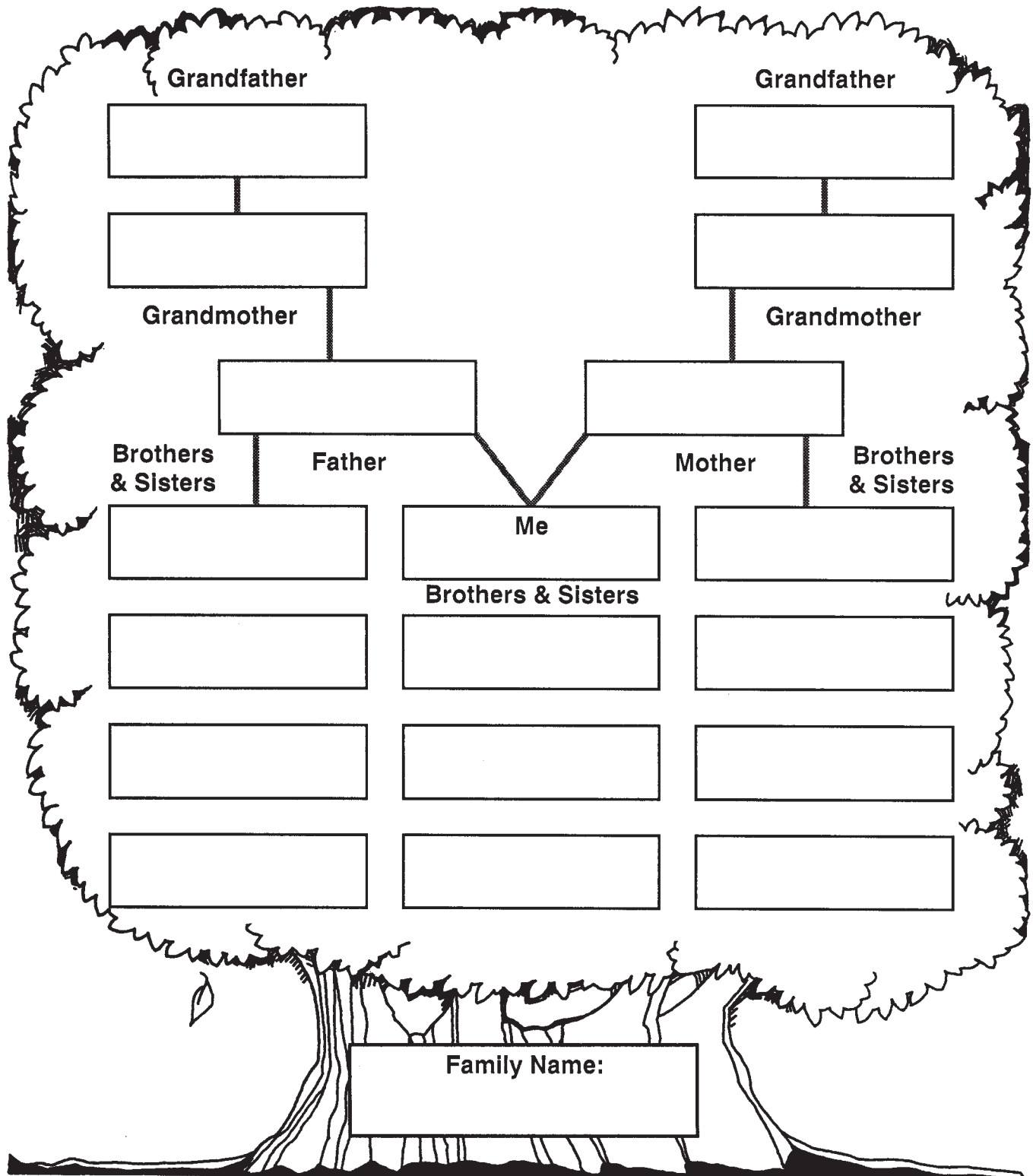
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## Down

1. Capital city near a lake
2. Tallest mountain
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# A Family Tree

Fill in the spaces with the names of your family members. You may need help from a parent to gather the information needed to complete this tree. If you can provide the names of great-grandparents, etc., add them to the top of the tree, or on the back of this paper.



# Build a Volcano

Grade Levels: 3–6

## Objectives

- Your child will learn about volcanoes.
- Your child will learn about chemical reactions.

