

# VOCABULARY

## SCIENCE AND TECHNOLOGY WORDS

- ◆ Science in the News
- ◆ Computers and the Net
- ◆ The Natural World
- ◆ Observations and Experiments

**VOCABULARY**  
*in context*

ELLIOTT QUINLEY

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*in context*

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**EVERYDAY LIVING WORDS**  
**HISTORY AND GEOGRAPHY WORDS**  
**MEDIA AND MARKETPLACE WORDS**  
**MUSIC, ART, AND LITERATURE WORDS**  
**SCIENCE AND TECHNOLOGY WORDS**  
**WORKPLACE AND CAREER WORDS**



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E-Mail: [info@sdlback.com](mailto:info@sdlback.com)  
Website: [www.sdlback.com](http://www.sdlback.com)

Development and Production: Laurel Associates, Inc.  
Cover Design: Elisa Ligon  
Interior Illustrations: Katherine Urrutia, Debra A. LaPalm, C. S. Arts

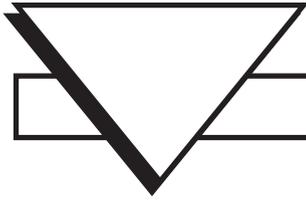
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ISBN-10: 1-56254-400-4  
ISBN-13: 978-1-56254-400-3  
eBook: 978-1-60291-484-1

Printed in the United States of America  
07 06 05 04 03 9 8 7 6 5 4 3 2 1

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## INTRODUCTION

Welcome to VOCABULARY IN CONTEXT!

A well-developed vocabulary pays off in many important ways. Better-than-average “word power” makes it easier to understand everything you read and hear—from textbook assignments to TV news reports or instructions on how to repair a bicycle. And word power obviously increases your effectiveness as a communicator. Think about it: *As far as other people are concerned, your ideas are only as convincing as the words you use to express them.* In other words, the vocabulary you use when you speak or write always significantly adds to or detracts from what you have to say.

VOCABULARY IN CONTEXT was written especially for *you*. The program was designed to enrich your personal “word bank” with many hundreds of high-frequency and challenging words. There are six thematic books in the series—**Everyday Living, Workplace and Careers, Science and Technology, Media and Marketplace, History and Geography, and Music, Art, and Literature**. Each worktext presents topic-related readings with key terms in context. Follow-up exercises provide a wide variety of practice activities to help you unlock the meanings of unfamiliar words. These strategies include the study of synonyms and antonyms; grammatical word forms; word roots, prefixes, and suffixes; connotations; and the efficient use of a dictionary and thesaurus. Thinking skills, such as drawing conclusions and completing analogies, are included as reinforcement.

A word of advice: Don’t stop “thinking about words” when you finish this program. A first-class vocabulary must be constantly renewed! In order to earn a reputation as a first-rate communicator, you must incorporate the new words you learn into your everyday speech and writing.

## PREVIEW

Here's an introduction to the vocabulary terms, skills, and concepts you will study in this unit. Answers are upside down on the bottom of the page.

Write **T** or **F** to show whether each statement is *true* or *false*.

1. \_\_\_\_ The words *molecule* and *atom* are **synonyms**.
2. \_\_\_\_ *Hexagon* is the **noun form** of *hexagonal*.
3. \_\_\_\_ *Cirrus* clouds are dark and dense.
4. \_\_\_\_ *Botanists* are scientists who study a type of food poisoning called *botulism*.
5. \_\_\_\_ The words *pollute* and *sterilize* are **antonyms**.
6. \_\_\_\_ The **prefix** *-al* turns the word *digit* into *digital*.
7. \_\_\_\_ The Greek root *therm* means "heat."
8. \_\_\_\_ *Dynamic* is the **adjective form** of the noun *dynamics*.
9. \_\_\_\_ The **plural form** of *bacterium* is *bacteriums*.
10. \_\_\_\_ The **suffix** *-ion* can be used to turn a verb into a noun.

**SPELLING**

Circle the correctly spelled word in each group.

1. vertabrate      virtabrate      vertebrate
2. professor      proffessor      perfesser
3. germanate      germinate      germenate

**GLOSSARY**

A *glossary* is an alphabetical list of unusual or specialized words from a certain field of knowledge. Following are some important scientific and technical words that all educated people should know.

**atmosphere** the air (made of gases, fine dust, and water vapor) that surrounds the Earth

**atoms** tiny parts into which all things on Earth can be broken down

**bacteria** simple, one-celled organisms that are visible only through a microscope

**bit** the smallest unit of information used by a computer; represented by a 0 or a 1

**byte** a string of eight bits standing for a single character

**carbohydrates** sugars and starches in food that give people energy

**chemistry** the scientific study of what substances are made of and how they can change when combined with other substances

**climate** a region's average weather over many years

**crust** the outer layer of the Earth

**diskettes** disks made of magnetic material and used to store data entered into a computer

**ecology** the study of how all living things depend on one another

**erosion** the wearing away of soil by wind and water

**evolution** changes in a species over time

**food chain** a group of organisms, each of which is dependent on another for food

**fossils** the remains of organisms that lived long ago

**organisms** living things

**WORDS IN CONTEXT**

Complete each sentence with a word from the glossary. Use the other words in the sentence to help you decide which word to add. Check the dictionary definition if you're still not sure.

1. The devastating Dust Bowl of the 1930s was caused by the widespread \_\_\_\_\_ of America's farmland.

2. Life science is the study of all the \_\_\_\_\_ on Earth.
3. Fruits, vegetables, and grains are all good sources of \_\_\_\_\_.
4. Some \_\_\_\_\_ are useful for making foods such as cheese; other kinds can cause sickness and death.
5. There are two hydrogen \_\_\_\_\_ and one oxygen \_\_\_\_\_ in a water molecule.
6. Each \_\_\_\_\_ of information in a computer program stands for a letter, number, or symbol.

**SCRAMBLED WORDS**

First unscramble the words from the glossary. Then solve the crossword puzzle with words that complete the sentences.

- ALTIME** \_\_\_\_\_
- ODFO ACHIN** \_\_\_\_\_
- COYLOGE** \_\_\_\_\_
- MYSTERCHI** \_\_\_\_\_
- STRUC** \_\_\_\_\_
- HERPOSTMAE** \_\_\_\_\_

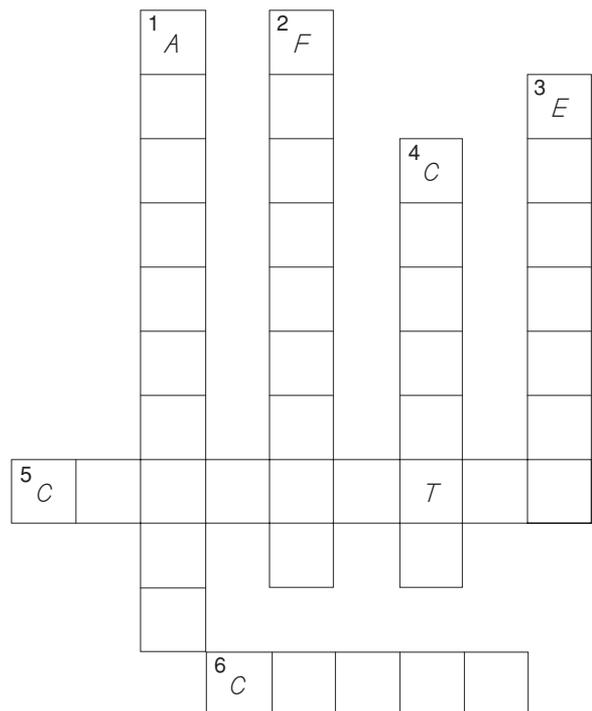
**ACROSS**

5. \_\_\_\_\_ is the study of what matter is made of and how it can change.
6. The continents and the ocean floor are part of the Earth's \_\_\_\_\_.

**DOWN**

1. The \_\_\_\_\_ extends more than 1,400 miles above the Earth's surface.

2. Each of the organisms in a \_\_\_\_\_ (two words) eats one of the other organisms.
3. The study of the relationship between different populations in a habitat is called \_\_\_\_\_.
4. A desert \_\_\_\_\_ is mostly hot and dry.



## WORD FORMS

Add vowels (*a, e, i, o, u*) to complete a different form of a glossary word. Use context clues for help. The first one has been done for you.

1. A bacterial infection can usually be treated with an antibiotic.
2. As weather   r  d  s rocks, salt from the rocks enters the soil.
3.   t  m  c energy is used to power some submarines.
4. Ch  m  sts often conduct their experiments in laboratories.
5. Over time, organisms will f  s  s  l  z   if all the conditions are right.
6. All of today's plants and animals   v  l  v  d from tiny one-celled creatures.
7. Scientists call lightning an "  tm  sph  r  c disturbance."

## EXAMPLES

Circle an example of each **boldface** glossary item.

1. **climate**

mountainous      overpopulated      humid      prosperous

2. **carbohydrates**

lettuce      butter      proteins      potatoes

3. **organisms**

fleas      glaciers      chemicals      instruments

**How Does Sunlight Produce Vitamin D?**

Vitamin D is a chemical that allows your body to make use of an important nutrient called *calcium*. Our bodies make the Vitamin D we need by “doing chemistry.”

Sunlight is a part of the chemical reaction that makes Vitamin D. When it's in your skin, the ultraviolet energy in sunshine snips up another chemical that is already floating around in your body. The new chemical formed is called Vitamin D<sub>3</sub>. But your body can't make use of Vitamin D<sub>3</sub> until a few more chemical reactions occur. So the D<sub>3</sub> is carried to your liver, where the atoms are rearranged to form a new

molecule. Then that chemical ends up in your kidneys. There it is taken apart again and put back together as *calcitrol*. This is the Vitamin D your stomach needs to absorb calcium.

Vitamin D is essential to everyone's nutrition. It helps young people grow strong teeth and straight new bones. It keeps older people's bones from getting brittle. Years ago, parents were concerned about the lack of sunshine in the dark winter months. They worried that their children weren't getting enough Vitamin D. Today, Vitamin D is added to almost all milk that's sold in the United States.

**WORD SEARCH**

1. What eight-letter word in the reading means “the smallest particle of a substance that can exist alone without losing its chemical form”? *m* \_\_\_\_\_
2. What three organs of the human body are named in the reading?  
*k* \_\_\_\_\_ *s* \_\_\_\_\_ *l* \_\_\_\_\_
3. What nine-letter word in the reading means “food” or “nourishment”? *n* \_\_\_\_\_
4. What two-syllable word in the reading means “to attract and take in another substance”? *a* \_\_\_\_\_

## WORD ROOTS

- The Latin roots *vit* and *viv* mean “life.” The word *vitamin*, for example, means “a substance needed by the body for normal growth and health.” Read the list of words containing *vit* or *viv*. Then write a letter to match each word with its meaning. Use a dictionary if you need help.

- |                           |                                 |
|---------------------------|---------------------------------|
| 1. _____ <b>survive</b>   | a. clear; bright; strong        |
| 2. _____ <b>vital</b>     | b. lively, spirited, energetic  |
| 3. _____ <b>vivid</b>     | c. to continue to live or exist |
| 4. _____ <b>vivacious</b> | d. necessary to life            |
| 5. _____ <b>revival</b>   | e. act of bringing back to life |

- Now write sentences of your own, using the five **boldface** words above.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## ANALOGIES

An *analogy* is a statement of relationship. It points out a likeness between things that are otherwise unlike. Complete the following analogies with words from the reading.

1. *Biology* is to *biologist* as c \_\_\_\_\_ is to *chemist*.
2. *Adjust* is to *readjust* as *action* is to r \_\_\_\_\_.
3. *Athlete* is to *athletic* as e \_\_\_\_\_ is to *energetic*.
4. *Multiply* is to *multiplication* as r \_\_\_\_\_ is to *rearrangement*.

## RHYMING WORDS

Write words from the reading that *rhyme* with the words below.

### FIRST PARAGRAPH:

- |                |                |
|----------------|----------------|
| 1. plead _____ | 3. shore _____ |
| 2. fizz _____  | 4. break _____ |

### SECOND PARAGRAPH:

- |                 |                  |
|-----------------|------------------|
| 1. voting _____ | 3. drowned _____ |
| 2. heart _____  | 4. buried _____  |

### THIRD PARAGRAPH:

- |                 |                |
|-----------------|----------------|
| 1. strung _____ | 3. fluff _____ |
| 2. plate _____  | 4. leaps _____ |

## SYNONYMS

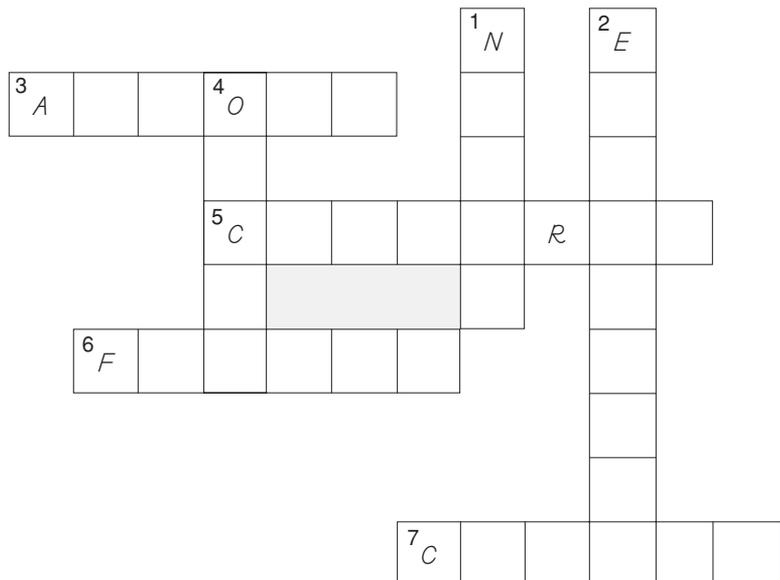
Complete the puzzle with words from the reading. Clue words are *synonyms* (words with a similar meaning) of the answer words.

### ACROSS

3. permits
5. offspring
6. created
7. named

### DOWN

1. requires
2. important
4. happen





## WORDS AND MEANINGS

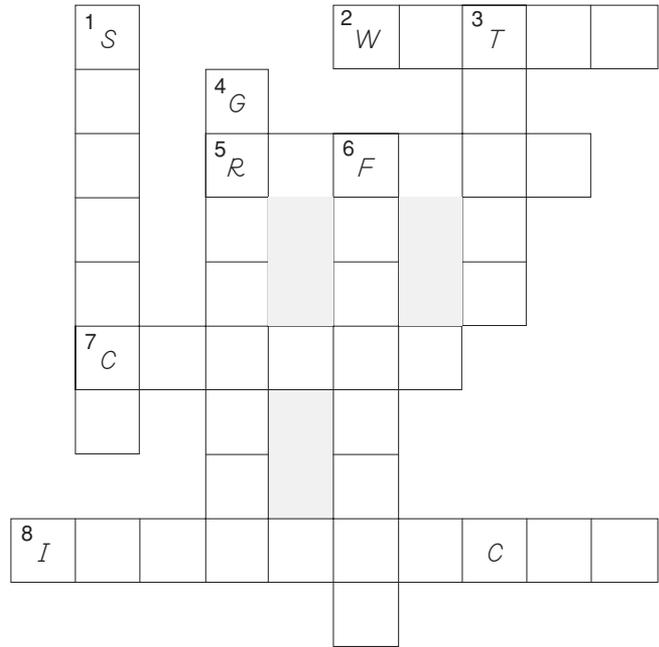
Use the clues to help you solve the crossword puzzle. Answers are words from the reading.

### ACROSS

2. colorless liquid found in oceans
5. points toward; assigns meaning to
7. tops or summits of waves
8. has an effect on

### DOWN

1. the outside of something
3. words or phrases with special meanings in science, art, etc.
4. describes smooth, beautiful ease of movement
6. qualities or characteristics



### PREFIXES

- The prefix *inter-* means "between," and the prefix *off-* means "away from." Write a word from the reading that begins with each prefix.

1. \_\_\_\_\_

- Now replace each scrambled word in the sentences below with a new word that begins with *inter-* or *off-*. The first one has been done for you.

2. Tom said the tree house is MILSTI off-limits until he repairs the floor.

3. That science fiction story is about TALCGAIC \_\_\_\_\_ warfare in outer space.

4. The actor waited GATES \_\_\_\_\_ until he heard his cue.

5. Route 66 is a well-known ETAST \_\_\_\_\_ highway.

## COMMONLY CONFUSED WORDS

You read that the surface features of the coast *affect* surf. Are you clear about the difference between the words *effect* and *affect*?

**effect:** the consequence or result of an action

**EXAMPLE:** *The moon has an effect on the tides.*

**affect:** to influence or produce an effect upon

**EXAMPLE:** *Bright lights affect the eyes.*

Write *affect* or *effect* to complete each sentence.

1. The store owner hoped his advertisement would have a good \_\_\_\_\_ on sales.
2. Our assignment was to write a paragraph about one cause and one \_\_\_\_\_ of world hunger.
3. Why should you allow her bad mood to \_\_\_\_\_ the way *you* feel?
4. If he studies a little harder, he can \_\_\_\_\_ a big change in his grades.

## COMPOUND WORDS

1. What compound word (one word made by combining two or more words) is a *synonym* of the word “beach”? \_\_\_\_\_
2. The distance between cresting waves is named by what compound word? \_\_\_\_\_

## WORD COMPLETION

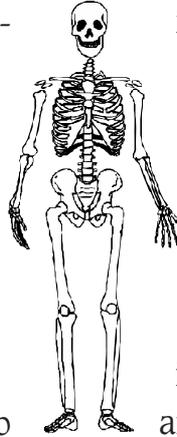
Add vowels (*a, e, i, o, u*) to complete the words from the reading.

1. \_\_nd\_\_l\_\_t\_\_ \_\_ns are curvy, wavy motions.
2. W\_\_v\_\_s are a combination of s\_\_ \_\_ and sw\_\_ll.
3. Surf is influenced by the h\_\_ \_\_ght and \_\_n\_\_rgy of the waves.

**Some Surprising Facts About Bones**

Living cells make up less than five percent of your body's bones—but they are continually busy! At this very moment, specialized cells in your skeleton are chewing up old, worn-out bits of bone and putting fresh new material in their place.

Meanwhile, these same busy bones are turning out new blood cells. And they're making sure that every part of your body gets just the right amount of calcium to keep it going. How do your bones do this? They act as a storage bank for calcium. In fact, 99 percent of the calcium in your body is held in bone—ready for release into the bloodstream as needed.



Many people think of the skeleton as a symbol of death. But each and every bone is a living organ, full of dynamic vitality. In fact, every square inch of your skeleton is regenerated every ten years. Some parts—the spongy bones of the spine and hip—renew themselves much more often.

In a broader sense, human bone is a key to understanding who we are as a species. The bones of long-dead creatures that have turned to fossils tell us much about life. Without them, scientists would know very little about the history of vertebrates over the past 600 million years.

**WORD SEARCH**

1. What seven-letter noun in the reading means “a group of plants or animals that are alike in certain ways”?

*s* \_\_\_\_\_

2. What seven-letter adjective in the reading means “active, energetic, vigorous”?

*d* \_\_\_\_\_

3. What seven-letter noun in the reading describes the hardened remains of ancient plants or animals?

*f* \_\_\_\_\_

**SYNONYMS**

First unscramble the words from the reading. Then write each unscrambled word next to its *synonym* (word with a similar meaning).

<b>SELS</b> _____	<b>OMANUT</b> _____
<b>ADED</b> _____	<b>TRUERACES</b> _____
<b>SYBU</b> _____	<b>NETFO</b> _____
<b>RAPT</b> _____	<b>LIARMEAT</b> _____

- |                   |                      |
|-------------------|----------------------|
| 1. piece _____    | 5. deceased _____    |
| 2. quantity _____ | 6. frequently _____  |
| 3. fewer _____    | 7. industrious _____ |
| 4. beings _____   | 8. substance _____   |

**SENTENCE COMPLETION**

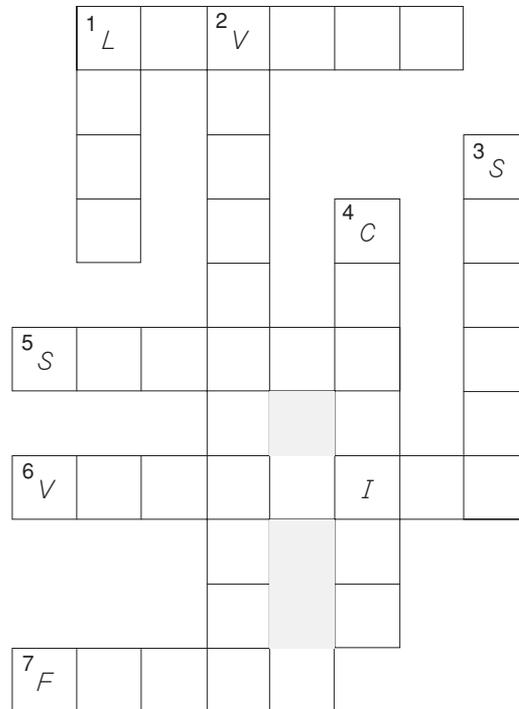
Puzzle answers are words from the reading that complete the sentences.

**ACROSS**

- Every bone is a \_\_\_\_\_ organ.
- A skeleton is often thought to be a \_\_\_\_\_ of death.
- Every bone is full of dynamic \_\_\_\_\_.
- Worn-out bits of bone are soon replaced with \_\_\_\_\_ new material.

**DOWN**

- Fossils are the remains of \_\_\_\_\_ dead creatures.
- Fossils tell us about the history of \_\_\_\_\_.
- The bones of the spine and hip have a \_\_\_\_\_ texture.
- Bones release \_\_\_\_\_ into the bloodstream.



## MULTIPLE-MEANING WORDS

Some words have entirely different meanings when they're used in different contexts. Find a word in the reading that matches each *pair* of definitions below. Write the words on the lines.

1. \_\_\_\_\_
  - the basic unit of living matter (noun)
  - small room in a jail or prison (noun)
2. \_\_\_\_\_
  - correct or true (adjective)
  - opposite direction of left (noun)
3. \_\_\_\_\_
  - metal device that unlocks a door (noun)
  - important or central idea (adjective)
4. \_\_\_\_\_
  - to play a part in a show (verb)
  - to function or do (verb)

## UNDERSTANDING THE READING

1. What percentage of human bone is *not* made up of living cells? \_\_\_\_\_
2. Bones hold our bodies upright and protect our inner organs. Describe two more jobs that bones do.  
\_\_\_\_\_
3. Are the bones in a 40-year-old the same bones that were there when that person was 25 years old? Explain why or why not.  
\_\_\_\_\_

## GREEK ROOTS

The Greek root *gen* means "birth." Draw a line to match each word on the left with its meaning on the right. Check a dictionary if you're not sure!

1. **generation**                      a. children or offspring
2. **genealogy**                      b. to renew or give new life to
3. **regenerate**                      c. all the people born about the same time
4. **progeny**                          d. a family tree or list of ancestors

**Science in the News: A Very Long-Term Experiment**



Seeds buried by a botanist 121 years ago have recently bloomed into bright yellow flowers.

In the late 1800s, William Beal was a botany professor at Michigan State University. In 1879, he devised an experiment to determine how long seed would continue to germinate. To do this he put seeds of mullein plants in 20 glass bottles and then buried them on the campus.

Professor Beal directed that one bottle should be unearthed every five years. To extend the experiment, the

intervals were lengthened to every ten and then every 20 years.

The fifteenth bottle was dug up on an April day in the year 2000. The 1,050 seeds in the bottle were set out in a growth chamber. Twenty-five seedlings, nearly all of them mullein, began to grow.

Put in greenhouses, the plants soon started blooming. The bright yellow flowers were described as “beautiful” by botanists following through with Professor Beal’s experiment.

Five of William Beal’s bottles still remain buried on the Michigan State campus. The next one is scheduled to be dug up in 2020.

**WORD SEARCH**

1. What nine-letter noun means “a college or university teacher of the highest rank”?

*p* \_\_\_\_\_

2. What eleven-letter compound word in the reading means “glass buildings that can be heated for growing plants”?

*g* \_\_\_\_\_

3. What ten-letter noun in the reading means “a test to find out whether a theory is correct”?

*e* \_\_\_\_\_

## ANTONYMS

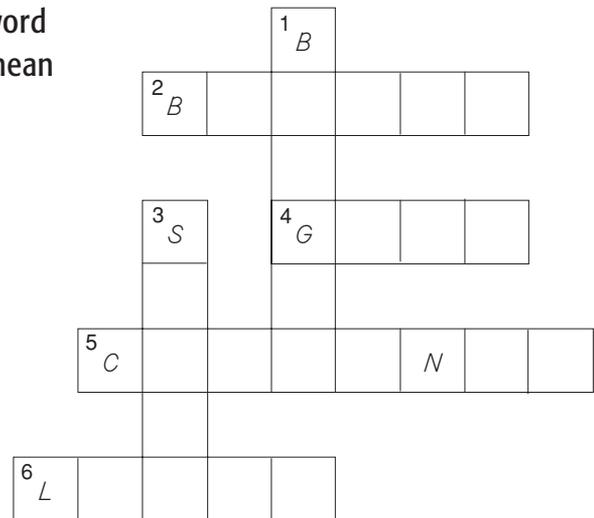
Use words from the reading to solve the crossword puzzle. Clue words are *antonyms* (words that mean the opposite) of the answer words.

### ACROSS

2. unearthed
4. wither
5. terminate
6. earlier

### DOWN

1. pale; dull
3. long



## SYNONYMS

First unscramble the words from the reading. Then write each word next to its *synonym* (word with a similar meaning).

<b>DISCBREED</b> _____	<b>RINWOLFEG</b> _____
<b>NEATIMERG</b> _____	<b>NEXTED</b> _____
<b>CRIEDEDT</b> _____	<b>EDSIVED</b> _____

- |                   |                        |
|-------------------|------------------------|
| 1. blooming _____ | 4. ordered _____       |
| 2. invented _____ | 5. lengthen _____      |
| 3. sprout _____   | 6. characterized _____ |

## THINKING ABOUT THE READING

1. How many of the 1,050 seeds planted in the year 2000 did *not* grow? \_\_\_\_\_
2. What's the name of the branch of science that studies plants and how they grow? \_\_\_\_\_
3. How many glass bottles of seeds have *already* been dug up? \_\_\_\_\_

## SUFFIXES MEANING "one who"

In the reading, the suffix *-ist* changes the word *botany* (the science of plants) into *botanist*—one who practices botany. But many other suffixes are also used to show "one who does, practices, or works with" something. Complete the sentences with words that contain the suffixes in the box. Check a dictionary if you need help. The first one has been done for you.

**-ist**

**-ian**

**-ant**

**-or**

**-er**

**-ar**

**-ent**

1. An artist practices art.
2. A \_\_\_\_\_ is one who paints.
3. One who assists is an \_\_\_\_\_.
4. One who begs is a \_\_\_\_\_.
5. An \_\_\_\_\_ is one who edits.
6. One who resides is a \_\_\_\_\_.
7. One who practices magic is a \_\_\_\_\_.
8. An \_\_\_\_\_ is one who acts.

## ANALOGIES

*Analogies* are statements of relationship. To come up with the missing word, you must figure out the relationship between the first two words. Then complete each analogy with a word from the reading.

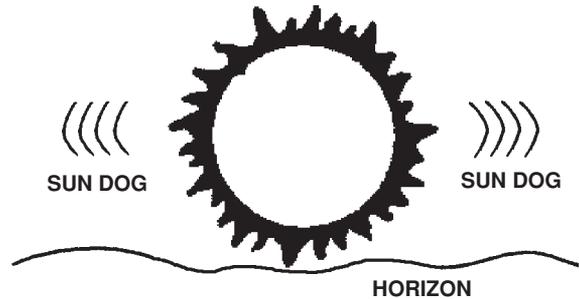
1. *Baby* is to *child* as seed is to s\_\_\_\_\_.
2. *Sweet* is to *taste* as y\_\_\_\_\_ is to *color*.
3. *Disappear* is to *vanish* as r\_\_\_\_\_ is to *stay*.
4. *Hours* are to *minutes* as y\_\_\_\_\_ are to *months*.
5. G\_\_\_\_\_ is to *bottle* as *tin* is to *can*.
6. *Run* is to *ran* as *dig* is to d\_\_\_\_\_.
7. *Water* is to *fish* as *soil* is to p\_\_\_\_\_.

**Have You Ever Seen a Sun Dog?**

If you glance up at the sun about an hour before sundown or after dawn, you might see a sun dog. Sun dogs are little patches of rainbow color that appear on the left and right sides of the sun.

Scientists say this is the effect of sunlight refracting as it passes through ice crystals. Sometimes these same crystals—which are in high-level cirrus clouds—can also create complete rainbow-like halos around the sun.

How are sun dogs created? The ice crystals in the clouds are of different shapes. One type, shaped like a six-sided plate, will reflect light only to



the sides of the sun when it is oriented horizontally. When these hexagonal crystals are oriented in all different directions, a complete halo results.

The technical name for sun dogs—which are also called “false suns”—is *parhelia*. For a graphic that further explains this phenomenon, ask a reference librarian or surf the Web.

**WORD SEARCH**

1. What six-letter adjective in the reading describes clouds that are “feathery and wispy”?

*c* \_\_\_\_\_

2. What four-letter noun in the reading names a unit of time?

*h* \_\_\_\_\_

3. What seven-letter noun in the reading means “a picture, map, or diagram”?

*g* \_\_\_\_\_

**SYNONYMS**

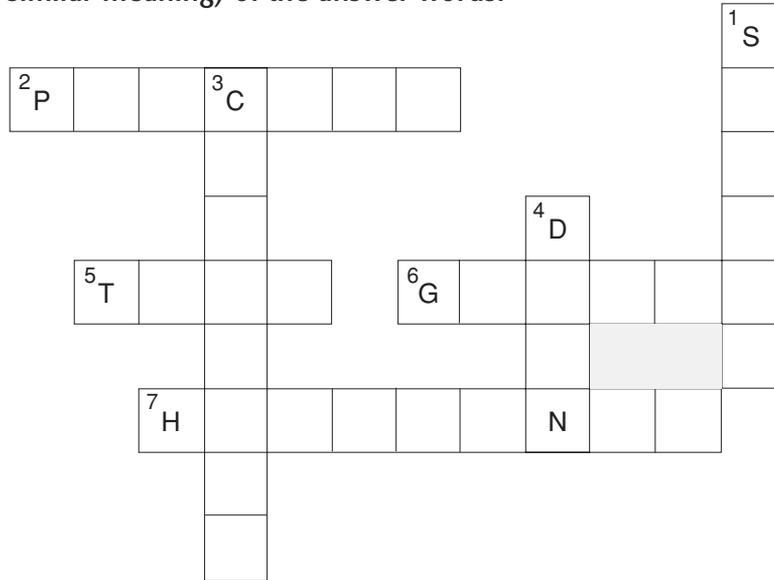
Complete the puzzle with words from the reading. Clue words are *synonyms* (words with a similar meaning) of the answer words.

**ACROSS**

- 2. spots
- 5. kind
- 6. look
- 7. six-sided

**DOWN**

- 1. forms
- 3. total
- 4. daybreak



**LOOK IT UP!**

Write the dictionary definition of each word from the reading.

- 1. **phenomenon** \_\_\_\_\_  
\_\_\_\_\_
- 2. **refracting** \_\_\_\_\_  
\_\_\_\_\_
- 3. **reflect** \_\_\_\_\_  
\_\_\_\_\_

**DIRECTIONAL RELATIONSHIPS**

The word *horizontal* means "level, flat, parallel to the horizon." The word *vertical* means "straight up and down; perpendicular to the horizon." Write **H** or **V** to show whether each item below is *horizontal* or *vertical*.

- 1. \_\_\_\_\_ the walls of a house
- 2. \_\_\_\_\_ the legs of a table
- 3. \_\_\_\_\_ a cupboard shelf
- 4. \_\_\_\_\_ a flagpole
- 5. \_\_\_\_\_ the surface of a pond
- 6. \_\_\_\_\_ a city sidewalk

## MYSTERY WORDS

Unscramble the words from the reading that match the definitions.

1. NOTDEERI \_\_\_\_\_: positioned in a certain way
2. SCARTSLY \_\_\_\_\_: regularly shaped pieces formed when many substances become solids
3. CHINCATEL \_\_\_\_\_: describes something used in a particular science, art, or profession

## UNDERSTANDING THE READING

Write **T** or **F** to show whether each statement below is *true* or *false*.

1. \_\_\_\_\_ Sun dogs always appear just before or after it rains.
2. \_\_\_\_\_ You can use the Internet to find out more about sun dogs.
3. \_\_\_\_\_ Sun dogs appear only when there are stratus clouds in the sky.
4. \_\_\_\_\_ The name “false suns” is also used to describe sun dogs.

## WORD FORMS

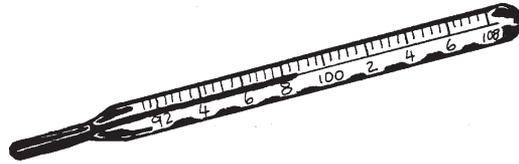
You can change the *form* of many words to make different parts of speech. The verb *excite*, for example, can be changed to the adjective *exciting*, or the noun *excitement*. Change the form of each **boldface** word from the reading according to the directions below. The first one has been done for you.

1. **cloud**                      adjective form: cloudy
2. **ice**                              adjective form: \_\_\_\_\_
3. **appear**                      noun form: \_\_\_\_\_
4. **hexagonal**                  noun form: \_\_\_\_\_
5. **complete**                  noun form: \_\_\_\_\_
6. **reflect**                      noun form: \_\_\_\_\_

**Science in the News: The Dangers of Mercury**

Does your family still have an old-fashioned mercury thermometer? These days, most people use the new digital thermometers. They measure temperature faster, and they're a lot easier to read.

How can you get rid of your old thermometer? You can't just dump it in the trash. That tiny drop of mercury inside can be very dangerous to human health. The half gram of mercury in one broken thermometer is enough to pollute 5 million gallons of water! That's why a mercury thermometer should never be incinerated or buried in landfill. Instead, old thermometers should be taken to the nearest household hazardous waste site.



Mercury in the environment carries unique risks. It affects the brain, spinal cord, kidneys, and liver. In humans, elevated mercury levels can cause mental and physical retardation.

The U.S. Environmental Protection Agency (EPA) is working to reduce human exposure to mercury. In 1998, the American Hospital Association signed an agreement with the EPA to start eliminating mercury from hospitals and clinics. A number of states and cities have recently passed laws making the sale of mercury thermometers illegal.

**WORD SEARCH**

1. What seven-letter adjective in the reading means “displaying data numerically rather than physically”?
2. What 11-letter noun in the reading means “the conditions that surround a person, animal, or plant and affect its character and growth”?

d

e

3. What four-letter noun in the reading means “the basic unit of weight in the metric system: about  $\frac{1}{28}$  of an ounce”?

*g* \_\_\_\_\_

4. What eight-letter noun in the reading means “a place where garbage or rubbish is disposed of by being buried under a shallow layer of earth”?

*l* \_\_\_\_\_

### GREEK ROOTS

- The Greek root *therm*, meaning “heat,” appears in a number of English words. Complete each sentence with a familiar English word containing this root. Add consonants to complete the words.

1. \_\_\_ e \_\_\_ a \_\_\_ underwear helps to hold in body heat.

2. Taylor’s \_\_\_ e \_\_\_ o \_\_\_ bottle keeps her vegetable soup hot until lunchtime.

3. Bradley uses the \_\_\_ e \_\_\_ o \_\_\_ a \_\_\_ to turn the furnace on and off.

4. If the \_\_\_ e \_\_\_ o \_\_\_ e \_\_\_ e \_\_\_ reading is  $100^{\circ}$ , you have a fever.

- The Greek root *meter* means “measure.” Add consonants to complete the words containing this root.

5. The \_\_\_ i a \_\_\_ e \_\_\_ e \_\_\_ of a circle is a straight line passing through its center.

6. A unit of length called a \_\_\_ e \_\_\_ i \_\_\_ e \_\_\_ e \_\_\_ is one one-hundredth of a meter.

7. Because it measures atmospheric pressure, a \_\_\_ a \_\_\_ o \_\_\_ e \_\_\_ e \_\_\_ is used to help forecast the weather.

8. An aircraft’s a \_\_\_ i \_\_\_ e \_\_\_ e \_\_\_ shows height above sea level.

## ANTONYMS

Write a letter to match each **boldface** word from the reading with its *antonym* (word with the opposite meaning).

- |                             |               |
|-----------------------------|---------------|
| 1. _____ <b>incinerated</b> | a. purify     |
| 2. _____ <b>pollute</b>     | b. frozen     |
| 3. _____ <b>elevated</b>    | c. beneficial |
| 4. _____ <b>dangerous</b>   | d. lowered    |

## SYNONYMS

First unscramble the words from the reading. Then write each word next to its *synonym* (word with a similar meaning).

<b>MUPD</b> _____	<b>NUQUIE</b> _____
<b>SHART</b> _____	<b>GALLILE</b> _____

- |                    |                   |
|--------------------|-------------------|
| 1. _____: unlawful | 3. _____: rubbish |
| 2. _____: discard  | 4. _____: unusual |

## SUFFIXES

What word form will correctly complete each phrase? Rewrite each **boldface** word, adding the correct suffix.

1. **hazard** \_\_\_\_\_ waste site
2. signed an **agree** \_\_\_\_\_
3. measure temperature **fast** \_\_\_\_\_
4. new **digit** \_\_\_\_\_ thermometers

## REVIEW

Here's your chance to show what you've learned in this unit!

**SENTENCE COMPLETION**

Write words you studied in Unit 1 to correctly complete the sentences.

1. \_\_\_\_\_ such as *un-*, *re-*, and *inter-* are added to the beginnings of base words to change their meaning.
2. The suffix \_\_\_\_\_ means "one who practices or does something."
3. *Ecological* is the adjective form of the noun \_\_\_\_\_.
4. The words *nourishment* and *nutrition* are \_\_\_\_\_.
5. The word \_\_\_\_\_ means "to influence or produce an effect."
6. The Greek root \_\_\_\_\_ means "birth."

**ANALOGIES**

Remember that *analogies* are statements of relationship. Figure out the relationship between the first two words. Then show the same relationship by completing each analogy with a word you studied in Unit 1.

1. *Oak* is to *maple* as *stratus* is to *c*\_\_\_\_\_.
2. *Slender* is to *chubby* as *i*\_\_\_\_\_ is to *lazy*.
3. *Page* is to *chapter* as *bit* is to *h*\_\_\_\_\_.
4. *Horizontal* is to *horizontally* as *v*\_\_\_\_\_ is to *vertically*.
5. *Steak* is to *protein* as *pasta* is to *c*\_\_\_\_\_.
6. *Off-* is to "away from" as *i*\_\_\_\_\_ is to "between."

## HIDDEN WORDS PUZZLE

Find and circle the words in the puzzle. Words may go up, down, across, backward, or diagonally. Check off each word as you find it.

- \_\_\_ TOPOGRAPHY      \_\_\_ FEATURES
- \_\_\_ EVOLUTION      \_\_\_ ECOLOGY
- \_\_\_ DISKETTES      \_\_\_ SURFACE
- \_\_\_ CHEMICAL      \_\_\_ FOSSILS
- \_\_\_ VERTEBRATES      \_\_\_ VITALITY
- \_\_\_ EXPERIMENT      \_\_\_ CRYSTALS



Now use each word in a sentence of your own. Be sure that your sentence makes the word's meaning clear.

1. **crystals:** \_\_\_\_\_  
\_\_\_\_\_
2. **topography:** \_\_\_\_\_  
\_\_\_\_\_
3. **experiment:** \_\_\_\_\_  
\_\_\_\_\_
4. **features:** \_\_\_\_\_  
\_\_\_\_\_
5. **vertebrates:** \_\_\_\_\_  
\_\_\_\_\_
6. **vitality:** \_\_\_\_\_  
\_\_\_\_\_
7. **evolution:** \_\_\_\_\_  
\_\_\_\_\_

8. **ecology:** \_\_\_\_\_  
 \_\_\_\_\_
9. **chemical:** \_\_\_\_\_  
 \_\_\_\_\_
10. **fossils:** \_\_\_\_\_  
 \_\_\_\_\_
11. **diskettes:** \_\_\_\_\_  
 \_\_\_\_\_
12. **surface:** \_\_\_\_\_  
 \_\_\_\_\_

**COMPOUND WORDS**

Write the *compound word* from Unit 1 that answers the question or completes the sentence.

1. A place where garbage is buried is called a \_\_\_\_\_.
2. In the wintertime, plants can be grown in a \_\_\_\_\_.
3. What is a synonym for dawn? \_\_\_\_\_
4. Sun dogs are little patches of \_\_\_\_\_ color around the sun.
5. Your bones release calcium into your \_\_\_\_\_.
6. What do we call the distance between successive crests of waves? \_\_\_\_\_

**MULTIPLE-MEANING WORDS**

Circle the word in each pair that can have an entirely different meaning when it's used in a different context.

- |            |        |              |          |
|------------|--------|--------------|----------|
| 1. crust   | crunch | 5. fractures | features |
| 2. sell    | cell   | 6. swell     | swollen  |
| 3. treated | traded | 7. wave      | surface  |
| 4. big     | bit    | 8. drink     | drop     |

## PREVIEW

Here's an introduction to the vocabulary terms, concepts, and skills you will study in this unit. Answers are upside down on the bottom of the page.

**WORD COMPLETION**

Add vowels (*a, e, i, o, u*) to complete the words.