## Materials

- Baking pan
- Soda bottle
- Moist soil
- Tablespoon baking soda
- Cup of vinegar
- Red food coloring
- Space where you can make a mess



## Background Information

### The Nature of Volcanoes

Volcanoes are built by the accumulation of their own eruptive products—lava, bombs (crusted over ash flows), and tephra (airborne ash and dust). A volcano is most commonly a conical hill or mountain built around a vent that connects with reservoirs of molten rock below the surface of Earth. The term volcano also refers to the opening or vent through which the molten rock and associated gases are expelled.

Driven by buoyancy and gas pressure, the molten rock, which is lighter than the surrounding solid rock, forces its way upward and may ultimately break through zones of weaknesses in Earth's crust. If so, an eruption begins, and the molten rock may pour from the vent as non-explosive lava flows, or it may shoot violently into the air as dense clouds of lava fragments. Larger fragments fall back around the vent, and accumulations of fall-back fragments may move downslope as ash flows under the force of gravity. Some of the finer ejected materials may be carried by the wind and fall to the ground many miles away. The finest ash particles may be injected miles into the atmosphere and carried many times around the world by stratospheric winds before settling out.

### Magma, Lava, and Pumice

Molten rock below the surface of Earth that rises in volcanic vents is known as magma, but after it erupts from a volcano it is called lava. Originating many tens of miles beneath the ground, the ascending magma commonly contains some crystals, fragments of surrounding (unmelted) rocks, and dissolved gases, but it is primarily a liquid composed of oxygen, silicon, aluminum, iron, magnesium, calcium, sodium, potassium, titanium, and manganese. Magmas also contain many other chemical elements in trace quantities. Upon cooling, the liquid magma may precipitate crystals of various minerals until solidification is complete to form an igneous or magmatic rock.

Lava is red-hot when it pours or blasts out of a vent but soon changes to dark red, gray, black, or some other color as it cools and solidifies. Very hot, gas-rich lava containing abundant iron and magnesium is fluid and flows like hot tar, whereas cooler, gas-poor lava high in silicon, sodium, and potassium flows sluggishly, like thick honey, or in other cases, like pasty, blocky masses.

All magmas contain dissolved gases, and as they rise to the surface to erupt, the confining pressures are reduced and the dissolved gases are liberated either quietly or explosively. If the lava is a thin fluid (not viscous), the gases may escape easily. But if the lava is thick and pasty (highly viscous), the gases will not move freely but will build up tremendous pressure, and ultimately escape with explosive violence. Gases in lava may be compared with the gas in a bottle of a carbonated soft drink. If you put your thumb over the top of the bottle and shake it vigorously, the gas separates from the drink and forms bubbles. When you remove your thumb abruptly, there is a miniature explosion of gas and liquid. The gases in lava behave in somewhat the same way. Their sudden expansion causes the terrible explosions that throw out great masses of solid rock as well as lava, dust, and ashes.

The violent separation of gas from lava may produce rock froth called pumice. Some of this froth is so light—because of the many gas bubbles—that it floats on water. In many eruptions, the froth is shattered explosively into small fragments that are hurled high into the air in the form of volcanic cinders (red or black), volcanic ash (commonly tan or gray), and volcanic dust.

## Directions

1. Start with an explanation of volcanoes using the background information.
2. Place the baking pan on the ground, and set the soda bottle in the middle of the pan.
3. Mound and shape the moist soil around the bottle to form a mountain. Bring the soil right up to the top of the bottle's opening, but don't get the soil inside the bottle.
4. Pour one tablespoon of baking soda into the bottle.
5. Color one cup of vinegar with red food coloring.
6. Pour the colored vinegar into the bottle. Stand back and watch red foam spray out of the top and down the mountain like lava.

**What's happening in there?** The baking soda is reacting with the vinegar to produce carbon dioxide gas. The gas builds up enough pressure to force the foaming liquid out of the top of the bottle.

Brought to you by MaryAnn Kohl, author of *Messy Art Book*.

# Eating to Live

**Making the Connection:** Scientists have discovered that the Mediterranean diet may be the most healthful diet there is.

Put away that candy and ice cream! Plenty of delicious foods are waiting for you to taste. Scientists have discovered that foods don't have to be boring to be healthy. In fact, one of the tastiest diets in the world is actually good for you!