1. \_\_xt\_\_nct animals are no longer living on the Earth.
2. C\_\_rb\_\_n is part of every living thing.
3. The verb form of observation is the word \_\_bs\_\_rv\_\_.
4. The bowhead whale is an \_\_nd\_\_ng\_\_r\_\_d species.

**TRUE OR FALSE**

Write **T** or **F** to show whether each statement is *true* or *false*.

1. \_\_\_\_ Adding the suffix *-al* can change a noun to an adjective.
2. \_\_\_\_ The plural form of the word *theory* is *theorys*.
3. \_\_\_\_ The words *characteristics* and *properties* are synonyms.
4. \_\_\_\_ The words *disprove* and *verify* are antonyms.
5. \_\_\_\_ Homonyms are synonyms that sound alike.
6. \_\_\_\_ The prefix *kilo-* means “one million.”
7. \_\_\_\_ A compound word is made up of two or more words.

ANSWERS: WORD COMPLETION: 1. extinct 2. carbon 3. observe 4. endangered  
TRUE OR FALSE: 1. T 2. F 3. T 4. T 5. F 6. F 7. T

**GLOSSARY**

A *glossary* is an alphabetical list of unusual or specialized words from a certain field of knowledge. Following are some important words from the fields of science and technology.

**cold-blooded** animals whose body temperature changes with the temperature of their environment

**condensation** the process by which gas turns into a liquid

**continents** the seven major land masses on Earth: Africa, Antarctica, Asia, Australia, Europe, North America, and South America

**environment** all the conditions that surround a person, animal, or plant and affect its life

**evaporation** the process by which heat changes water to water vapor

**extinct** no longer living on Earth; used to describe a species that has died out

**ozone** a form of oxygen in a thin layer within the stratosphere

**precipitation** any moisture that falls from the atmosphere

**respiration** the way a cell gets energy by mixing food and oxygen

**satellite** an object that revolves around a planet

**solar system** the sun and all the planets that revolve around it

**warm-blooded** animals whose body temperature stays the same in hot and cold weather

**water cycle** natural process by which water continually condenses, evaporates, and condenses again

**WORDS IN CONTEXT**

Use context clues (the other words in the sentence) to help you complete the sentences with words from the glossary. If you're not sure, check a dictionary.

1. The \_\_\_\_\_ of Antarctica is in the Southern Hemisphere.
2. Fish and snakes are \_\_\_\_\_ animals.

3. In 1957, the first manmade \_\_\_\_\_ circled the Earth.
4. Every living thing responds to changing conditions in its \_\_\_\_\_.
5. The dinosaur and the woolly mammoth are examples of \_\_\_\_\_ creatures.
6. Jupiter and Saturn are two planets in our \_\_\_\_\_.
7. In humans, \_\_\_\_\_ begins when the lungs take in air.
8. Steam coming from a tea kettle is an example of \_\_\_\_\_.
9. \_\_\_\_\_ protects the Earth from harmful radiation from the sun.
10. \_\_\_\_\_ occurs when water vapor turns into dew.
11. In a process called the \_\_\_\_\_, all the water on Earth is used over and over again.
12. Squirrels, whales, and mice are all \_\_\_\_\_ animals.
13. Rain is the most common form of \_\_\_\_\_.

## WORD FORMS

To correctly complete each sentence, rewrite each **boldface** word in a different *form*.

1. (**evaporation**) On a sunny day, water in a puddle will \_\_\_\_\_ quickly.
2. (**extinct**) Mass \_\_\_\_\_ occurs when many forms of life suddenly disappear from the Earth.
3. (**environment**) \_\_\_\_\_ are those who work to protect Earth's air and water from pollution.
4. (**condensation**) Freezing temperatures \_\_\_\_\_ water into ice.

## ANALOGIES

Remember that *analogies* are statements of relationship. Begin by thinking about the relationship between the first two words. Then complete the analogy by writing the glossary word that makes sense.

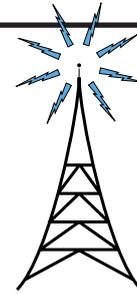
1. *Human being* is to *frog*  
as *warm-blooded* is to  
*c* \_\_\_\_\_.
2. *Past* is to *present* as  
*e* \_\_\_\_\_  
is to *living*.
3. *Daisy* is to *flower* as *sleet*  
is to *p* \_\_\_\_\_.
4. *Venus* is to *planet* as *moon*  
is to *a* \_\_\_\_\_.
5. *Environment* is to  
*environmental* as *continent*  
is to *c* \_\_\_\_\_.
6. *Circulation* is to *circulatory*  
as *r* \_\_\_\_\_  
is to *respiratory*.

**What's a Hertz?**

A *hertz* is the standard unit of frequency used to measure an energy wave. Suppose you were watching a child on a swing. Each cycle of swing-out and swing-in would be one cycle. If you kept track of time while you watched, you could measure the swing in hertz. Two in-and-out cycles per second would be 2-hertz or 2Hz.

Household electricity is usually 120 volts at 60Hz—which means it pulses energy at 60 times per second. *Kilohertz* means thousands of cycles per second. AM radio broadcasts in *kHz*. Its programs are transmitted on waves that number 740,000 per second. *Megahertz* or MHz means

millions of cycles per second. Cordless phones broadcast as radio signals that cycle at millions of times a second. Computer processors run at speeds of about 450 million cycles per second.



Where did the word *hertz* come from? It came from a German physicist named Heinrich Hertz. In the late 1800s, he was the first to produce electromagnetic waves under laboratory conditions. This led to the development of the telegraph and the radio.

The abbreviations *Hz*, *kHz*, and *MHz* appear in tiny print on lots of appliances.

**WORD SEARCH**

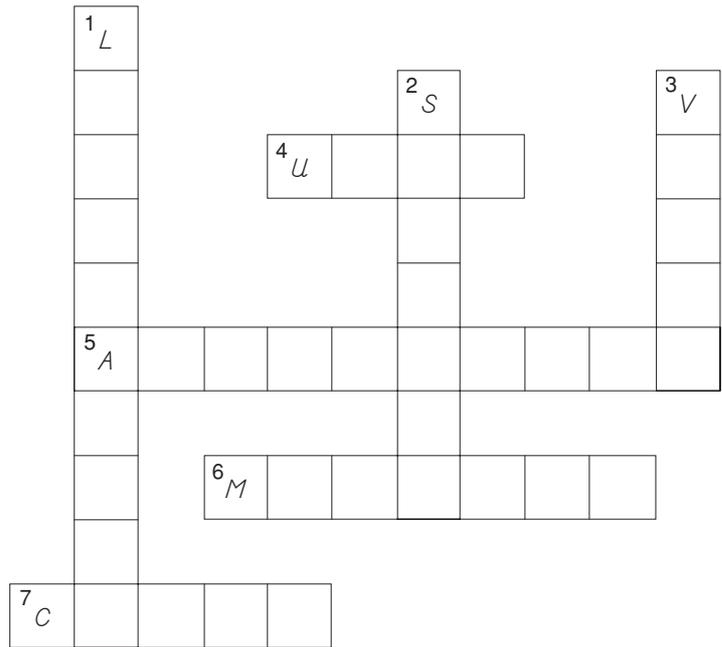
1. What six-letter noun in the reading means “the power of certain forces of nature to do work”? *e* \_\_\_\_\_
  
2. What nine-letter noun in the reading means “a device for sending messages by a code of electrical signals”? *t* \_\_\_\_\_
  
3. What nine-letter noun in the reading means “a scientist who studies the interrelationships of matter, energy, force, and motion”? *p* \_\_\_\_\_

## WORDS AND MEANINGS

Use the clues to help you solve the crossword puzzle.

### ACROSS

4. any standard term of measurement such as *inch*, *pound*, or *degree*
5. things like refrigerators, toasters, hairdryers
6. to determine quantity
7. a complete set of events that repeat in the same order



### DOWN

1. room or building where scientific tests are carried out
2. information sent by an electromagnetic wave
3. measurements of an electric current

## PREFIXES

You learned in the reading that the prefix *kilo-* means "thousand" and the prefix *mega-* means "million." Use this information to help you complete the following sentences.

1. The word *kilometer* must mean \_\_\_\_\_ *meters*.
2. A \_\_\_\_\_ must be equal to one million *tons*.
3. A \_\_\_\_\_ must be one one-millionth of a *megaton*.
4. A *megawatt* of electrical power must be equal to one million \_\_\_\_\_.
5. Something that weighs one *kilogram* must be equal to \_\_\_\_\_ *grams*.
6. A *megabyte* must be equal to one million \_\_\_\_\_ of computer memory.

## ABBREVIATIONS

You already know that abbreviations—like *Mr.* for *Mister*—are shortened forms of words. On the lines below, write either the abbreviation or the whole word that matches. The first one has been done for you.

1. megahertz = MHz
2. hertz = \_\_\_\_\_
3. kilohertz = \_\_\_\_\_
4. \_\_\_\_\_ = ft.
5. gallon = \_\_\_\_\_
6. \_\_\_\_\_ = min.
7. \_\_\_\_\_ = oz.
8. quart = \_\_\_\_\_

## MULTIPLE-MEANING WORDS

Some words have entirely different meanings when they're used in different contexts. Notice the **boldface** words in phrases from the reading. Then write a sentence of your own, using the same word with an entirely different meaning.

1. measure an energy **wave** \_\_\_\_\_  
\_\_\_\_\_
2. cycles per **second** \_\_\_\_\_  
\_\_\_\_\_
3. if you kept **track** \_\_\_\_\_  
\_\_\_\_\_

## SYNONYMS

Draw a line to match each **boldface** word from the reading with its *synonym* (word with a similar meaning).

- |                       |           |
|-----------------------|-----------|
| 1. <b>transmitted</b> | vibration |
| 2. <b>run</b>         | power     |
| 3. <b>pulse</b>       | operate   |
| 4. <b>energy</b>      | sent      |

**What Causes Precipitation?**

Numerous factors influence the amount of precipitation in a location. Three of the most important factors are a location's latitude, distance from the ocean, and elevation. Compare the cities of Los Angeles, Denver, Seattle, and Phoenix, for example.

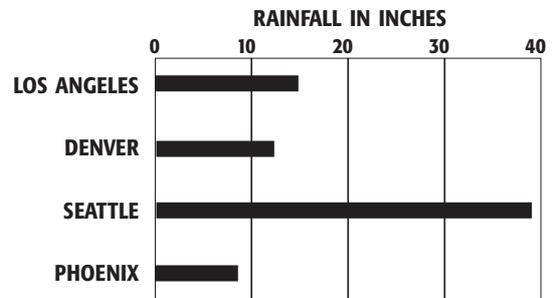
In the United States, most precipitation-producing weather systems come from the west. These systems are carried along by undulations in the polar jet stream. The jet stream is stronger in higher latitudes, bringing more storms to northern locales.

Western cities near the Pacific Ocean tend to get more precipitation than inland cities. Why? Because of the higher mountains. Ranges such as

the Cascades, the Sierra Nevada, and the Rockies wring moisture out of the clouds as they are lifted over the mountains.

Finally, elevation determines whether precipitation will fall as rain or snow.

Average annual rainfall in the four cities is as follows: Los Angeles, 14.83 inches; Denver, 12.55 inches; Seattle, 37.92 inches; and Phoenix, 7.95 inches.

**WORD SEARCH**

1. What nine-letter noun in the reading means "height above sea level"?
2. What five-letter noun in the reading means "a row or line of connected mountains"?
3. What eight-letter noun in the reading means "the length of a line between two points"?

*e* \_\_\_\_\_

*r* \_\_\_\_\_

*d* \_\_\_\_\_

## ANTONYMS

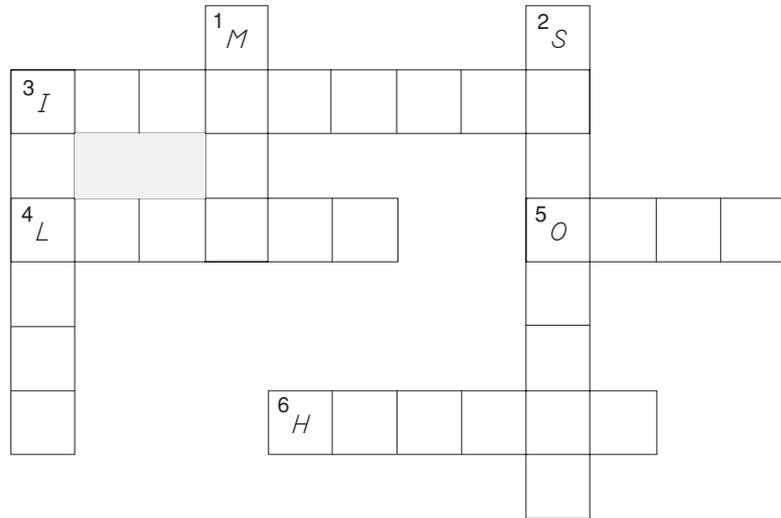
Solve the crossword puzzle. Clues are *antonyms* (words with opposite meanings) of words from the reading.

### ACROSS

3. insignificant
4. dropped
5. under
6. lower

### DOWN

1. least
2. weaker
3. oceanfront



## HOMOPHONES

*Homophones* are words that sound exactly alike but have different meanings and spellings. In the reading, for example, you can find the homophones *weather* and *whether*. Write a homophone for each word listed below.

- |                    |                   |
|--------------------|-------------------|
| 1. aunt / _____    | 6. fowl / _____   |
| 2. bare / _____    | 7. herd / _____   |
| 3. capital / _____ | 8. higher / _____ |
| 4. cent / _____    | 9. not / _____    |
| 5. chews / _____   | 10. mane / _____  |

## LOOK IT UP!

Check a dictionary to help you compare the meanings of *longitude and latitude*. Circle the word that correctly completes the sentence.

1. A city's ( longitude / latitude ) is its distance north or south of the equator.
2. Both longitude and latitude are measured in ( miles / degrees ).

3. ( Longitude / Latitude ) is distance measured east or west of an imaginary line running from the North Pole to the South Pole.
4. Lines of longitude and latitude are usually shown on a ( globe / road map ).
5. Chicago is at 87 degrees west ( latitude / longitude ).
6. Minneapolis is at 45 degrees north ( latitude / longitude ).

### **ANALOGIES**

*Analogies* are statements of relationship. To complete an analogy, figure out the relationship between the first two words. Then write the word from the reading that shows the same relationship.

1. *Horizontal* is to *vertical* as *latitude* is to l\_\_\_\_\_.
2. *Numerous* is to *plentiful* as *yearly* is to a\_\_\_\_\_.
3. *Warmer* is to *rain* as *colder* is to s\_\_\_\_\_.
4. *Mountain* is to *mountainous* as *pole* is to p\_\_\_\_\_.

### **MYSTERY WORDS**

Unscramble words from the reading to correctly complete the sentences.

1. SCARTOF \_\_\_\_\_ are causes that combine to bring about a result.
2. LAUDNUSNOIT \_\_\_\_\_ are wavy movements.
3. Precipitation is measured in CHINES \_\_\_\_\_.
4. Liquid causing dampness is called STROMUIE \_\_\_\_\_.

**Try It Yourself: Make a Standing Wave**

Any surfer will tell you that an ocean wave keeps moving—even when it washes onto a beach. This experiment will show you a kind of wave that doesn't go anywhere. It's called a *standing wave*.



To conduct this experiment, you'll need:

- several drinking glasses of different sizes
- a small cloth such as a dish towel
- a plastic bottle of water
- a machine that shakes when it operates (clothes dryer, dishwasher, washing machine, air conditioner, etc.)

Follow these steps:

1. Fill one of the glasses about half full of water.
2. Put the cloth on the machine and place the glass on the cloth.
3. Turn on the machine and wait a few seconds.
4. Look at the water's surface. Do you see a pattern of rings?
5. If you don't see a pattern, repeat the experiment with a different size glass of water.
6. What should you do if you try all the glasses and still don't see a pattern? Repeat the experiment with a different machine.

What will happen when you finally find the right combination of glass size and shaking machine? You will see ring-shaped standing waves on the water's surface. The waves in the water will go from the wall of the glass to the center—and then seem to disappear. But the waves don't *actually* disappear in the middle. As they keep going to the other side of the glass, they exactly match the waves coming toward them!

**WORD SEARCH**

1. Which five-letter noun in the reading means "one of the huge bodies of salt water on Earth"?

\_\_\_\_\_

2. What seven-letter noun in the reading names a manmade substance used in manufacturing many products? p

3. What seven-letter adjective in the reading means “more than two but not many”? 1

**SYNONYMS**

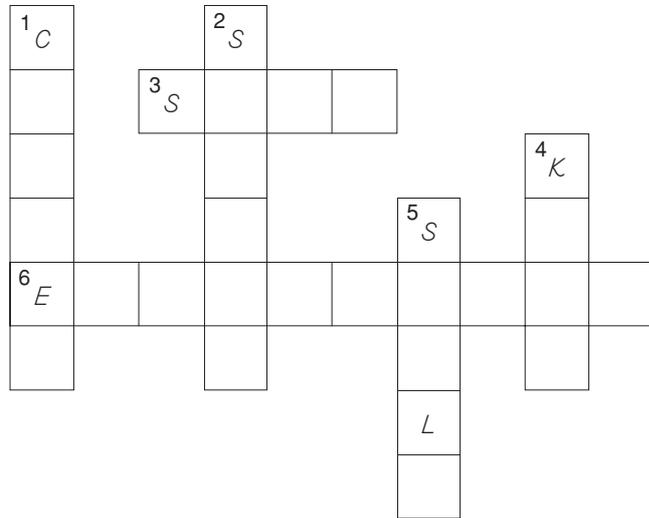
Complete the crossword puzzle with words from the reading. The clue words are *synonyms* (words with a similar meaning) of the answers.

**ACROSS**

- 3. to demonstrate
- 6. to test

**DOWN**

- 1. middle
- 2. vibrates
- 4. type
- 5. little



**WORDS IN CONTEXT**

First unscramble the word from the reading and write it on the line. Then circle a letter to show the word’s meaning.

1. The sea SEWSAH \_\_\_\_\_ the shore.
  - a. cleans with soap and water
  - b. flows over or against
  - c. wears or carries away
  
2. A NAGDINTS \_\_\_\_\_ wave doesn’t go anywhere.
  - a. confined; unable to flow freely
  - b. upright or erect position
  - c. position, rank, or reputation

3. An electric shaver is a machine that shakes when it  
APESTORE \_\_\_\_\_.
- a. runs or works      b. conducts surgery      c. manages or controls
4. A RENTTAP \_\_\_\_\_ of rings will appear on the water's surface.
- a. planned route      b. guide for making something      c. visible design

### ANTONYMS

Write a letter to match each word from the reading with its *antonym* (word with the opposite meaning).

- |                    |                  |
|--------------------|------------------|
| 1. _____ full      | a. away          |
| 2. _____ different | b. identical     |
| 3. _____ toward    | c. vanish        |
| 4. _____ appear    | d. empty         |
| 5. _____ exactly   | e. approximately |

### THE PREFIX *dis-*

The prefix *dis-* has three meanings: **(1) away, away from, or out of;** **(2) the opposite of;** **(3) to fail, stop, or refuse to.** Read the words listed below. Then write 1, 2, or 3 to show the meaning of the prefix in that word. If you're not sure, check a dictionary.

- |                    |                       |
|--------------------|-----------------------|
| 1. _____ disbelief | 6. _____ disregard    |
| 2. _____ dislocate | 7. _____ dissatisfied |
| 3. _____ disagree  | 8. _____ disqualified |
| 4. _____ dishonest | 9. _____ disown       |
| 5. _____ displace  | 10. _____ disobey     |

**Carbon: A Common Element**

All things that take up space on Earth—including solids, liquids, and gases—are made of matter. And all matter is made of chemical elements. So far, scientists have identified 103 elements. Some of these are gold, helium, tin, oxygen, and carbon. Elements are *basic*. That means they cannot be broken down into simpler substances.

*Carbon* is an interesting element. In nature, it is found in two different forms that have very different properties, or characteristics. A diamond is one form of carbon. As the hardest natural substance known, diamonds are used to make

cutting tools. And, of course, polished diamonds are beautiful gems often used in jewelry. Another form of the same element is *graphite*—which is soft, black, and slippery. Because of its properties, graphite is used to grease the moving parts of some machines. Did you know that what we call the “lead” in a pencil is really graphite?

Carbon makes up less than one percent of all matter. But this important element can be found in all foods and is part of every living thing. Chemists have given the name *organic chemistry* to the branch of chemistry that studies carbon compounds.

**WORD SEARCH**

1. What ten-letter noun in the reading means “the characteristics or special qualities by which something is known”?

*p* \_\_\_\_\_

2. What three different forms of matter are mentioned in the reading?

*s* \_\_\_\_\_ *l* \_\_\_\_\_ *g* \_\_\_\_\_

3. What nine-letter noun in the reading means “chemical substances formed by combining two or more elements”?

*c* \_\_\_\_\_

4. What seven-letter adjective in the reading means “having to do with chemical compounds containing carbon”?

organic

### WORDS IN CONTEXT

Use words from the reading to complete the sentences.

- Some of the \_\_\_\_\_ of matter are color, odor, shape, and density.
- The two gases mentioned in the reading are \_\_\_\_\_ and \_\_\_\_\_.
- Platinum and silver are two \_\_\_\_\_ that are often used in fine jewelry.
- Chemists study \_\_\_\_\_ and how it can change.

### WORD FORMS

Complete the chart by writing either the *noun* or *adjective* form of each word given. The first one has been done for you.

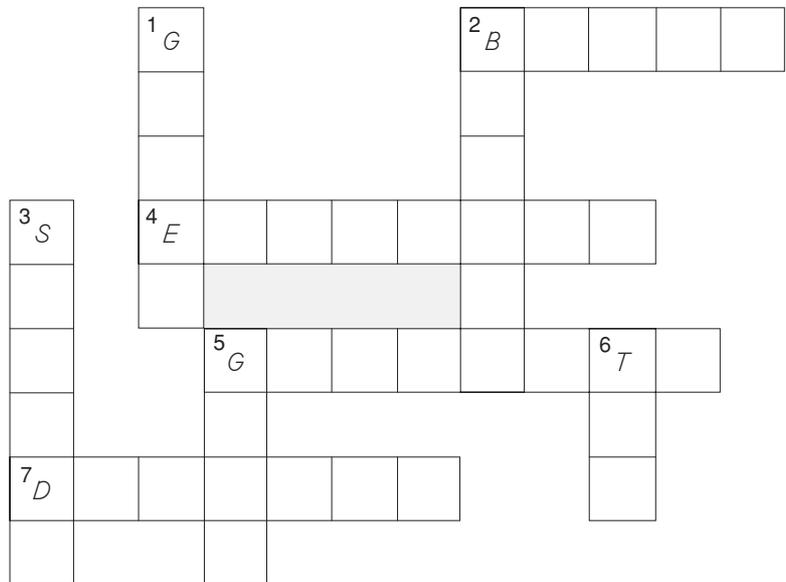
NOUN	ADJECTIVE
1. science	<i>scientific</i>
2.	chemical
3. beauty	
4. difference	
5.	important
6. nature	
7.	elementary

## WORDS AND MEANINGS

Use the clues to help you solve the crossword puzzle.

### ACROSS

2. fundamental;  
not reducible
4. So far, 103 of them  
have been identified.
5. form of carbon that  
is soft and black
7. the hardest  
substance  
in nature



### DOWN

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. form of matter<br/>including oxygen<br/>(plural)</li> <li>2. a division or part of</li> <li>3. form of matter including<br/>iron (plural)</li> </ol> | <ol style="list-style-type: none"> <li>5. precious jewels</li> <li>6. lightweight metal used to<br/>make cans</li> </ol> |
|--|--|

### SYNONYMS

Unscramble the words from the reading. Then write each word under its *synonyms* (words with a similar meaning).

<b>TRIPEROPES</b> _____	<b>ROMF</b> _____
<b>DUMSCOONP</b> _____	<b>SEERAG</b> _____

1. *kind, type,*

\_\_\_\_\_

3. *to oil, lubricate,*

\_\_\_\_\_

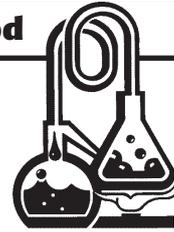
2. *qualities, characteristics,*

\_\_\_\_\_

4. *mixtures, combinations,*

\_\_\_\_\_

**In Pursuit of Knowledge: The Scientific Method**



Science is the study of nature and the universe, based on facts learned from observation and experiment. This process of discovery is called the *scientific method*. There are five orderly steps in the scientific method:

1. **State the problem.** You can't begin to answer a question or solve a problem until you know exactly what it is that you're trying to learn.
2. **Gather all related information.** You must research your subject thoroughly to determine what is already known. Besides reading about the subject, you might talk to others who are working on the same problem.
3. **Suggest a possible answer or solution.** Scientists call this preliminary theory a *hypothesis*. For the time being, they use this idea as the basis for further study and reasoning.
4. **Conduct experiments to try out the theory.** A scientific experiment is a test—or series of tests—designed to determine whether a theory is correct. The results of one experiment often lead to further experiments.
5. **Record the results.** Lastly, a scientist writes a report on the experiment. This document, which is recorded in some detail, may be used as proof that the theory is correct.

**WORD SEARCH**

1. What eight-letter noun in the reading means “everything that exists, including the Earth, sun, planets, and outer space”? u
2. What eight-letter noun from the reading means “a written record that proves something”? d
3. What eleven-letter noun in the reading means “careful examination and study of something”? e

4. What seven-letter noun in the reading means “something being discussed or examined”? \_\_\_\_\_ ↙

### PARTS OF SPEECH

- Study the words in the box. Circle only the words that can be used as either a noun or a verb. Check a dictionary if you’re not sure. (Hint: You should circle 12 words.)

<b>problem</b>	<b>percent</b>	<b>study</b>	<b>subject</b>	<b>conduct</b>
<b>document</b>	<b>solve</b>	<b>proof</b>	<b>time</b>	<b>test</b>
<b>experiment</b>	<b>state</b>	<b>learn</b>	<b>basis</b>	<b>reading</b>
<b>determine</b>	<b>observe</b>	<b>step</b>	<b>lead</b>	<b>results</b>

- Now write sentences of your own. Use *four* of the words you just circled in *two* different ways.

1. NOUN: \_\_\_\_\_

VERB: \_\_\_\_\_

2. NOUN: \_\_\_\_\_

VERB: \_\_\_\_\_

3. NOUN: \_\_\_\_\_

VERB: \_\_\_\_\_

4. NOUN: \_\_\_\_\_

VERB: \_\_\_\_\_

### PLURALS

Write the *plural* (names more than one) form of each word from the reading.

1. experiment \_\_\_\_\_ 3. proof \_\_\_\_\_

2. discovery \_\_\_\_\_ 4. theory \_\_\_\_\_

## SYNONYMS

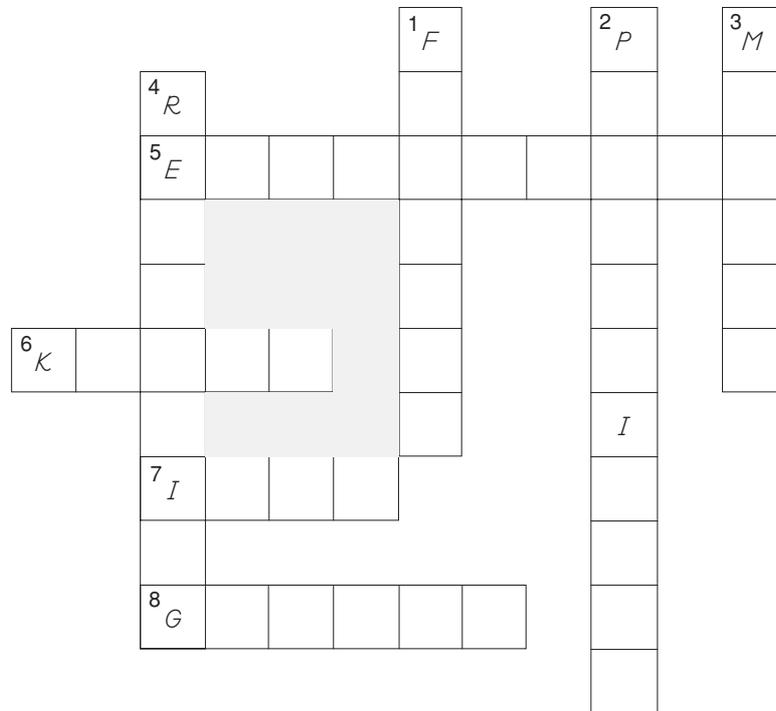
Use words from the reading to complete the crossword puzzle. Clue words are *synonyms* (words with a similar meaning) of the answer words.

### ACROSS

5. test
6. comprehended
7. theory
8. collect

### DOWN

1. additional
2. introductory
3. process
4. thinking



## ANTONYMS

Unscramble the words from the reading. Then write each word next to its *antonym* (word with the opposite meaning).

<b>HOOLOGYHUG</b> _____	<b>TURIPUS</b> _____
<b>GELEDWONK</b> _____	<b>ADLE</b> _____

1. haphazardly / \_\_\_\_\_
2. follow / \_\_\_\_\_
3. avoidance / \_\_\_\_\_
4. ignorance / \_\_\_\_\_

**Science in the News: Rewriting the Record Books**

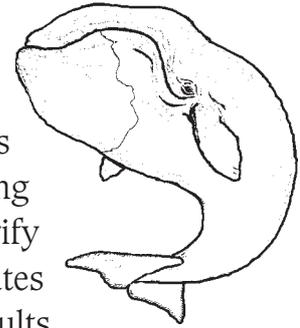
Until now, scientists thought that bowhead whales had a longevity of 80 to 100 years—about the same as humans. But that was before the Inupiat people of northern Alaska discovered evidence to the contrary. After recent hunts, they found six ancient ivory and stone harpoon points embedded in the blubber of four whales. How could that be? Native Alaskan whalers had used only steel harpoons since the 1800s!

Scientific researchers were amazed but skeptical. So, to determine ages, they studied the lenses of the whales' eyes. Changes in amino acids revealed that three whales were between 135 and 172 years old. The fourth whale appeared to have been 211 when it was killed! These findings could establish whales as the longest-living

mammals on Earth. Further tests on the bowheads' bones and skin are being conducted to verify the initial estimates of age. If the results

are confirmed, we will know that some whales that are alive today were swimming around the arctic seas during America's Civil War—or perhaps even when Thomas Jefferson was president!

Bowhead whales—each weighing 80 to 110 tons and measuring 50 to 60 feet in length—bear distinguishing white markings on their front lower jaws. There are thought to be 8,000 to 12,000 bowheads in existence. The bowhead is listed as an endangered species.

**WORD SEARCH**

1. What nine-letter noun in the reading means “span of life”?
2. What seven-letter noun in the reading names a kind of weapon?
3. What seven-letter plural noun in the reading means “warm-blooded animals with backbones”?

*l* \_\_\_\_\_

*h* \_\_\_\_\_

*m* \_\_\_\_\_

## ANTONYMS

First unscramble the words from the reading. Then write each unscrambled word next to its *antonym* (word that means the opposite).

<b>THRENRON</b> _____	<b>NICETAN</b> _____
<b>FRONCDIME</b> _____	<b>MEAZDA</b> _____
<b>RIVFEY</b> _____	<b>EROWL</b> _____

1. *southern* \_\_\_\_\_
2. *upper* \_\_\_\_\_
3. *unsurprised* \_\_\_\_\_
4. *disprove* \_\_\_\_\_
5. *modern* \_\_\_\_\_
6. *denied* \_\_\_\_\_

## WORDS IN CONTEXT

Circle a letter to show the meaning of the **boldface** word or words.

1. The bowhead's jaw has a **distinguishing** white marking.
  - a. elegant; dignified
  - b. different in every whale
  - c. conspicuous; distinct
2. The Inupiats discovered evidence **to the contrary**.
  - a. that discredited earlier evidence
  - b. that raised another issue
  - c. stubbornly inflexible

## HOMOPHONES

*Homophones* are words that sound alike but have different meanings and often different spellings. Find a homophone in the reading for each word listed below.

The first one has been done for you.

1. wails \_\_\_\_\_ *whales* \_\_\_\_\_
2. forth \_\_\_\_\_
3. steal \_\_\_\_\_
4. sees \_\_\_\_\_
5. inn \_\_\_\_\_
6. bare \_\_\_\_\_

## SYNONYMS

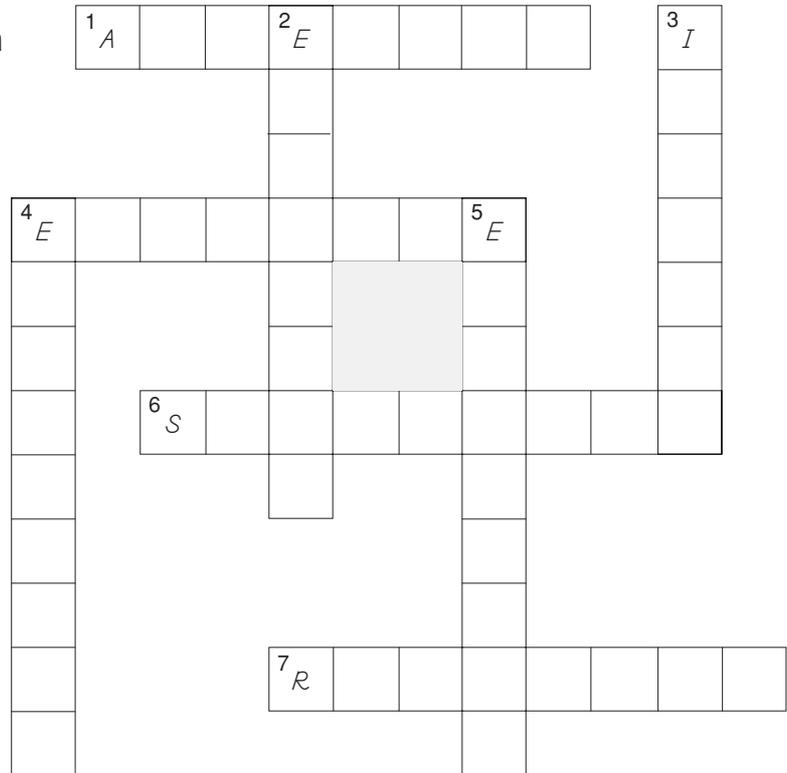
Complete the crossword puzzle.  
Clues are *synonyms* (words with a similar meaning) of words from the story.

### ACROSS

1. seemed
4. proof
6. doubtful
7. showed

### DOWN

2. buried
3. first
4. certify
5. guesses



## UNDERSTANDING THE READING

Write **T** or **F** to show whether each statement is *true* or *false*. Write **NI** if there is *no information* in the reading to suggest an answer.

1. \_\_\_\_\_ Until recently, some kinds of fish were thought to be the longest living animals.
2. \_\_\_\_\_ Scientists can estimate a whale's age by studying citric acids in the lenses of its eyes.
3. \_\_\_\_\_ The Inupiat people have hunted whales for more than 4,000 years.
4. \_\_\_\_\_ Bowheads may be the oldest mammals on the planet.

## REVIEW

Here's your chance to show what you've learned in this unit.

**SENTENCE COMPLETION**

Circle the word that correctly completes each sentence.

1. A scientist who studies matter, energy, and force is called a ( *physician* / *physicist* ).
2. The words *synonym* and *antonym* are ( *adverbs* / *antonyms* ).
3. The letter groups *-ing*, *-ant*, and *-able* are common ( *suffixes* / *prefixes* ).
4. A city's ( *elevation* / *latitude* ) is its height above sea level.
5. Scientists have identified 103 chemical ( *processes* / *elements* ).
6. ( *Properties* / *Characteristics* ) is a multiple-meaning word.
7. The words *seas* and *sees* are called ( *abbreviations* / *homonyms* ).
8. A ( *meteor* / *satellite* ) is an object that revolves around a planet.
9. The abbreviations kHz and MHz appear in tiny print on lots of ( *appliances* / *lightbulbs* ).
10. Lines of ( *latitude* / *longitude* ) show distance north or south of the equator.

## HIDDEN WORDS PUZZLE

Find and circle the words in the puzzle. Words may go up, down, across, backward, or diagonally. Check off each word as you find it.

- |                  |             |
|------------------|-------------|
| ___ CONTINENTS   | ___ OCEANS  |
| ___ SYNONYM      | ___ ENERGY  |
| ___ HOMONYM      | ___ ANTONYM |
| ___ ADJECTIVE    | ___ NOUN    |
| ___ ABBREVIATION | ___ GAS     |
| ___ COMPOUND     | ___ RAIN    |



## WORDS IN CONTEXT

Write original sentences, using the words from the hidden words puzzle. Include examples in each sentence.

1. **continents** \_\_\_\_\_  
\_\_\_\_\_
2. **oceans** \_\_\_\_\_  
\_\_\_\_\_
3. **energy** \_\_\_\_\_  
\_\_\_\_\_
4. **compound** \_\_\_\_\_  
\_\_\_\_\_
5. **antonym** \_\_\_\_\_  
\_\_\_\_\_

6. **abbreviation** \_\_\_\_\_

\_\_\_\_\_

7. **synonym** \_\_\_\_\_

\_\_\_\_\_

8. **homonym** \_\_\_\_\_

\_\_\_\_\_

9. **adjective** \_\_\_\_\_

\_\_\_\_\_

10. **noun** \_\_\_\_\_

\_\_\_\_\_

11. **gas** \_\_\_\_\_

\_\_\_\_\_

12. **rain** \_\_\_\_\_

\_\_\_\_\_

### **ANALOGIES**

*Analogies* are statements of relationship. Figure out the relationship between the first two words. Then complete the analogy with a word you studied in this unit.

1. *Water* is to *ocean* as *land* is to c\_\_\_\_\_.
2. *Cold* is to *condensation* as *warmth* is to e\_\_\_\_\_.
3. *Rise* is to *evaporation* as *fall* is to p\_\_\_\_\_.
4. *Abbreviation* is to *Mr.* as *kHz* is to k\_\_\_\_\_.
5. *Extinct* is to *living* as *cold-blooded* is to w\_\_\_\_\_.
6. *Weight* is to *pound* as *energy wave* is to h\_\_\_\_\_.

## PREVIEW

Here's an introduction to the vocabulary terms, skills, and concepts you will study in this unit. Answers appear upside down on the bottom of this page.

**RECOGNIZING EXAMPLES**

Circle two items in each word group that match the category.

1. **proper adjectives**

Joseph      Ouch!      Hispanic      Shakespearean

2. **plural nouns**

celebrates      frequencies      violates      fungi

3. **compound words**

broadcasting      interaction      ecosystem      snowflake

4. **words with a prefix**

researcher      unforgivable      disjointed      desired

5. **words with a suffix**

moldy      hairless      imprecise      nostrils

**SPELLING**

Underline the two correctly spelled words in each group.

1. inventer      modems      inventor      modams

2. navigate      rhinocerus      rhinoceros      navagate

3. aproppriate      substitute      appropriate      substatute

4. studios      amplafied      studioes      amplified

ANSWERS: RECOGNIZING EXAMPLES: 1. Hispanic, Shakespearean 2. frequencies, fungi 3. broadcasting, snowflake  
4. unforgivable, disjointed 5. moldy, hairless SPELLING: 1. modems, inventor 2. navigate, rhinoceros  
3. substitute, appropriate 4. studios, amplified

**GLOSSARY**

A *glossary* is an alphabetical list of unusual or specialized words from a certain field of knowledge. Following are some important words from the fields of science and technology.

**appendage** a body part that sticks out, such as an arm, wing, or leg

**axis** an imaginary line running through the center of a planet from one pole to the other pole

**carbon dioxide** gas made of carbon and oxygen; it is breathed out of the lungs and taken in by plants

**chromosomes** tiny particles in the nucleus of cells made up of DNA and genes

**cyclone** an area of low pressure with strong, circular winds

**ecosystem** all the living things that make up a particular community in a certain environment

**fertilization** the joining of a sperm cell with an egg cell

**genetics** the study of the way animals and plants pass on characteristics to their offspring

**germination** the process by which a young plant breaks out of its seed

**magma** the molten matter under the Earth's crust

**parasite** an organism that lives in or on another organism

**Precambrian era** the geological era that began 4.5 billion years ago and lasted nearly four billion years

**tissue** a group of cells that all do the same job

**WORDS IN CONTEXT**

Use context clues to help you complete the sentences with the correct words from the glossary. If you're not sure, check a dictionary.

1. The \_\_\_\_\_ covers nearly 85 percent of all geological time.
2. Much like a tornado, a \_\_\_\_\_ can be very damaging.

3. A tree branch and a dog's tail are both \_\_\_\_\_.
4. When \_\_\_\_\_ reaches a volcano's surface, it is called *lava*.
5. If you've ever seen a flea on a dog, you've seen a \_\_\_\_\_.
6. Every 24 hours, the Earth makes a complete rotation on its \_\_\_\_\_.
7. The \_\_\_\_\_ of a pond includes weeds, insects, frogs, worms, and fish.
8. If you exercise too hard, you may damage your muscle \_\_\_\_\_.
9. \_\_\_\_\_ is the branch of science that explains how traits are passed on from one generation to the next.
10. In order to make food, plants need \_\_\_\_\_.
11. Humans have 23 pairs of \_\_\_\_\_; fruit flies have only four pairs.
12. At \_\_\_\_\_, a baby inherits genes from both its father and its mother.
13. Sprouts in a vegetable garden show that \_\_\_\_\_ has taken place.

### **SCRAMBLED WORDS**

Unscramble the words from the reading to complete the sentences.

1. YOGLOGE \_\_\_\_\_ is the study of the Earth's crust, including rocks and fossils.
2. RUCLARIC \_\_\_\_\_ winds blow around in a spiral.