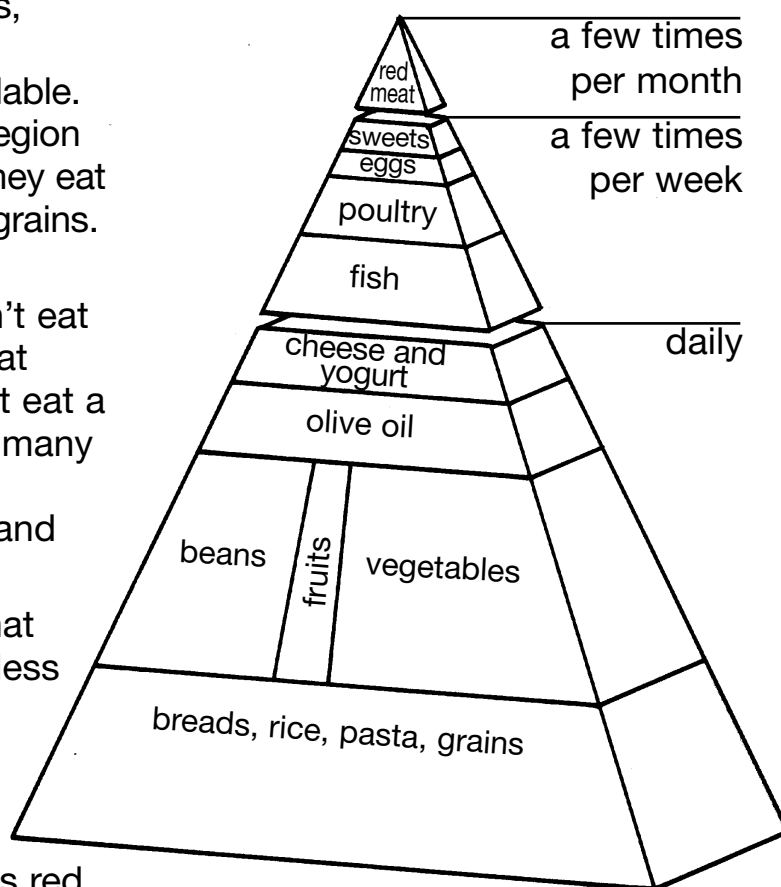
The diet is called the Mediterranean diet. That's because people living near the Mediterranean Sea have eaten it for years. The Mediterranean region is rich in olives, oranges, lemons, figs, wheat, rice, and potatoes. A lot of fish are available. People in the Mediterranean region use lots of olive oil to cook. They eat a lot of pasta, rice, and other grains.

What don't the people in the Mediterranean eat? They don't eat much red meat. They don't eat many sweets. They also don't eat a lot of eggs. Instead, they eat many kinds of cheeses and lots of yogurt. They eat nuts, fruits, and vegetables every day.

Scientists have discovered that people who eat this way are less likely than the average American to develop heart disease. They think one reason for this is that Mediterranean people eat less red meat than Americans do. They also believe that the many fruits and

vegetables in the Mediterranean diet help the heart stay strong longer. Finally, Americans eat a lot of butter unlike the olive oil in the Mediterranean diet. Butter has a lot of cholesterol. This cholesterol can sometimes block blood vessels, causing heart disease.

Work alone or with a partner to answer the following questions and share your ideas about diet and health.



*This pyramid shows the Mediterranean diet.*



**Answer the questions.**

1. According to the Mediterranean diet pyramid:

a. How often should a person eat red meat?

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b. How often should a person eat cheese or yogurt?

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c. How often should a person eat sweets?

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2. Below is Lucy’s eating plan. What’s wrong with it? Correct it by crossing out some foods and writing others in their place.

<b>Breakfast</b>	<b>Lunch</b>	<b>Snack</b>	<b>Dinner</b>
eggs	roast beef sandwich	cake	chicken
toast	milk		bread
juice			soda
			ice cream

3. What do you eat? Label 7 sheets of paper, one for each day of the week. Try to write down what you eat each day. Discuss your diet with a friend. How could you change it?

4. Olive oil is one of the best oils for cooking and making salads. What kind of dishes can you make with it? If you know any, write them down. If you don’t know already, try to find out from parents, friends, or other adults what some are and how they are made. Bring back the information and report it to the class.

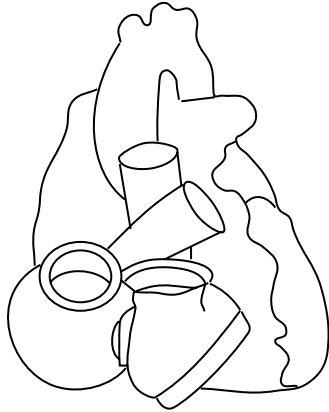
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# TOTAL ARTIFICIAL HEART

**Making the Connection:** Scientists have found a technological solution to society's growing demand for donor hearts needed for transplant patients.