## WORDS AND MEANINGS

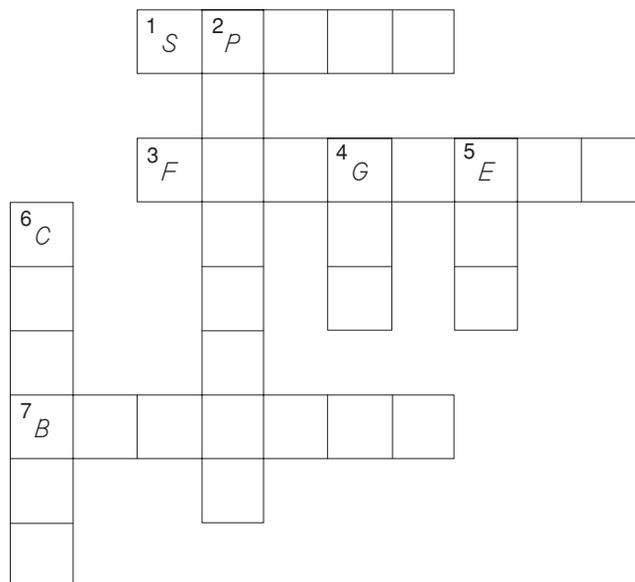
Use clues to help you complete the crossword puzzle. Answers are words from the reading.

### ACROSS

1. male reproductive cell
3. broken off part or piece of something
7. a thousand million

### DOWN

2. a tiny bit; a speck
4. form of matter that is neither liquid nor solid
5. female reproductive cell
6. kind of dioxide formed with oxygen



## SUFFIXES

*Suffixes* can be used to turn many words into *adjectives* (describing words). Rewrite the words below. Make them adjectives by adding one of these suffixes: *-y*, *-ic*, *-al*, or *-ful*.

1. dream \_\_\_\_\_
2. music \_\_\_\_\_
3. peace \_\_\_\_\_
4. ice \_\_\_\_\_
5. history \_\_\_\_\_
6. guilt \_\_\_\_\_
7. atmosphere \_\_\_\_\_
8. environment \_\_\_\_\_

**Today's Weather Forecast: A National Overview**

People in the northern Midwest can expect frigid temperatures today. In some extreme northern locations, 0 degrees may be the daytime high. The South will be fairly chilly as well. Highs there are projected to be in the upper 40s and lower 50s. As a group of high-pressure systems move across the country, temperatures are expected to fall even lower.

Snow will continue to fall across the Midwest. The South will see a few more flurries and showers before this evening. But most of the precipitation there will dissipate by tomorrow morning. Both the Pacific Northwest and the Northeast can expect more rain today as low-pressure systems linger. But the relentless weather pattern in both regions is expected to break up by the weekend.

**TODAY'S OUTLOOK IN SELECTED CITIES****ATLANTA**

Rain showers changing to ice and snow; increasing clouds; high 45°, low 28°

**SEATTLE**

Intermittent showers until noon, then mostly sunny; high 45°, low 39°

**KANSAS CITY**

Overcast in the morning, sunny in the afternoon; high 30°, low 10°

**DETROIT**

Consistent light flurries throughout the day; high 25°, low 5°

**WORD SEARCH**

1. What twelve-letter adjective in the reading means "stopping and starting again from time to time"?

*i* \_\_\_\_\_

2. What eight-letter plural noun in the reading means “sudden light falls of snow or rain”? *f* \_\_\_\_\_

3. What eight-letter noun in the reading is a synonym of “prediction”? *f* \_\_\_\_\_

4. What four regions of the United States are mentioned in the reading?  
\_\_\_\_\_  
\_\_\_\_\_

**PARTS OF SPEECH**

Many words can be used as either a *noun* (names a person, place, or thing) or a *verb* (names an action). On the lines below, write two sentences using the **boldface** word from the reading. In one sentence, use the word as a noun. In the other, use the word as a verb. The first one has been done for you.

1. **snow** NOUN: *Freshly fallen snow covered the sidewalk.* \_\_\_\_\_

VERB: *The weather forecaster said it might snow today.* \_\_\_\_\_

2. **fall** NOUN: \_\_\_\_\_

VERB: \_\_\_\_\_

3. **rain** NOUN: \_\_\_\_\_

VERB: \_\_\_\_\_

4. **shower** NOUN: \_\_\_\_\_

VERB: \_\_\_\_\_

## SYNONYMS

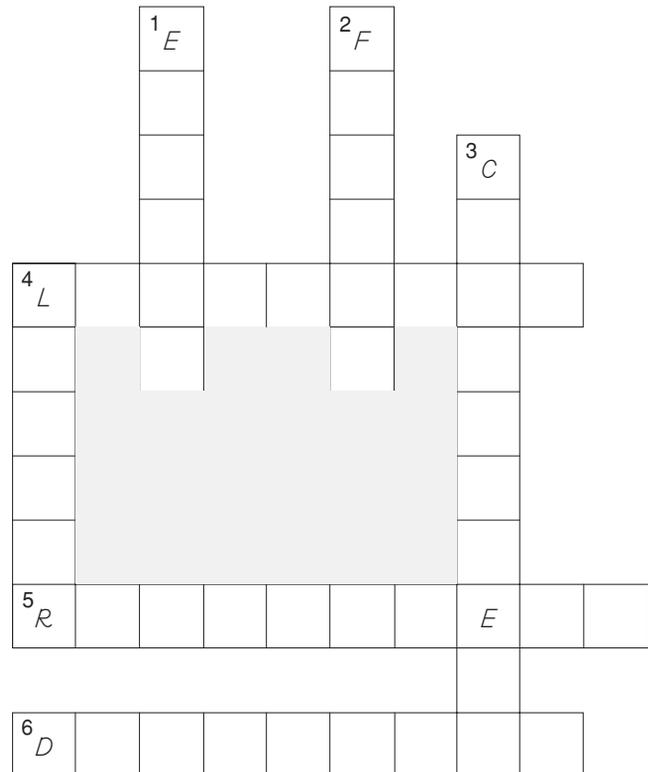
Complete the puzzle with words from the reading. Clues are *synonyms* (words with a similar meaning) of the answer words.

### ACROSS

- places; perhaps cities
- persistent; unyielding
- to break up; disappear

### DOWN

- to foresee; anticipate
- freezing; bitterly cold
- steady; unchanging
- to remain; continue

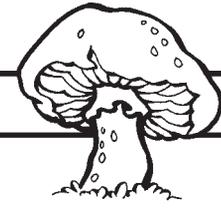


## ANTONYMS

Think about the meaning of the **boldface** word in each phrase. Then circle a letter to show its *antonym* (word with the opposite meaning). Check a dictionary if you need help.

- some **extreme** northern locations
  - slightly
  - remote
  - unusual
- will be fairly **chilly**
  - windy
  - uncomfortable
  - sweltering
- snow will **continue**
  - cease
  - develop
  - proceed
- increasing** clouds
  - darkening
  - diminishing
  - fluffier

Try It Yourself: Making Mold



Everyone knows that the Earth is teeming with all kinds of plants and animals. Biologists have identified more than a million animals and nearly 400,000 different types of plants. But plants and animals aren't the only organisms living on Earth. Another classification of living things is called the *fungus kingdom*.

Molds, yeasts, and mushrooms are fungi. Mold grows on damp, decaying things like discarded food or dead trees. To see for yourself, try this experiment:

(1) Fill three small cups half full of coffee, and put three slices of bread in clear plastic sandwich bags.

(2) Then place one bag of bread and one cup of coffee in each of these places: on a sunny windowsill; in a dark cabinet or closet; in the refrigerator.

(3) Every day for two weeks, use a magnifying glass to observe the bread and coffee. Take notes on any changes you see. Draw a sketch if something appears.

(4) If you don't see any change, keep checking for another two weeks.

What will you eventually discover? Fuzzy white stuff will appear on the coffee. White, green, or black stuff will appear on the bread. This is mold—a type of living, growing thing that is neither a plant nor an animal.

**WORD SEARCH**

1. What ten-letter adverb in the reading means “finally” or “in the end”? e
2. What five-letter proper noun in the reading names a planet? E
3. What seven-letter noun in the reading means “in biology, one of the major groups into which all living things are divided”? k

4. What nine-letter plural noun in the reading names a kind of edible fungi that have a stalk and a cap?

m\_\_\_\_\_

### ANTONYMS

First unscramble the words from the reading. Then write each unscrambled word next to its *antonym* (word that means the opposite).

<b>NYNUS</b> _____	<b>GEMTINE</b> _____
<b>MAPD</b> _____	<b>REPAPA</b> _____
<b>UZZFY</b> _____	<b>LUFL</b> _____
<b>HEWIT</b> _____	<b>GINFYAM</b> _____

- |                   |                     |
|-------------------|---------------------|
| 1. dry / _____    | 5. hairless / _____ |
| 2. vanish / _____ | 6. barren / _____   |
| 3. reduce / _____ | 7. empty / _____    |
| 4. black / _____  | 8. gloomy / _____   |

### MULTIPLE-MEANING WORDS

Notice how the words *type*, *draw*, and *mold* are used in the reading. Then write original sentences in which the words have completely different meanings. Use a dictionary if you need help.

1. **(type)** \_\_\_\_\_
2. **(draw)** \_\_\_\_\_
3. **(mold)** \_\_\_\_\_

## SYNONYMS

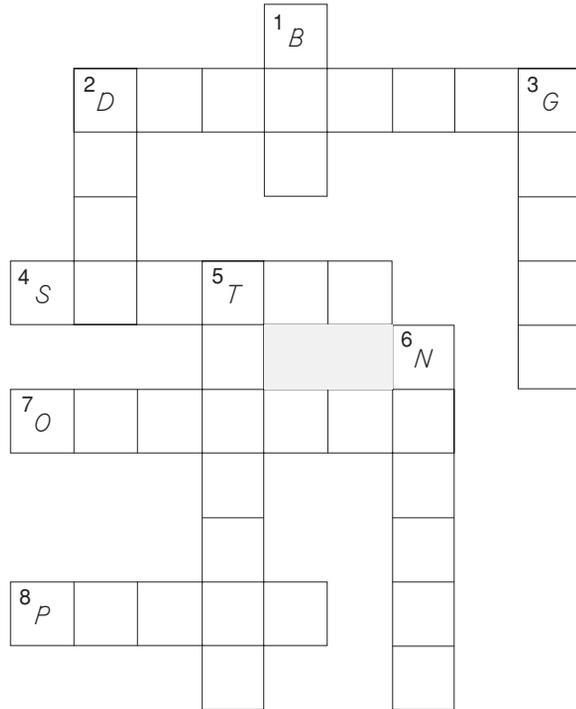
Complete the puzzle with words from the reading. Clues are *synonyms* (words with a similar meaning) of the answer words.

### ACROSS

2. rotting
4. a drawing
7. to watch
8. a vegetable

### DOWN

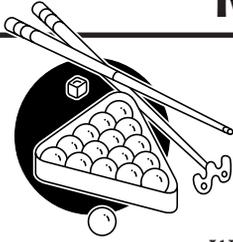
1. a sack
2. dim
3. thrives
5. swarming
6. almost



## ANALOGIES

Remember that an *analogy* is a statement of relationship. Figure out the relationship between the first two words. Then show the same relationship by completing the analogy with the correct word from the reading.

1. *Elephant* is to *animal* as *yeast* is to f\_\_\_\_\_.
2. *Alike* is to *unlike* as *same* is to d\_\_\_\_\_.
3. *Natural* is to *cotton* as *manmade* is to p\_\_\_\_\_.
4. *Ledge* is to *window sill* as *cupboard* is to c\_\_\_\_\_.
5. *Organize* is to *organization* as *classify* is to c\_\_\_\_\_.
6. *Plants* is to *plant* as *fungi* is to f\_\_\_\_\_.
7. *General* is to *specific* as *scientist* is to h\_\_\_\_\_.
8. *Either* is to *or* as *neither* is to n\_\_\_\_\_.

**Two Kinds of Research: Basic and Applied**

*Research*—the quest for information—was born when people first started asking questions and searching for answers. The inventors of the wheel were great researchers. Modern research, based on study and experimentation, got its true start in the 1500s with the work of Galileo.

In the natural sciences—such as biology, chemistry, and medicine—methods of research are very exact. Scientists have developed very accurate instruments such as electronic microscopes.

*Basic research* is aimed at discovering more about the laws of nature. As they push into the unknown, scholars doing basic research may have little idea of what lies ahead. They may be trying to find out why birds migrate or whether

plants grow on Mars. Wishing only to add to the world's knowledge, they don't concern themselves with the practical applications of their findings.

*Applied research* is aimed at a practical goal. Researchers focus on discovering or inventing new and useful products or better ways of doing something. The first synthetic plastic, for example, was developed to find a substitute for ivory in the manufacture of billiard balls. This early plastic—called Celluloid—paved the way for development of today's enormous plastics industry.

Basic and applied researchers work hand in hand. Applied research is often built on ideas from basic research. In turn, basic researchers depend on applied research for the invention of instruments that make further investigations possible.

**WORD SEARCH**

1. What five-letter noun in the reading means “a seeking, hunt, or pursuit”?

*g* \_\_\_\_\_

2. What seven-letter verb in the reading means “to move from one region to another with the change of seasons”?   m
3. What ten-letter noun in the reading means “something used in the place of another”?   s

**WORD FORMS**

Complete the chart below with different forms of the verbs *apply* and *investigate*.

<b>APPLY</b>	<b>INVESTIGATE</b>
<b>PAST-TENSE VERB:</b> _____	<b>PAST-TENSE VERB:</b> _____
<b>NOUN FORM:</b> _____	<b>NOUN FORM:</b> _____
<b>ONE WHO DOES:</b> _____	<b>ONE WHO DOES:</b> _____

**UNDERSTANDING THE READING**

Write **T** or **F** to show whether each statement is *true* or *false*.

1. \_\_\_\_\_ Modern research got its start with the discovery of the wheel.
2. \_\_\_\_\_ Scientists involved in applied research are trying to solve specific problems.
3. \_\_\_\_\_ The words *knowledge* and *information* are synonyms.
4. \_\_\_\_\_ Basic researchers try to discover more about the laws of nature.



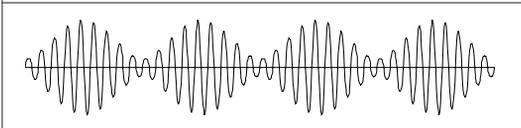
**How Does a Radio Work?**

The space around you may *look* empty—but it isn't. At all times it is filled with radio frequency waves from nearby radio stations. They are causing minute vibrations in all the metal objects in the room. But you can hear these vibrations only if you turn on your radio.

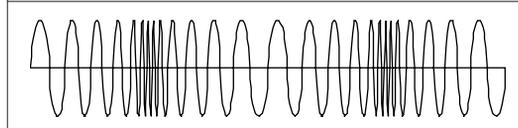
Your radio picks up the radio waves of the station you want to hear and turns them into sound waves. How does it do this?

1. Your radio's *antenna* (or *aerial wire*) picks up all the radio frequency currents that are in the air around it.
2. The *tuner* selects the frequency of the desired station and blocks out the frequencies of other stations.
3. Now your radio separates the program current from the carrier current. Electronic devices block off the carrier current so that only the program current is left.
4. The program current, which is very weak, must be amplified until it can operate the loudspeaker. This is done by *transistors*.
5. The loudspeaker changes the program current into sound waves. These sound waves are a copy of those in the broadcasting studio.

AM (amplitude modulation) Radio Wave



FM (frequency modulation) Radio Wave



**WORD SEARCH**

1. What eleven-letter plural noun in the reading means “tiny electronic devices made from semiconductors that control the flow of electrical current”?
2. What eight-letter plural noun in the reading means “places with electronic equipment for sending out radio or TV programs”?

t\_\_\_\_\_

s\_\_\_\_\_

3. What five-letter adjective in the reading means “made of a chemical—such as iron, gold, or aluminum—that conducts electricity”?

m

### ANTONYMS

Circle a letter to show the *antonym* (word that means the opposite) of the **boldface** word in each sentence.

1. **Nearby** radio stations fill the air around you with radio frequency waves.  
a. overlapping      b. faraway      c. powerful
2. In order to operate the loudspeaker, the program current must be **amplified**.  
a. ignited      b. refined      c. silenced
3. The tuner selects the frequency of the **desired** station.  
a. best      b. unwanted      c. chosen
4. The space around you is never **empty**.  
a. quiet      b. occupied      c. hollow

### ANALOGIES

*Analogies* are statements of relationship. Figure out the relationship between the first two words. Then show the same relationship by completing the analogy with a word from the reading.

- |  |   |
|--|---|
| 1. <i>Tongue</i> is to <i>taste</i><br>as <i>ear</i> is to<br><u>h</u> _____.              | 3. <i>Copy</i> is to <i>copies</i><br>as <i>frequency</i> is to<br><u>f</u> _____.  |
| 2. <i>Celebrate</i> is to <i>celebration</i><br>as <i>vibrate</i> is to<br><u>v</u> _____. | 4. <i>Gather</i> is to <i>scatter</i><br>as <i>combine</i> is to<br><u>s</u> _____. |

## SYNONYMS

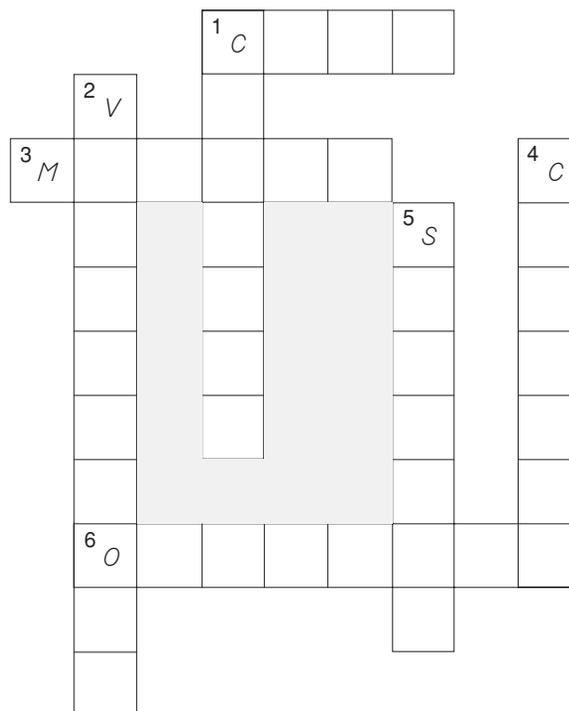
Use the clues to help you solve the crossword puzzle. Clues are *synonyms* (words with a similar meanings) of words from the reading.

### ACROSS

1. to duplicate
3. microscopic
6. runs

### DOWN

1. generating
2. pulses
4. transforms
5. chooses



## PARTS OF SPEECH

In a different context, the same word can be a different part of speech. Notice how the **boldface** words from the reading are used in each sentence. Then identify the part of speech by writing *noun* (names a person, place, or thing), *verb* (shows action), or *adjective* (describes a noun or pronoun).

1. \_\_\_\_\_ Is that information **current** or out-of-date?
2. \_\_\_\_\_ Will you take a **minute** to answer my question?
3. \_\_\_\_\_ Ed **programs** his computer to do specialized tasks.
4. \_\_\_\_\_ The TV **programs** I like are on Tuesday night.
5. \_\_\_\_\_ **Minute** particles of dust covered the furniture.
6. \_\_\_\_\_ The North Atlantic **current** moves across the ocean from Newfoundland to England.

**The Amazing Rhino**

Rhinoceroses are quiet, slow-moving, retiring animals—until they are cornered. If that happens, watch out! They can charge an enemy at 30 miles an hour.

These huge, thick-skinned animals have heavy bodies and one or two large horns above their nostrils. Their legs are short, and each foot has three toes. They are hoofed animals, related to horses.

The smallest rhinoceros, the Sumatran, usually weighs less than a ton and is about four feet high at the shoulder. The largest is the African white rhinoceros. It may weigh three and one-half tons or more and stand six and one-half feet high.

Some kinds of rhinoceroses have very long horns. The longest one ever measured was 62½ inches. The



horns are made of closely packed masses of tough hairs. Their bodies, however, are usually hairless.

There are five different kinds of rhinoceroses living today. Two of these live in Africa, and the other three kinds live in Asia. In captivity, rhinoceroses typically live to be about 50 years old.

Rhinoceroses do not hunt other animals. As herbivores, they eat only grass and other plants. They usually travel alone, but are sometimes found in small family groups. The female bears only one offspring at a time.

**WORD SEARCH**

1. What eight-letter noun in the reading means “part of the body to which an arm or foreleg is connected”?

1 \_\_\_\_\_

2. What seven-letter adjective in the reading means “of the same family or kind”?

2 \_\_\_\_\_

3. What eight-letter plural noun in the reading means “openings in the nose through which people and some animals breathe and smell”?

nostrils

### ANTONYMS

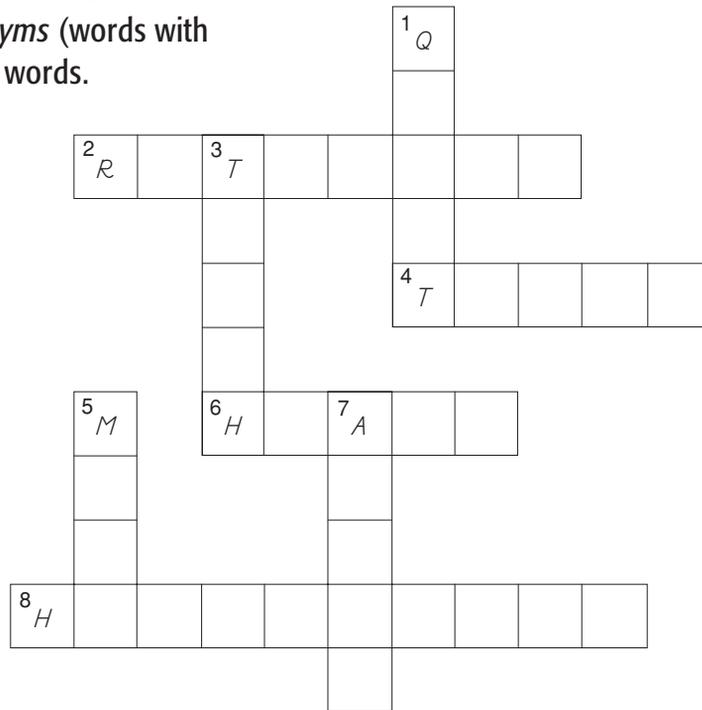
Complete the crossword puzzle with words from the reading. Clue words are *antonyms* (words with opposite meanings) of the answer words. Use a dictionary if you need help.

#### ACROSS

2. aggressive
4. thin
6. weightless
8. carnivores

#### DOWN

1. noisy
3. wispy
5. female
7. below



### SYNONYMS

Circle a letter to show the *synonym* (word with a similar meaning) of each **boldface** word from the reading.

1. The foot of a rhinoceros has three **toes**.
  - a. knuckles
  - b. hooves
  - c. digits
  
2. Rhinoceroses can **charge** at 30 miles an hour.
  - a. postpone payment
  - b. launch a running attack
  - c. take bounding leaps
  
3. If a rhinoceros is cornered, its **enemy** better watch out!
  - a. foe
  - b. competitor
  - c. prey

4. Rhinoceroses are **sometimes** found in small groups.
  - a. occasionally
  - b. rarely
  - c. typically
5. The horns are made of **closely packed** masses of tough hairs.
  - a. woven
  - b. dense
  - c. enclosed
6. Their bodies, **however**, are usually hairless.
  - a. by the way
  - b. likewise
  - c. nevertheless

### PROPER ADJECTIVES

You read that the smallest rhinoceros is *Sumatran*. That word is a *proper adjective* describing someone or something from Sumatra—a large island in Indonesia. On the lines below, write the proper adjective that can be made from each place name. Remember that proper adjectives are always capitalized!

- |                           |                          |
|---------------------------|--------------------------|
| 1. <b>Brazil</b> _____    | 5. <b>England</b> _____  |
| 2. <b>Europe</b> _____    | 6. <b>Russia</b> _____   |
| 3. <b>France</b> _____    | 7. <b>China</b> _____    |
| 4. <b>Australia</b> _____ | 8. <b>Scotland</b> _____ |

### WORD FORMS

Find the word *captivity* in the reading. You can probably figure out that *captivity* means “kept in a zoo” or “the condition of being held by force” as it is used in the reading. To complete the sentences below, unscramble some different forms of the word *captivity*.

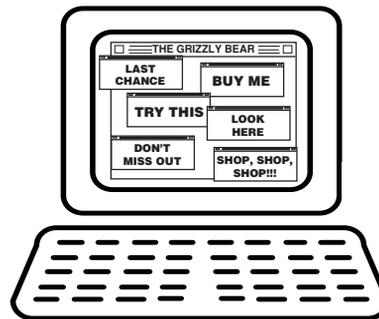
1. The zoologists tried to RAPTCUE \_\_\_\_\_ a rhinoceros.
2. The TAPEVIC \_\_\_\_\_ rhino was loaded onto a truck.
3. The rhino’s ROTPACS \_\_\_\_\_ were careful not to injure the animal.

**Science in the News: Avoiding Potholes on the Information Highway**

Jean Armour Polly, a former librarian, has been working with computers and modems for 20 years. In a 1992 magazine article, she coined the term “surfing the Internet.” Today, she is a best-selling author. Her book, *The Internet Kids and Family Yellow Pages*, has helped hundreds of thousands of young people learn to navigate the Net safely, comfortably, and productively. The book has recently come out in its fifth edition.

Mrs. Polly says that the best Web sites for young people should meet certain criteria: They should have authority, currency, and an acceptable “signal-to-noise ratio.” No less importantly, the sites should be age-appropriate. Specifically, the author gives this advice:

- **Authority** Ask yourself who is behind the site. Is it a reputable source such as *National Geographic* or someone you never heard of? Make sure the information comes from a source you can trust.
- **Currency** Some pages have been on the Web for years without being updated. Look for the “last update” notation on the site’s front page.
- **Age-appropriate** To learn about how the heart works, middle school students don’t need a lengthy article from a professional medical journal. Instead, find a well-illustrated article written at a lower level.
- **Acceptable mix of signal to noise** Avoid too many distractions. Things such as ads, pop-up windows, and music that can’t be turned off soon become annoying. They detract from the value of the site.



If you’d like, you can contact Mrs. Polly at [www.netmom.com](http://www.netmom.com).

**WORD SEARCH**

1. What seven-letter plural noun in the reading means “electronic devices that connect computers via a telephone line”?

*m* \_\_\_\_\_

2. What eight-letter proper noun in the reading means “a network linking computers all over the world by satellite and telephone, connecting users with service networks such as e-mail and the World Wide Web”? l\_\_\_\_\_
  
3. What twelve-letter plural noun in the reading means “things that interfere with concentration”? d\_\_\_\_\_
  
4. What four-letter noun in the reading means “the place where certain information can be found on the Web”? s\_\_\_\_\_

### ANALOGIES

*Analogies* are statements of relationship. First find the relationship between the first two words. Then show the same relationship by completing the analogy with a word from the reading.

- |  |   |
|--|---|
| 1. <i>Portrait</i> is to <i>artist</i><br>as <i>book</i> is to<br><u>a</u> _____.        | 5. <i>Scissors</i> is to <i>divide</i><br>as <i>modems</i> are to<br><u>c</u> _____.    |
| 2. <i>Potholes</i> are to <i>highway</i><br>as <i>problems</i> are to<br><u>l</u> _____. | 6. <i>Music</i> is to <i>musician</i><br>as <i>library</i> is to<br><u>l</u> _____.     |
| 3. <i>Present</i> is to <i>past</i><br>as <i>current</i> is to<br><u>f</u> _____.        | 7. <i>Esteemed</i> is to <i>reputable</i><br>as <i>worth</i> is to<br><u>v</u> _____.   |
| 4. <i>Bear</i> is to <i>bare</i><br>as <i>sight</i> is to<br><u>s</u> _____.             | 8. <i>Adjective</i> is to <i>adverb</i><br>as <i>important</i> is to<br><u>i</u> _____. |

## SYNONYMS

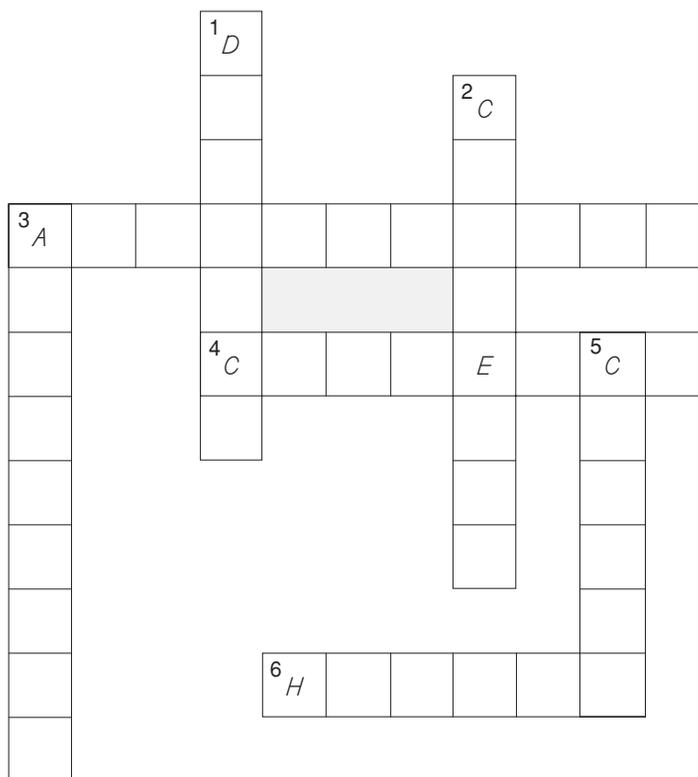
Complete the puzzle with words from the reading. Clue words are *synonyms* (words with a similar meaning) of the answer words.

### ACROSS

3. suitable
4. recency; newness
6. assisted

### DOWN

1. to devalue
2. standards
3. credibility
5. invented



## ANTONYMS

First, complete the sentences by unscrambling the words from the reading. Then, on the line after each sentence, write the *antonym* (word that means the opposite) of the unscrambled word. Antonyms are words in the box.

<b>wastefully</b>	<b>questionable</b>	<b>intolerable</b>	<b>concise</b>	<b>soothing</b>
-------------------	---------------------	--------------------	----------------	-----------------

1. The terms of the agreement were PACECLABET  
\_\_\_\_\_ to us, but not to them. \_\_\_\_\_
2. Her simple question did not require a THYGLEN  
\_\_\_\_\_ explanation. \_\_\_\_\_
3. Al accomplishes more than Ben does, because he uses his time  
LYVIDROPCUTE \_\_\_\_\_. \_\_\_\_\_
4. The constant dripping of a leaky faucet can be quite  
NONYGAIN \_\_\_\_\_. \_\_\_\_\_

## REVIEW

Here's your chance to show what you know about the material you studied in Unit 3.

**TRUE OR FALSE**

Write **T** or **F** to show whether each statement is *true* or *false*.

1. \_\_\_\_\_ *Overview* and *outlook* are compound words.
2. \_\_\_\_\_ Basic researchers are concerned with the practical applications of their findings.
3. \_\_\_\_\_ The adjective form of the noun *meteor* is *meteoric*.
4. \_\_\_\_\_ *Current* and *retiring* are multiple-meaning words.
5. \_\_\_\_\_ The words *aerial* and *antenna* are synonyms.
6. \_\_\_\_\_ The adjective form of *wave* is spelled *wavey*.
7. \_\_\_\_\_ *Overcast* and *flurries* are words that might be used to describe the weather.
8. \_\_\_\_\_ Mushrooms are members of the plant kingdom.

**ANTONYMS**

Draw a line to match each **boldface** word from the unit with its *antonym* (word that means the opposite).

- |                       |               |
|-----------------------|---------------|
| 1. <b>annoying</b>    | a. airy       |
| 2. <b>current</b>     | b. outdated   |
| 3. <b>dense</b>       | c. unsuitable |
| 4. <b>appropriate</b> | d. soothing   |

## HIDDEN WORDS PUZZLE

Find and circle the words in the hidden words puzzle. Words may go up, down, across, backward, or diagonally. Check off each word as you find it.

- \_\_\_\_\_ CLASSIFY
- \_\_\_\_\_ THEORY
- \_\_\_\_\_ EXACT
- \_\_\_\_\_ QUEST
- \_\_\_\_\_ WAVES
- \_\_\_\_\_ MASSES
- \_\_\_\_\_ GENETICS
- \_\_\_\_\_ PARTICLE
- \_\_\_\_\_ CONSISTENT
- \_\_\_\_\_ FRIGID
- \_\_\_\_\_ MOLD
- \_\_\_\_\_ FUZZY

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

## WORDS IN CONTEXT

Now use each word from the puzzle in a sentence of your own. Try to include a scientific fact, explanation, or example in each sentence.

1. **fuzzy** \_\_\_\_\_  
\_\_\_\_\_
2. **masses** \_\_\_\_\_  
\_\_\_\_\_
3. **mold** \_\_\_\_\_  
\_\_\_\_\_
4. **waves** \_\_\_\_\_  
\_\_\_\_\_
5. **consistent** \_\_\_\_\_  
\_\_\_\_\_
6. **quest** \_\_\_\_\_  
\_\_\_\_\_

7. **frigid** \_\_\_\_\_

\_\_\_\_\_

8. **exact** \_\_\_\_\_

\_\_\_\_\_

9. **particle** \_\_\_\_\_

\_\_\_\_\_

10. **theory** \_\_\_\_\_

\_\_\_\_\_

11. **genetics** \_\_\_\_\_

\_\_\_\_\_

12. **classify** \_\_\_\_\_

\_\_\_\_\_

### **ANALOGIES**

*Analogies* are statements of relationship. Find the relationship between the first two words. Then show the same relationship by completing the analogy with a word from Unit 3.

1. *Decay* is to *rot*  
as *predict* is to  
*f* \_\_\_\_\_.

4. *Singular* is to *plural*  
as *chromosome* is to  
*c* \_\_\_\_\_.

2. *Sea* is to *oceanography*  
as *earth* is to  
*g* \_\_\_\_\_.

5. *Male* is to *female*  
as *sperm* is to  
*e* \_\_\_\_\_.

3. *Radio waves* are to *antenna*  
as *sound waves* are to  
*l* \_\_\_\_\_.

6. *Occasional* is to *steady*  
as *intermittent* is to  
*c* \_\_\_\_\_.

## PREVIEW

Here's an introduction to the vocabulary terms, concepts, and skills you will study in this unit. Answers are upside down on the bottom of this page.

**SENTENCE COMPLETION**

Circle the words that correctly complete the sentences.

1. The words *categorize* and *classify* are ( homonyms / synonyms ).
2. Animals without backbones are called ( *vertebrates* / *invertebrates* ).
3. The word ( *exceeds* / *extends* ) means “goes beyond what is usual or allowed.”
4. The words *sights* and *sites* are ( antonyms / homonyms ).
5. WWW is the ( *abbreviation* / *nickname* ) of the World Wide Web.
6. An outcome that can't be prevented can be described as ( *catastrophic* / *inevitable* ).

**TRUE OR FALSE**

Write **T** or **F** to show whether each statement is *true* or *false*.

1. \_\_\_\_ *Astrology* is the scientific study of the universe beyond the Earth's atmosphere.
2. \_\_\_\_ *Lead* has more density than *bread*.
3. \_\_\_\_ Healthy humans must have some *minerals* in their diet.
4. \_\_\_\_ A *colony* of plants or animals may be scattered all over the Earth.

ANSWERS: SENTENCE COMPLETION: 1. synonyms 2. invertebrates 3. exceeds 4. homonyms 5. abbreviation 6. inevitable  
TRUE OR FALSE: 1. F 2. T 3. T 4. F

**GLOSSARY**

A *glossary* is an alphabetical list of unusual or specialized words from a certain field of knowledge. Following are some important words from the fields of science and technology.

**astronomy** the scientific study of the universe beyond the Earth's atmosphere

**consumers** organisms that eat other organisms

**carbohydrates** sugars and starches in food that give people energy

**density** the amount of matter per each unit of area or volume

**force** any push or pull on an object

**habitat** the place where an organism lives

**host** an animal on or in which a parasite lives

**minerals** natural substances found in non-living things

**output** processed data that comes out of a computer

**radiation** energy that can move through a vacuum

**spectrum** the rainbow-like band of colors that can be seen when white light is refracted

**technology** the application of scientific and industrial skills to practical use

**turbine** a machine driven by the force of a moving fluid

**vacuum** the absence of matter

**weathering** the process that breaks down rocks and minerals

**WORDS IN CONTEXT**

Complete each sentence with the correct word from the glossary. If you're not sure about some words, check a dictionary.

1. That woodland stream is the \_\_\_\_\_ of beavers.
2. Over time, erosion and \_\_\_\_\_ can wear down an entire mountain range.

3. Light, heat, radio waves, and X-rays are different kinds of \_\_\_\_\_.
4. Scientists who study \_\_\_\_\_ learn about the size and motion of the stars.
5. A hog or a cow may be the \_\_\_\_\_ of a parasite such as a tapeworm.
6. A healthy diet for humans includes such \_\_\_\_\_ as iron and salt.
7. Animals are called \_\_\_\_\_ because they cannot make their own food.
8. If nearly all the air is removed from a bottle, a \_\_\_\_\_ is formed inside.
9. Gravity is the \_\_\_\_\_ that holds us on the ground.
10. There are seven colors in the \_\_\_\_\_ of visible light.
11. Because a rock has greater \_\_\_\_\_ than water, it will sink in a pond.
12. Your computer monitor is an \_\_\_\_\_ device.
13. Engineers and mechanics use \_\_\_\_\_ to solve practical problems.
14. Good sources of \_\_\_\_\_ include vegetables, grains, and potatoes.
15. A powerful \_\_\_\_\_ engine uses the water in a dam to create electricity.

## ANALOGIES

*Analogies* are statements of relationship. To complete an analogy, figure out the relationship between the first pair of words. Then write the word from the reading that shows the same relationship.

- |   |   |
|---|---|
| 1. <i>Keyboard</i> is to <i>printer</i><br>as <i>input</i> is to<br><u>o</u> _____. | 4. <i>Plants</i> are to <i>producers</i><br>as <i>animals</i> are to<br><u>c</u> _____. |
| 2. <i>Total</i> is to <i>partial</i><br>as <i>erosion</i> is to<br><u>w</u> _____.  | 5. <i>Flower</i> is to <i>botany</i><br>as <i>planet</i> is to<br><u>a</u> _____.       |
| 3. <i>Wind</i> is to <i>windmill</i><br>as <i>fluid</i> is to<br><u>t</u> _____.    | 6. <i>Meat</i> is to <i>protein</i><br>as <i>doughnut</i> is to<br><u>c</u> _____.      |

## CATEGORIES

Write the boxed items under the correct headings.

<b>desert</b>	<b>bread</b>	<b>quartz</b>	<b>monitor</b>
<b>fruits</b>	<b>ocean</b>	<b>printer</b>	<b>rain forest</b>
<b>silver</b>	<b>noodles</b>	<b>zinc</b>	<b>disk drive</b>

### 1. HABITATS

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### 3. COMPUTER OUTPUT DEVICES

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### 2. CARBOHYDRATES

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### 4. MINERALS

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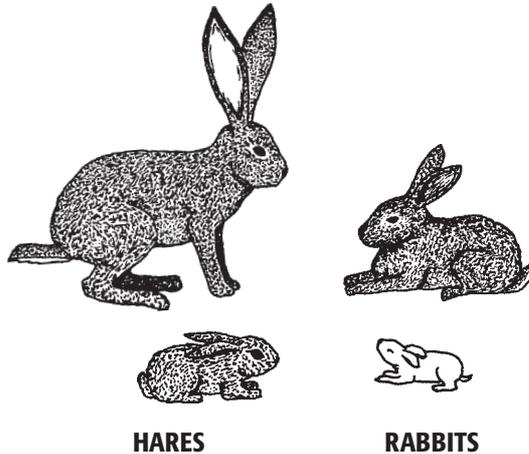
**Rabbits and Hares: What's the Difference?**

Rabbits and hares were once classified as rodents. After all, just like rodents, they have two pairs of big gnawing teeth, or incisors, in the front of their jaws. But rabbits and hares also have a second, smaller pair of upper incisors. Because of this and other differences, rabbits and hares are now placed in a separate order from rodents.

In general, rabbits and hares are a lot alike. They both have big, long ears and stubby tails. They have short front legs and long, powerful hind legs that make them expert runners and leapers. And they are both vegetarians that eat grass, leaves, tender buds, and twigs.

But rabbits are usually smaller than hares, and their ears are not so long. At birth, the young of rabbits

are blind, naked, and helpless. In contrast, newborn hares are born wide-eyed and fully furred. They are able to hop about on the day of their birth.



True rabbits dig far-reaching burrows and bear their young in an underground nest. Hares, on the other hand, make their nests in hollows in the ground. (So does the cottontail—but in all other ways it is a true rabbit!)

**WORD SEARCH**

1. What seven-letter plural noun in the reading means “a very large order of gnawing mammals”?
2. What four-letter plural noun in the reading means “plant swellings from which leaves or flowers develop”?