The heart is the one of the strongest muscles in the body, but it can become diseased and weak. Without a healthy heart to pump blood, a body cannot stay alive very long. Thousands of people in this country have hearts that are failing. They need to have a heart transplant to live. Unfortunately, only a small percent of them are able to receive a transplant.

Many people die because there aren't enough donor hearts for all those who need them. Scientists, however, have come up with a solution. A battery-powered total artificial heart implant.

The total artificial heart (TAH) will completely replace a diseased heart. A patient's own heart will be removed and the TAH will be inserted in its place. The total

artificial heart is a miniature electric pump. It is only about the size of a grapefruit, but it can pump more than 10 liters of blood per minute. At rest, a human heart pumps about five to seven liters of blood per minute. An electronic system in the TAH will automatically adjust to pump as much blood as the body needs. For instance, it will pump more blood if the patient is climbing stairs and less blood when the patient is asleep. Don't worry, the TAH does not make a loud mechanical noise in the patient's chest. Like a real heart, you can only hear it through a doctor's stethoscope.

The total artificial heart is operated by a battery. Doctors will not have to operate to change an old battery. Instead, the patient wears a small transmitter and it sends power to the TAH. The patient, however, can go for short periods of time without the power transmitter. The TAH does have batteries that allow it to run a short time between chargings.

Doctors will not have to operate to check on a patient's TAH. The artificial heart itself can transmit to them all the information they need. Doctors can give checkups over the phone!

**Answer the questions.**

1. Why did scientists develop a total artificial heart?

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2. What happens if the batteries run out on a total artificial heart?

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3. How do doctors check up on their patients with a total artificial heart?

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4. Look up the latest statistics about heart transplants. How many people need them each year? How many people receive them? Look up the statistics for the last five years and present your findings in graph.

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5. What are the causes of heart diseases? Make a chart showing the cause and treatment of several heart diseases.

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6. Find out about other advances in medical technology used to treat the heart. Write a short report about your findings.

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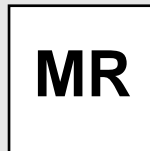
# If My Calculator Could Talk!

Imagine life without a little invention known as the calculator! We all know how handy calculators are to add, subtract, multiply, and divide numbers; but did you know they can also “talk”?

Read the story below. Each time you come to a math problem, enter it in your calculator. Then turn your calculator upside down and read the word. Write the word in the blank. When you are done, try to invent your own calculator story.

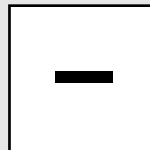
\_\_\_\_\_, I’m your calculator. I want to tell you about the

$140 \div 10$   
funniest thing I ever did  $500 - 165$ . I hope I can tell it without  
starting to  $370,000 + 9,919$ .



Once,  $118 + 99$ ,  $15436 \div 2$ , and  $(9 \times 33) + 40$  were using me to

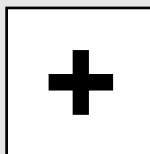
$67 \times 5$  if they had enough money to go to the  $.2 \div 10$ .



$7518 + 200$  was eating an  $2979 \div 3$  and he dropped the

$386,725 \div 5$  all over the floor. Just then a  $(150 \times 2) + 38$  flew over

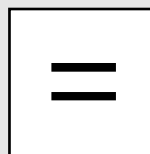
and was about to sting  $(50 \times 4) + 17$  on the  $237 + 400$ . Her cat,



$35,563 + 2,175$ , came running down the  $15428 \div 2$  and started to

$378408 + 401$  the  $1,690 \div 5$ . But then  $40,000 - 2262$  saw the

$1,000 - 7$   $15469 \times 5$  on the floor. She spit out the  $169 \times 2$



and ate the  $7734.5 \times 10$  instead.

$9 \times 501$  that was funny!

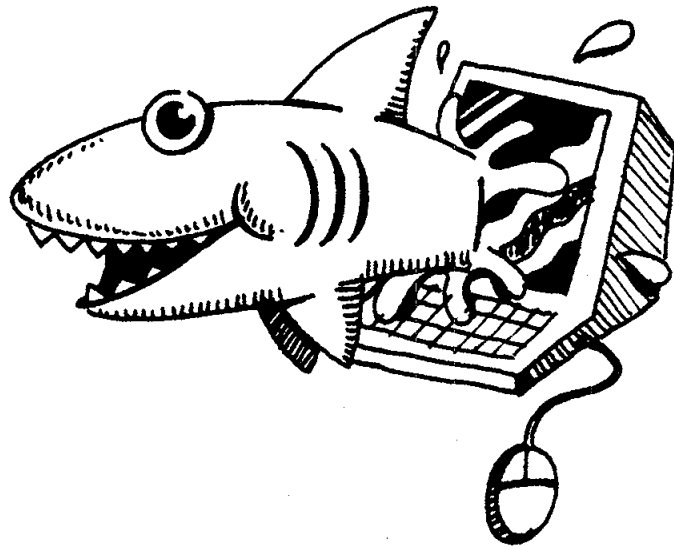
# Answer Key

**Hi**, I'm your calculator. I want to tell about the funniest thing I ever did **see**. I hope I can tell it without starting to **giggle**.

Once, **Liz**, **Bill**, and **Lee** were using me to **see** if they had enough money to go the **zoo**. **Bill** was eating an **egg**, and he dropped the **shell** all over the floor. Just then a **bee** flew over and was about to sting **Liz** on the **leg**. Her cat, **Belle**, came running down the **hill** and started to **gobble** the **bee**. But then **Belle** saw the **egg shell** on the floor. She spit out the **bee** and ate the **shell** instead. **Gosh** that was funny!

# Computer Wiz

The Internet helps people find information on an array of topics. Think of a topic you would like to know more about. Write down the topic and write a list of questions you would like to answer below. For fun, look up the answers to your questions when you have a chance.



# Elementary Supply List

Parents,

Your children are very excited about beginning a new school year. Please make every effort to purchase all of the supplies on the list. In advance I want to thank you for your cooperation. I look forward to working with you throughout the school year.

- 1 container of baby wipes
- 1 back pack
- 1 calculator
- 1 box of 64 crayons
- 2 erasers
- 4 glue sticks
- 3 different colored highlighters
- 1 pack of index cards
- 1 pack of water-based markers
- 1 pencil box
- 2 pencil sharpeners
- 10 pencils
- 6 pocket folders
- 1 pack of Post-it Notes®
- 2 boxes of facial tissues
- 1 inch/cm ruler
- 1 pair of scissors
- 1 roll of Scotch tape
- 1 three ring binder (2-3 inches)
- 1 pack of wide-ruled notebook paper

Grade Levels:	<b>Pre-K - 5</b>
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## Cold and Flu Prevention Checklist



### **Stay Home If You're Sick**

We want to teach our kids the importance of working hard, but it's just good sense to stay home from work or school when you're sick, to prevent the spread of cold and flu germs.

### **Keep Your Hands Clean**

You never know what germs you might be picking up in the course of the day. It's a good idea to wash your hands frequently, especially before eating, and after blowing your nose, coughing, sneezing, or using the bathroom. Use warm water and soap, and make sure you lather up for 20 seconds!

### **Cover Your Nose & Mouth When Coughing or Sneezing**

Avoid spreading cold and flu germs to others by coughing or sneezing into a tissue. If none is available, don't cough or sneeze into your hands! Instead, turn your head away from nearby people and, if necessary, aim for your shoulder.

### **Don't Touch Your Eyes, Nose, or Mouth**

Germs that might otherwise languish on your hands can easily infiltrate your system when you rub your face. Try to keep your hands away from your face as much as you reasonably can.

### **Get Plenty of Rest**

Your body works overtime to hunt and destroy harmful germs when you're resting or relaxed, but high stress levels leave you susceptible to invasion. Get some rest and give your white blood cells the time they need to do their job.

### **Avoid Unnecessary Close Contact**

It's an unfortunate fact that a person can spread flu germs a full day before exhibiting symptoms, and then up to five days after that. Steer clear of those with flu-like symptoms—they'll understand. And if you're sick, avoid close contact with others.

### **Eat Plenty of Fruits & Vegetables**

Eating right is always important, but particularly during cold and flu season. The vitamins and minerals found in fruits and vegetables can buttress your body's immune system against invaders.

### **Get Fresh Air & Exercise**

It's a myth that low temperatures cause cold and flu. In fact, the culprit is increased, prolonged contact with greater numbers of people. Going outside for a walk means you'll get exercise and get away from potential germ-bearers.