*r* \_\_\_\_\_

*h* \_\_\_\_\_

3. Which seven-letter plural noun in the reading means “underground holes or tunnels”?

*h* \_\_\_\_\_

**ANTONYMS**

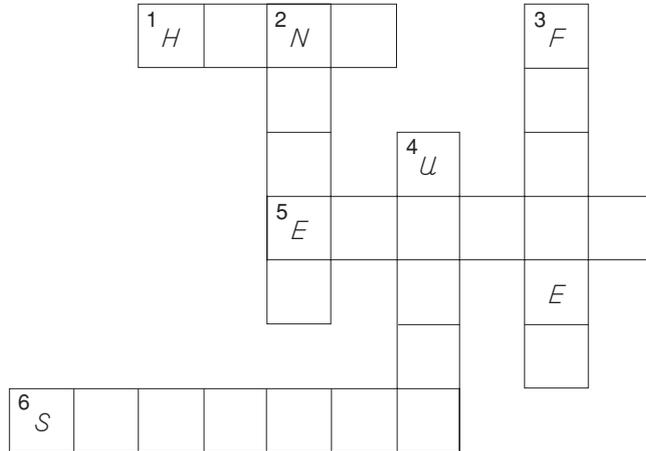
Complete the crossword puzzle with words from the reading. Clues are *antonyms* (words that mean the opposite) of the answer words.

**ACROSS**

- 1. front
- 5. unskilled
- 6. larger

**DOWN**

- 2. covered
- 3. bald
- 4. lower



**SYNONYMS**

First unscramble the words from the reading. Then write each unscrambled word next to its *synonym* (word with a similar meaning).

<b>WOLPRUFE</b> _____	<b>DERENT</b> _____
<b>BUSBYT</b> _____	<b>LUAUSLY</b> _____
<b>SAICFIELDS</b> _____	<b>AKEIL</b> _____

- 1. similar / \_\_\_\_\_
- 4. ordinarily / \_\_\_\_\_
- 2. soft / \_\_\_\_\_
- 5. mighty / \_\_\_\_\_
- 3. short / \_\_\_\_\_
- 6. categorized / \_\_\_\_\_

## CATEGORIES

List each word in the box under the correct heading.

<b>newborn</b>	<b>underground</b>	<b>helpless</b>	<b>longer</b>	<b>vegetarian</b>	<b>cottontail</b>
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### 1. COMPOUND WORDS

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### 2. WORDS WITH SUFFIXES

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## HOMONYMS

*Homonyms* are words that sound the same but have different meanings and spellings. First write a homonym for each **boldface** word from the reading. Then write a sentence that contains *both* words. The first one has been done for you.

1. **hare** / hair

*The hair on that hare is a beautiful brown color.*

2. **pairs** / \_\_\_\_\_

---

3. **bear** / \_\_\_\_\_

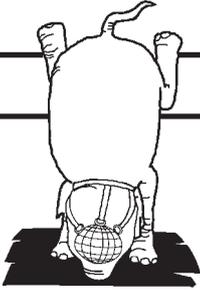
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4. **tails** / \_\_\_\_\_

---

5. **two** / \_\_\_\_\_

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## Animal Intelligence

Many animals, from a flea to an elephant, can be taught to perform tricks. But these acts tell us little about learning ability. An animal's intelligence is measured by how it manages a new situation and how well it solves problems.

The maze is one method scientists use to test animal intelligence. A maze contains a number of confusing pathways. In a scientific test, the animal's task is to discover the path that leads to food or some other reward. How many attempts does the animal make to find its way through the blind alleys of the maze? And how

long does the animal remember what it has learned? The answers to these questions are strong indications of the animal's learning and memory capacities.

Which animals are smarter? In learning how to solve new problems, vertebrates are usually superior to invertebrates. Chimpanzees, dogs, cats, and rats make high scores on various tests. But there are wide differences among individual animals of the same species. Some bees, ants, and cockroaches, for example, are much brighter than other members of the same colony.

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### Here are a few fascinating facts about animal intelligence:

- Many fish have color vision and can recognize each other by color patterns on the head.
- Squirrels, like some birds, have a sense of numbers.
- An octopus can run mazes and differentiate between a circle, a square, and a triangle.
- Toads and frogs learn to respond to their caretakers.

### WORD SEARCH

1. What thirteen-letter verb in the reading means "to tell the difference between"?

d\_\_\_\_\_

2. What thirteen-letter plural noun in the reading means “creatures without backbones”?

*i* \_\_\_\_\_

3. What six-letter noun in the reading means “a group of animals or plants living or growing together”?

*c* \_\_\_\_\_

4. What eight-letter verb in the reading means “found out the exact size, amount, or extent of something”?

*m* \_\_\_\_\_

**SYNONYMS**

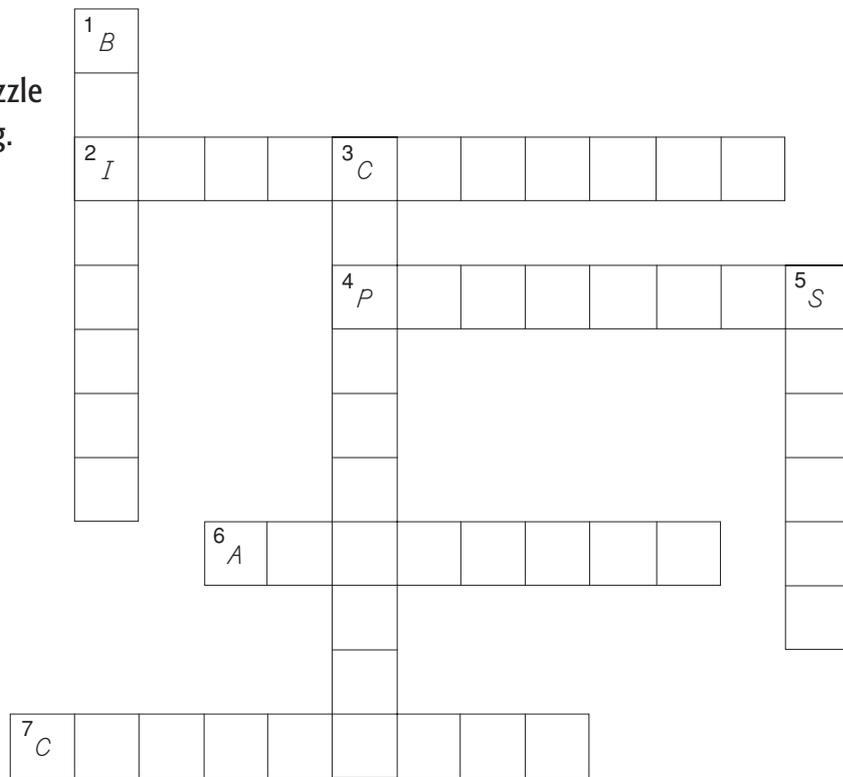
Complete the crossword puzzle with words from the reading. Clues are *synonyms* (words with a similar meaning) of the answer words.

**ACROSS**

- 2. signs
- 4. designs
- 6. tries
- 7. bewildering

**DOWN**

- 1. smarter
- 3. abilities; skills
- 5. answers; explains



**CATEGORIES**

Write examples from the reading that belong to each category.

1. three geometric figures: \_\_\_\_\_

\_\_\_\_\_

2. four insects: \_\_\_\_\_

\_\_\_\_\_

## WORD FORMS

Complete the chart. If the **boldface** word is a *noun*, write its verb form. If the word is a *verb*, write its noun form.

VERBS	NOUNS
1. <b>recognize</b>	
2.	<b>colony</b>
3. <b>measure</b>	
4. <b>perform</b>	
5.	<b>memory</b>
6. <b>solve</b>	

## ANTONYMS

Unscramble the words from the reading. Then write each one next to its *antonym* (word that means the opposite).

<b>DRAWER</b> _____	<b>INVALIDUDI</b> _____
<b>ROPERIUS</b> _____	<b>SCANTIGAFIN</b> _____

1. boring / \_\_\_\_\_      3. inferior / \_\_\_\_\_  
2. group / \_\_\_\_\_      4. punishment / \_\_\_\_\_

## WORDS IN CONTEXT

Circle a letter to show the meaning of the **boldface** word or words.

1. An animal must find its way around **blind alleys**.  
a. scary streets      b. dark passages      c. dead-end paths
2. Toads and frogs **respond** to their caretakers.  
a. recognize and react to      b. give intelligent answers to      c. try to please and impress



3. What seven-letter verb in the reading means “goes beyond what is usual or allowed”?

e\_\_\_\_\_

**ANTONYMS**

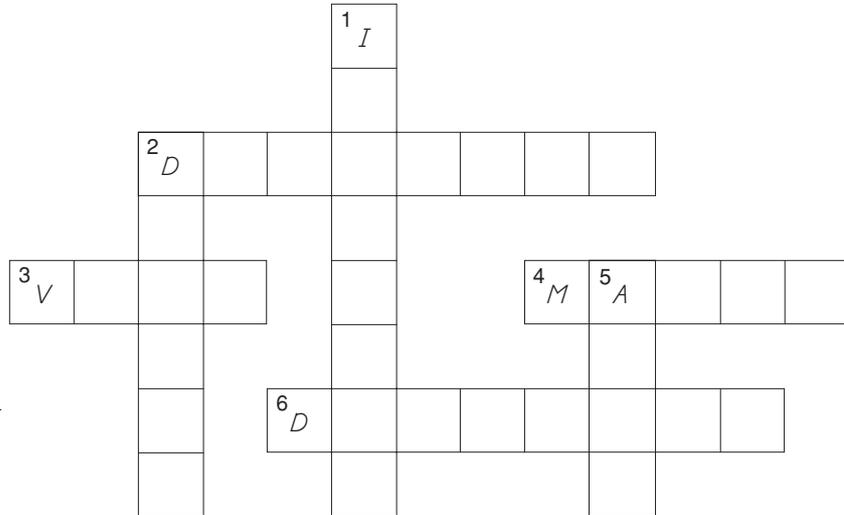
Complete the crossword puzzle with words from the reading. Clues are *antonyms* (words that mean the opposite) of the answer words.

**ACROSS**

- 2. alike; same
- 3. small
- 4. minor
- 6. upwind

**DOWN**

- 1. exterior; coastal
- 2. rain forest
- 5. humid; damp



**THE PREFIX *mid-***

The prefix *mid-* means “middle or middle part.” Complete the sentences below with a word beginning with *mid-*. Use a dictionary if you need help.

- 1. The two small planes met in a \_\_\_\_\_ collision.
- 2. \_\_\_\_\_ is the halfway point between dusk and dawn.
- 3. Chicago, Illinois and Omaha, Nebraska are \_\_\_\_\_ cities.
- 4. Students take \_\_\_\_\_ tests halfway through the semester.
- 5. The cafeteria serves lunch at \_\_\_\_\_.

## MULTIPLE-MEANING WORDS

Some words have entirely different meanings when they are used in different contexts. Unscramble the multiple-meaning words from the reading. Then write a sentence for each meaning shown.

1. SEGNAR \_\_\_\_\_
  - a. (noun) *rows or lines of connected mountains* \_\_\_\_\_  
\_\_\_\_\_
  - b. (verb) *roams or wanders about freely* \_\_\_\_\_  
\_\_\_\_\_
  
2. CHESTRETS \_\_\_\_\_
  - a. (noun) *unbroken distances* \_\_\_\_\_  
\_\_\_\_\_
  - b. (verb) *draws out to full length or to a greater size* \_\_\_\_\_  
\_\_\_\_\_
  
3. BOLCSK \_\_\_\_\_
  - a. (verb) *stops movement or progress* \_\_\_\_\_  
\_\_\_\_\_
  - b. (noun) *wooden or plastic toy bricks or cubes* \_\_\_\_\_  
\_\_\_\_\_

## SYNONYMS

Draw a line to match each **boldface** word from the reading with its *synonym* (word with a similar meaning).

- |                    |                 |
|--------------------|-----------------|
| 1. <b>stark</b>    | a. loaded       |
| 2. <b>barriers</b> | b. developed    |
| 3. <b>laden</b>    | c. obstructions |
| 4. <b>formed</b>   | d. bleak        |

**Q&A Sites on the Internet**

Do you need the answer to a tricky question? Would you like some help understanding a difficult concept? You can always try one of the Question and Answer (Q&A) sites on the World Wide Web. These are places you can submit a question for an expert to answer. Before you start clicking, however, there are a few things you should know.

Most Web sites offering expert assistance also keep an archive. This is a collection of all previous questions and answers—or at least the most frequently asked questions (FAQs). So check out the site's archive *before* submitting your question. If your question has already been answered in their archive, some sites will not respond to your e-mail.

Other sites require a certain time frame to respond—perhaps two days, or even longer. Still other sites select and answer only one question of all

those received in a day or a week. And they answer it only on a message board. That means you have to visit the message board frequently to see if your question was chosen. Some interesting Q&A sites are listed below. Just remember that Web sites change frequently. If one site doesn't work, try another one!



- [www.howstuffworks.com](http://www.howstuffworks.com)  
for help with science projects
- [www.science.ca/ask/](http://www.science.ca/ask/)  
150 Canadian scientists answer your questions
- [www.ipl.org/youth/](http://www.ipl.org/youth/)  
great references for kids from the Internet Public Library
- <http://mathforum.com/dr.math>  
Dr. Math accepts math challenges.

**WORD SEARCH**

1. What seven-letter noun in the reading means “a general idea of what a thing or a group of things is”?

2. What ten-letter plural noun in the reading means “books or other sources of information”?

  r  \_\_\_\_\_

3. What eight-letter verb in the reading means “putting forward for someone to take or refuse”?

  e  \_\_\_\_\_

### WORDS IN CONTEXT

Circle a letter to show the meaning of the **boldface** words in the sentences.

1. Many Web sites provide **FAQs** to provide help quickly.
  - a. Fast Accurate Quotes
  - b. Facts and Quality
  - c. Frequently Asked Questions
  
2. If you can imagine a subject, you can find out about it on the **Internet**.
  - a. international network of electronically connected computers
  - b. a search engine such as www.yahoo.com
  - c. Web pages with customized information
  
3. Your question may be answered on the site’s **message board**.
  - a. an organization’s list used for regular mailings
  - b. area on a Web site where users post comments and read the comments of others
  - c. an educational chat room for regular users
  
4. Some sites respond only within a certain **time frame**.
  - a. date and time of day framed on the screen
  - b. information about the time an event occurred
  - c. period of time during which something is planned to take place

## HOMONYMS

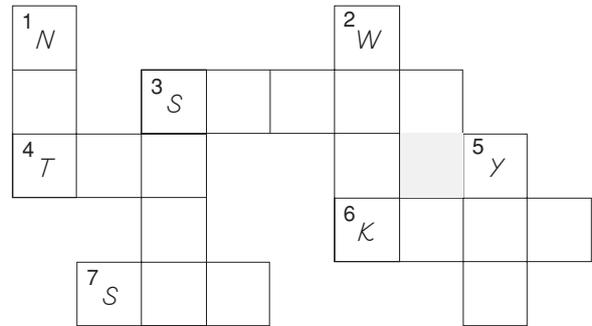
*Homonyms* are words that sound alike but have different meanings and sometimes different spellings. Clue words are homonyms of words from the reading. Use words from the reading to complete the crossword puzzle.

### ACROSS

3. sights
4. to
6. no
7. sea

### DOWN

1. knot
2. weak
3. sum
5. ewe



## SYNONYMS AND ANTONYMS

Write **S** or **A** next to each word pair to show whether the words are *synonyms* (words with a similar meaning) or *antonyms* (words with opposite meanings).

- |                            |                              |
|----------------------------|------------------------------|
| 1. _____ submit / receive  | 5. _____ frequently / rarely |
| 2. _____ perhaps / maybe   | 6. _____ require / need      |
| 3. _____ respond / answer  | 7. _____ expert / amateur    |
| 4. _____ chosen / rejected | 8. _____ previous / earlier  |

## ANALOGIES

*Analogies* are statements of relationship. Figure out the relationship between the first two words. Then complete the analogy with a word from the reading that shows the same relationship.

- |  |   |
|--|---|
| 1. <i>Gymnasium</i> is to <i>gym</i><br>as <i>mathematics</i> is to<br>_____.  | 3. <i>Money</i> is to <i>budget</i><br>as <i>time</i> is to<br>_____. |
| 2. <i>Later</i> is to <i>subsequently</i><br>as <i>earlier</i> is to<br>_____. | 4. <i>Send</i> is to <i>submit</i><br>as <i>reply</i> is to<br>_____. |



3. What seven-letter adjective in the reading describes something that comes into sight in a sudden, frightening way? l\_\_\_\_\_

**ANTONYMS**

*Antonyms* are words with opposite meanings. Unscramble the words from the reading and write them next to their antonyms.

1. **SUMOAF**

\_\_\_\_\_ / unknown

4. **PINTONIP**

\_\_\_\_\_ / guess

2. **TONGRINIOM**

\_\_\_\_\_ / ignoring

5. **TICAVE**

\_\_\_\_\_ / extinct

3. **NYCETRIAL**

\_\_\_\_\_ / doubtfully

6. **TRIBET**

\_\_\_\_\_ / mild

**SYNONYMS**

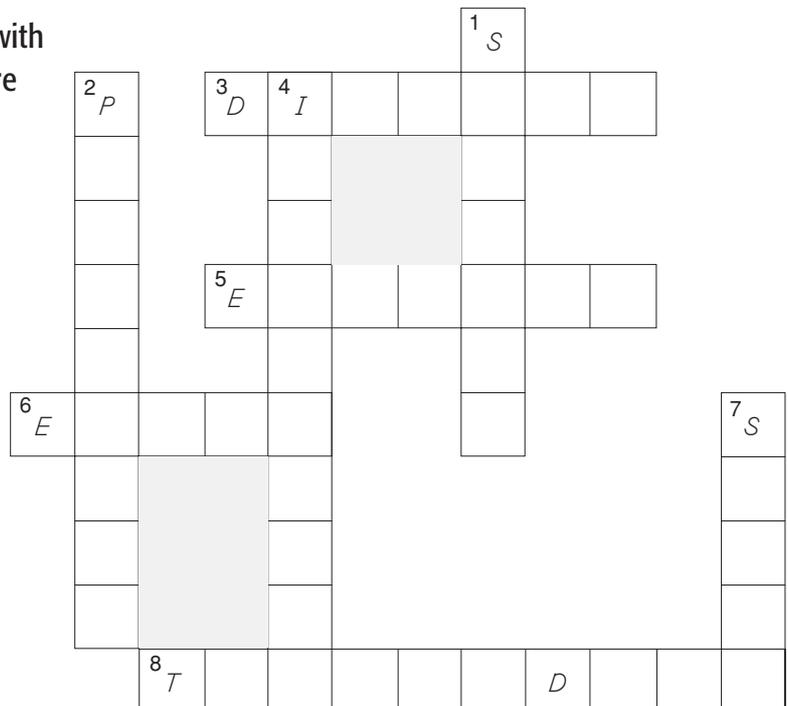
Complete the crossword puzzle with words from the reading. Clues are *synonyms* (words with a similar meaning) of the answer words.

**ACROSS**

- 3. argument
- 5. plain; clear
- 6. explode
- 8. enormous

**DOWN**

- 1. topic
- 2. forerunner
- 4. unavoidable
- 7. indications



## WORDS IN CONTEXT

Circle a letter to show the meaning of the **boldface** words. If you need help, check a dictionary.

- Lava and burning ashes **cascaded** down the mountain.
  - exploded in all directions
  - quickly flowed in large amounts
  - mushroomed in a dark cloud
- Would residents have enough time to **evacuate**?
  - immediately leave for safety's sake
  - board up their homes
  - evaporate the hot lava
- Can **state-of-the-art** equipment warn of an eruption?
  - finest instruments in the state
  - artistic renderings
  - most advanced technology
- Convulsive** waves of lava completely buried Pompeii.
  - curving outward, not inward
  - uncontrollably jerky and shaky
  - very dense and heavy
- On the **mainland** of Europe, Vesuvius is the only active volcano.
  - not an island or a peninsula
  - most important region
  - centrally located

## WORD FORMS

Rewrite each **boldface** word from the reading in the form of an adjective or a noun. Check a dictionary if you're not sure of the spelling.

### ADJECTIVE FORM

- volcano** \_\_\_\_\_
- catastrophe** \_\_\_\_\_
- disaster** \_\_\_\_\_

### NOUN FORM

- active** \_\_\_\_\_
- erupt** \_\_\_\_\_
- occur** \_\_\_\_\_

**Noise Pollution: How Loud Is *Too* Loud?**

Warnings about the dangers of air and water pollution are frequently in the news. But noise pollution is also a serious problem in the modern world. City-dwellers are especially vulnerable since noise levels are higher in urban areas. Loud noise stresses the nerves in your ears. If the excessively loud noise continues for a long time, your ears can be damaged permanently.

Did you know that the intensity of sound is measured in decibels (dB)? A very faint noise, such as the sound of human breathing, is about

5 dB. If someone shouts in your ear, the sound level may reach 100 dB. Sound levels above 120 dB cause physical pain. At 140 dB, extremely loud sound can break your eardrums, and at 180 dB, it can kill you! Hearing loss is common in people who work around constantly thunderous, roaring, or shrieking sounds.

Besides damaging your hearing, noise pollution can hurt you in other ways. When people are exposed to noise levels above 70 dB, their blood pressure and pulse rates increase. Because their bodies are under stress, they become tense and irritable.

**WORD SEARCH**

1. What nine-letter noun in the reading means “the quality of having great strength or force”?

*i* \_\_\_\_\_

2. What ten-letter adverb in the reading means “steadily and invariably, without stopping”?

*c* \_\_\_\_\_

3. What nine-letter noun in the reading means “corrupted condition caused by an outside influence”?

*p* \_\_\_\_\_

4. What six-letter plural noun in the reading means “bodily fibers that connect organs, muscles, etc. to the brain and spinal cord”?

n\_\_\_\_\_

**ANTONYMS**

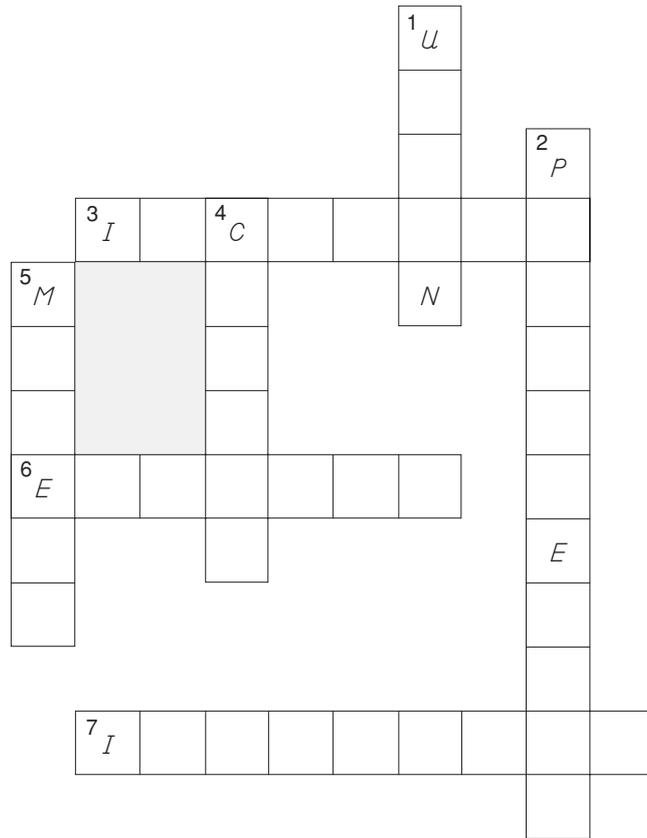
Complete the crossword puzzle with words from the reading. Clues are *antonyms* (words that mean the opposite) of the answer words.

**ACROSS**

- 3. diminish
- 6. shielded
- 7. joyful

**DOWN**

- 1. rural
- 2. temporarily
- 4. unusual
- 5. ancient



**SYNONYMS**

Unscramble the words from the reading. Then write the unscrambled words next to their *synonyms* (words with a similar meaning).

1. **GAMEAD**

\_\_\_\_\_ / injury

3. **IOURSSE**

\_\_\_\_\_ / severe

2. **ARKEB**

\_\_\_\_\_ / rupture

4. **STOUSH**

\_\_\_\_\_ / yells

## ANALOGIES

*Analogies* are statements of relationship. Find the relationship between the first two words. Then write a word from the reading that shows the same relationship between the second pair of words.

- |   |   |
|---|---|
| 1. <i>Fahrenheit</i> is to <i>F</i><br>as <i>decibel</i> is to<br><u>d</u> _____. | 4. <i>Effect</i> is to <i>cause</i><br>as <i>flood</i> is to<br><u>r</u> _____.     |
| 2. <i>Damage</i> is to <i>injury</i><br>as <i>strain</i> is to<br><u>s</u> _____. | 5. <i>Soft</i> is to <i>whisper</i><br>as <i>loud</i> is to<br><u>s</u> _____.      |
| 3. <i>Finger</i> is to <i>knuckle</i><br>as <i>ear</i> is to<br><u>e</u> _____.   | 6. <i>Adjective</i> is to <i>noun</i><br>as <i>intense</i> is to<br><u>i</u> _____. |

## WORD COMPLETION

Add vowels (*a, e, i, o, u*) to complete the words in the sentences.

1. Increased bl\_\_ \_\_d pressure and pulse r\_\_t\_\_s are two signs of physical stress.
2. A person with c\_\_mpl\_\_t\_\_ hearing loss is d\_\_ \_\_f.
3. If you are in a good m\_\_ \_\_d, you are not a bit \_\_rr\_\_t\_\_bl\_\_.
4. Respiration is the scientific term for br\_\_ \_\_th\_\_ng.
5. A f\_\_ \_\_nt sound is very low and s\_\_ft.
6. The adjective form of the noun str\_\_ss is str\_\_ssf\_\_l.
7. A p\_\_rm\_\_n\_\_nt disability never goes away.

## REVIEW

## SPELLING

Circle the correctly spelled word in each group.

1. vaccum                  vacuum                  vaccume
2. weathering                  whethering                  wethering
3. diffrences                  diferrences                  differences
4. intellagence                  intelligense                  intelligence

## WORD FORMS

To correctly complete each sentence, add a *suffix* to the **boldface** word. Write the new word on the line.

1. One who **pollutes** is called a \_\_\_\_\_.
2. A book or Web site you **refer** to for information is called a \_\_\_\_\_.
3. When you **submit** a question to a Web site, your question is your \_\_\_\_\_.
4. A scientist who studies **volcanoes** is a \_\_\_\_\_.

## MYSTERY WORDS

To complete the sentences, write the unscrambled words on the lines.

1. An VERAICH \_\_\_\_\_ is a Web site's collection of FAQs.
2. To NOTPINIP \_\_\_\_\_ something is to identify it exactly.
3. The place where an organism lives is its THABAIT \_\_\_\_\_.

## HIDDEN WORDS PUZZLE

Find and circle the words in the hidden words puzzle. Words may go up, down, across, backward, or diagonally. Check off each word as you find it.

- |              |                |
|--------------|----------------|
| _____ ERUPT  | _____ BURROWS  |
| _____ HARES  | _____ HOMONYMS |
| _____ DESERT | _____ SUPERIOR |
| _____ MAJOR  | _____ DOWNWIND |
| _____ RANGE  | _____ INTERNET |
| _____ SUBMIT | _____ ARCHIVE  |

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

## WORDS IN CONTEXT

Now use each word from the puzzle in a sentence of your own. Try to include a scientific fact, explanation, or example in each sentence.

1. **archive** \_\_\_\_\_  
\_\_\_\_\_
2. **submit** \_\_\_\_\_  
\_\_\_\_\_
3. **burrows** \_\_\_\_\_  
\_\_\_\_\_
4. **erupt** \_\_\_\_\_  
\_\_\_\_\_
5. **hares** \_\_\_\_\_  
\_\_\_\_\_
6. **homonyms** \_\_\_\_\_  
\_\_\_\_\_

7. **desert** \_\_\_\_\_

\_\_\_\_\_

8. **superior** \_\_\_\_\_

\_\_\_\_\_

9. **major** \_\_\_\_\_

\_\_\_\_\_

10. **range** \_\_\_\_\_

\_\_\_\_\_

11. **Internet** \_\_\_\_\_

\_\_\_\_\_

12. **downwind** \_\_\_\_\_

\_\_\_\_\_

### ANALOGIES

*Analogies* are statements of relationship. Find the relationship between the first two words. Then show the same relationship in the second pair of words by completing the analogy with a word from Unit 4.

1. *Fall* is to *snow*  
as *cascade* is to  
*l* \_\_\_\_\_.

4. *Much* is to *little*  
as *loud* is to  
*f* \_\_\_\_\_.

2. *Explode* is to *explosion*  
as *erupt* is to  
*e* \_\_\_\_\_.

5. *Sound* is to *homonyms*  
as *meaning* is to  
*s* \_\_\_\_\_.

3. *Yesterday* is to *outdated*  
as *now* is to  
*y* \_\_\_\_\_.

6. *Lion* is to *consumer*  
as *dandelion* is to  
*p* \_\_\_\_\_.

**END-OF-BOOK TEST**

**ELEMENTS OF VOCABULARY**

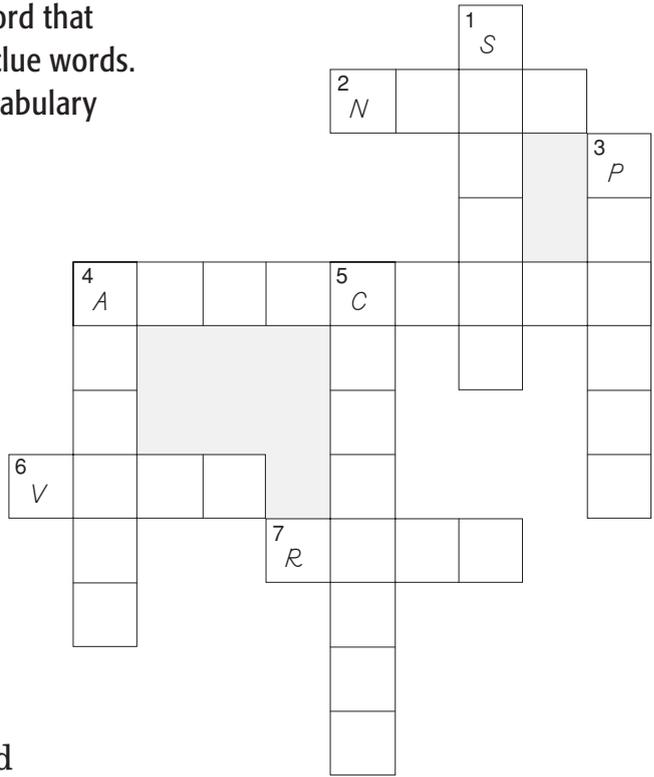
- Complete the crossword puzzle with a word that names the category that could label the clue words. Answers are some of the elements of vocabulary you've been working with in this book.

**ACROSS**

- 2. student, Paris, loyalty
- 4. red, electric, spongy
- 6. are, jump, think
- 7. *therm, gen, vit*

**DOWN**

- 1. *-ment, -ance, -ist*
- 3. *inter-, pro-, anti-*
- 4. soon, slowly, awkwardly
- 5. daybreak, snowshoe, barnyard



- Now write three examples of your own for each *element of vocabulary* (crossword puzzle answers).

1. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_

2. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_

3. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_

4. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_

5. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_
6. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_
7. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_
8. ELEMENT: \_\_\_\_\_  
 EXAMPLES: \_\_\_\_\_

### HOMONYMS

*Homonyms* are words that sound exactly alike, but have different meanings and often, different spellings. First figure out a homonym for each **boldface** word from the book. Then write a phrase, describing your homonym with two appropriate adjectives. The first one has been done for you.

	HOMONYM	PHRASE
1. <b>sun</b>	<u>son</u>	<u>her oldest, tallest son</u>
2. <b>chilly</b>	_____	_____
3. <b>flower</b>	_____	_____
4. <b>hare</b>	_____	_____

### PLURALS

Write the correct *plural* form of each **boldface** word from the book. If you need help, check a dictionary.

- |            |              |            |
|------------|--------------|------------|
| 1. kidney  | 4. bacterium | 7. memory  |
| _____      | _____        | _____      |
| 2. fungus  | 5. alley     | 8. flurry  |
| _____      | _____        | _____      |
| 3. species | 6. criterion | 9. ability |
| _____      | _____        | _____      |

## SILENT LETTERS

Find and circle the silent letter in *half* the words listed below.

gnawing

liver

aerial

focus

respond

autumn

modem

knowledge

## ANTONYMS

Find and circle the words hidden in the puzzle. Words may go up, down, across, backward, or diagonally. Check off each word as you find it. When you have circled all the words, write each word next to its *antonym* (word that means the opposite).

\_\_\_\_\_ **EXTINCT**

\_\_\_\_\_ **PARASITE**

\_\_\_\_\_ **SOLID**

\_\_\_\_\_ **INTERIOR**

\_\_\_\_\_ **MULTIPLE**

\_\_\_\_\_ **LATITUDE**

\_\_\_\_\_ **URBAN**

\_\_\_\_\_ **CONDENSATION**

\_\_\_\_\_ **INFERIOR**

\_\_\_\_\_ **OUTPUT**

\_\_\_\_\_ **MAJOR**

\_\_\_\_\_ **VOWELS**

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

1. consonants / \_\_\_\_\_

7. living / \_\_\_\_\_

2. minor / \_\_\_\_\_

8. host / \_\_\_\_\_

3. liquid / \_\_\_\_\_

9. evaporation / \_\_\_\_\_

4. exterior / \_\_\_\_\_

10. single / \_\_\_\_\_

5. input / \_\_\_\_\_

11. rural / \_\_\_\_\_

6. longitude / \_\_\_\_\_

12. superior / \_\_\_\_\_

## WORDS IN CONTEXT

Circle a word to correctly complete each sentence.

1. Rabbits and hares have a second pair of upper ( incisors / appendages ).
2. Noise levels are measured in ( Hz / dB ).
3. ( Evaporation / Elevation ) determines whether precipitation will fall as rain or snow.
4. Scientists have identified 103 ( organic / chemical ) elements.
5. The ( tuners / transistors ) in a radio amplify the program current.
6. *Carnivore* is to *meat-eater* as *herbivore* is to ( *vegetarian* / *cold-blooded* ).

## COMPOUND WORDS

First unscramble the compound words. Then use each unscrambled word to complete one of the sentences.

<b>DROOLBETAMS</b> _____	<b>NAILMAND</b> _____
<b>GLINTHUS</b> _____	<b>THAWGENVEL</b> _____

1. Calcium is released as needed into the \_\_\_\_\_.
2. The distance between successive crests on the ocean's surface is called the \_\_\_\_\_.
3. As it passes through ice crystals, \_\_\_\_\_ refracts and appears as sun dogs.
4. Vesuvius is the only active volcano on the \_\_\_\_\_ of Europe.

## WORD LIST

**A**bbreviation

ability  
absorb  
adjective  
advance  
adverb  
aerial  
African  
amino acids  
amplified  
analogy  
Andes  
annual  
Antarctica  
antenna  
antonym  
ants  
appendage  
application  
applied research  
appropriate  
Arabian Peninsula  
archive  
arctic  
area  
arid  
Arizona  
astronomy  
atmosphere  
atoms  
Australia  
author  
authority  
axis

**B**acteria

barriers  
basic research  
bees  
biologists

bit  
bitter  
blind alleys  
blood pressure  
bloodstream  
blubber  
boldface  
botany, botanist  
branch  
brittle  
broadcasting  
buds  
burrows  
byte

**C**alcitrol

calcium  
campus  
capacity  
captivity  
carbohydrates  
carbon  
carbon dioxide  
caretaker  
cascade  
catastrophe  
category  
cell  
Celluloid  
challenges  
characteristics  
chemistry  
chilly  
chimpanzee  
chromosomes  
cirrus  
classification  
classify  
climate  
coastal

cockroach  
cold-blooded  
colony  
compound  
computers  
concepts  
condensation  
conditions  
confirm  
consistent  
constant  
consumers  
context  
continents  
contrary  
contrast  
convulsive  
cottontail  
crests  
criteria  
crust  
crystals  
currency  
currents  
cycle  
cyclone

**D**amage

debate  
decaying  
decibels (dB)  
degrees (°)  
dense  
density  
desert  
detract  
devastating  
devised  
diagonally  
differentiate

## WORD LIST

digital  
 disaster  
 discovery  
 disk drive  
 diskettes  
 disprove  
 dispute  
 dissipate  
 distinct  
 distinguishing  
 distractions  
 document  
 downwind  
 dynamic

**E**ardrum  
 ecology  
 ecosystem  
 egg  
 electromagnetic  
 electronic  
 element  
 elephant  
 elevated, elevation  
 endangered  
 energy  
 enormous  
 environment  
 equipment  
 erosion  
 erupt  
 essential  
 evacuate  
 evaporation  
 evident, evidence  
 evolution  
 exact  
 exceed  
 excessively  
 expanses  
 experiment  
 expert  
 exposed, exposure

extent  
 extinct

**F**actors  
 faint  
 fascinating  
 features  
 fertilization  
 findings  
 flea  
 flurries  
 focus  
 food chain  
 force  
 fossils  
 frequency  
 frigid  
 fungi, fungus  
 furred  
 fuzzy

**G**as  
 genetics  
 geographic  
 geology  
 germinate, germination  
 glossary  
 gnawing  
 Gobi  
 graphite  
 greenhouse

**H**abitat  
 halos  
 hare  
 harpoon  
 hazardous waste  
 helium  
 herbivore  
 hertz  
 hexagonal  
 high-pressure system  
 Himalayas

hind  
 hollows  
 homonym  
 hoofed  
 horizon  
 horizontal  
 horns  
 host  
 hydrogen  
 hypothesis

**I**ncinerate  
 incisors  
 individuals  
 industrious  
 industry  
 inevitable  
 inferior  
 information  
 inland  
 input  
 instruments  
 intensity  
 interaction  
 interior  
 intermittent  
 Internet  
 intervals  
 inventions, inventor  
 invertebrates  
 investigations  
 involved  
 irritable  
 Italy

**J**et stream

**K**idneys  
 kilo-  
 kingdom  
 knowledge

**L**andfill  
 latitude  
 lava  
 laws of nature  
 lenses  
 life science  
 linger  
 liquid  
 liver  
 locations, locales  
 longevity  
 longitude  
 looming

**M**agma  
 magnifying glass  
 mainland  
 maintains  
 major  
 mammal  
 manufacture  
 Mars  
 masses  
 matter  
 maze  
 measure  
 mega-  
 memory  
 mercury  
 message board  
 metal  
 meteor  
 microscopes  
 midlatitude  
 migrate  
 minerals  
 minute  
 modem  
 modern  
 moisture  
 mold  
 molecules  
 monitor

monitoring  
 mountain ranges  
 mullein plants  
 multiple

**N**aked  
 Naples  
 nature  
 navigate  
 nest  
 newborn  
 noise  
 nostrils  
 notation  
 noun  
 nucleus  
 nutrient  
 nutrition

**O**bjects  
 observation  
 oceans  
 offshore  
 offspring  
 operate  
 opposite  
 order  
 organic chemistry  
 organisms  
 oriented  
 outlook  
 output  
 overcast  
 overview  
 oxygen  
 ozone

**P**arallel  
 parasite  
 parhelia  
 particle  
 parts of speech  
 pattern

percentage  
 permanently  
 perpendicular  
 phenomenon  
 physics, physicist  
 pinpoint  
 plain  
 planet  
 plastics  
 plural  
 polar  
 pollute, pollution  
 Pompeii  
 practical  
 Precambrian era  
 precipitation  
 precursor  
 prefix  
 preliminary  
 prevailing winds  
 process  
 produced  
 productive  
 professor  
 projected  
 proper adjective  
 proper noun  
 properties  
 pulse  
 pursuit

**Q**ualities  
 quartz  
 quest

**R**abbit  
 radiation  
 radio frequency  
     waves  
 rain forest  
 rain shadow  
 rate  
 ratio

## WORD LIST

reaction  
 reflect  
 refracting  
 regenerated  
 regions  
 relationship  
 relentless  
 reputable  
 research  
 respiration  
 respond  
 retardation  
 retiring  
 rhinoceros  
 rodent  
  
**S**atellite  
 scholars  
 scientific method  
 score  
 seas  
 seedlings  
 seismic  
 Sierra Nevada  
 signal  
 site  
 skeptical  
 sketch  
 slopes  
 solar system  
 solid  
 sound waves  
 source  
 space  
 species  
 specific  
 spectrum  
 spongy  
 square miles  
 stark

state-of-the-art  
 stations  
 stomach  
 stratus  
 stress  
 stretches  
 subject  
 submit  
 substance  
 substitute  
 subtropical  
 successive  
 suffix  
 Sumatran  
 sun dogs  
 superior  
 surf  
 surface  
 swells  
 synonym  
 synthetic

**T**ask  
 technical  
 technology  
 teeming  
 telegraph  
 terminate  
 test  
 theory  
 thermometer  
 thunderous  
 time frame  
 tissue  
 topography  
 transistors  
 transmit  
 tremendous  
 tuner  
 turbine

Turkestan  
 twigs

**U**ltraviolet  
 underground  
 undulations  
 unearthed  
 unit  
 universe  
 updated  
 upwind  
 urban

**V**acuum  
 various  
 vast  
 vegetarians  
 verb  
 verify  
 vertebrates  
 Vesuvius  
 vibrations  
 vitality  
 vocabulary  
 volcanologist  
 volt  
 vowels  
 vulnerable

**W**arm-blooded  
 water cycle  
 water table  
 wave  
 wavelength  
 waves  
 weathering  
 Web sites  
 wither

**Z**inc

**VOCABULARY**  
*in context*

## **VOCABULARY . . .**

**EVERYDAY LIVING WORDS**

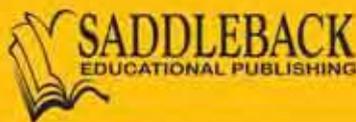
**HISTORY AND GEOGRAPHY WORDS**

**MEDIA AND MARKETPLACE WORDS**

**MUSIC, ART, AND LITERATURE WORDS**

**SCIENCE AND TECHNOLOGY WORDS**

**WORKPLACE AND CAREER WORDS**



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