

## LESSON

## 1-2

**Sets of Real Numbers****Reteach**

Numbers can be organized into groups. Each number can be placed into one or more of the groups.

**Real numbers** include all rational and irrational numbers. All of the numbers that we use in everyday life are real numbers.

- If a real number can be written as a fraction, it is a **rational number**. If it cannot be written as a fraction, it is an **irrational number**.
- If a rational number is a whole number, or the opposite of a whole number, then it is an **integer**.
- If an integer is positive or 0, then it is a **whole number**.

You can use these facts to categorize any number.

A. What kind of number is 10?

Is it a real number? **Yes**.

Is it a rational number? Can it be written as a fraction? **Yes:  $\frac{10}{1}$**

Is it an integer? Is it a whole number or the opposite of a whole number? **Yes**.

Is it a whole number? **Yes**.

So 10 is a real number, a rational number, an integer, and a whole number.

B. What kind of number is  $\sqrt{\frac{9}{3}}$ ?

Is it a real number? **Yes**.

Is it a rational number? Can it be written as a fraction? **No.  $\frac{9}{3}$  simplifies**

**to 3. If you try to find the square root of 3, you will get a decimal answer that goes on forever but does not repeat: 1.7320508... This cannot be written as a fraction.**

So  $\sqrt{\frac{9}{3}}$  is a real, irrational number.

**Answer each question to identify the categories the given number belongs to.**

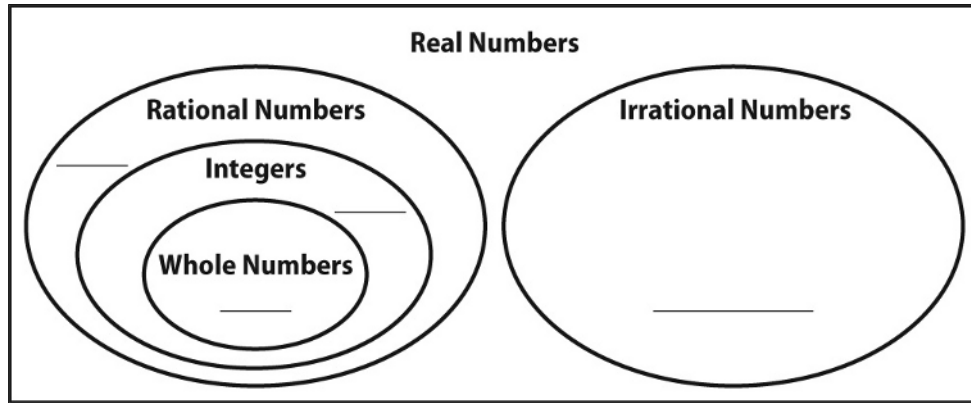
$$\sqrt{16}$$

1. Is it a real number? \_\_\_\_\_
2. Is it a rational number? Can it be written as a fraction?  
\_\_\_\_\_
3. Is it an integer? Is it a whole number or the opposite of a whole number? \_\_\_\_\_
4. Is it a whole number? \_\_\_\_\_
5. List all of the categories  $\sqrt{16}$  belongs to.  
\_\_\_\_\_

**LESSON**  
**1-2**

# Sets of Real Numbers

*Reading Strategies: Use a Venn Diagram*



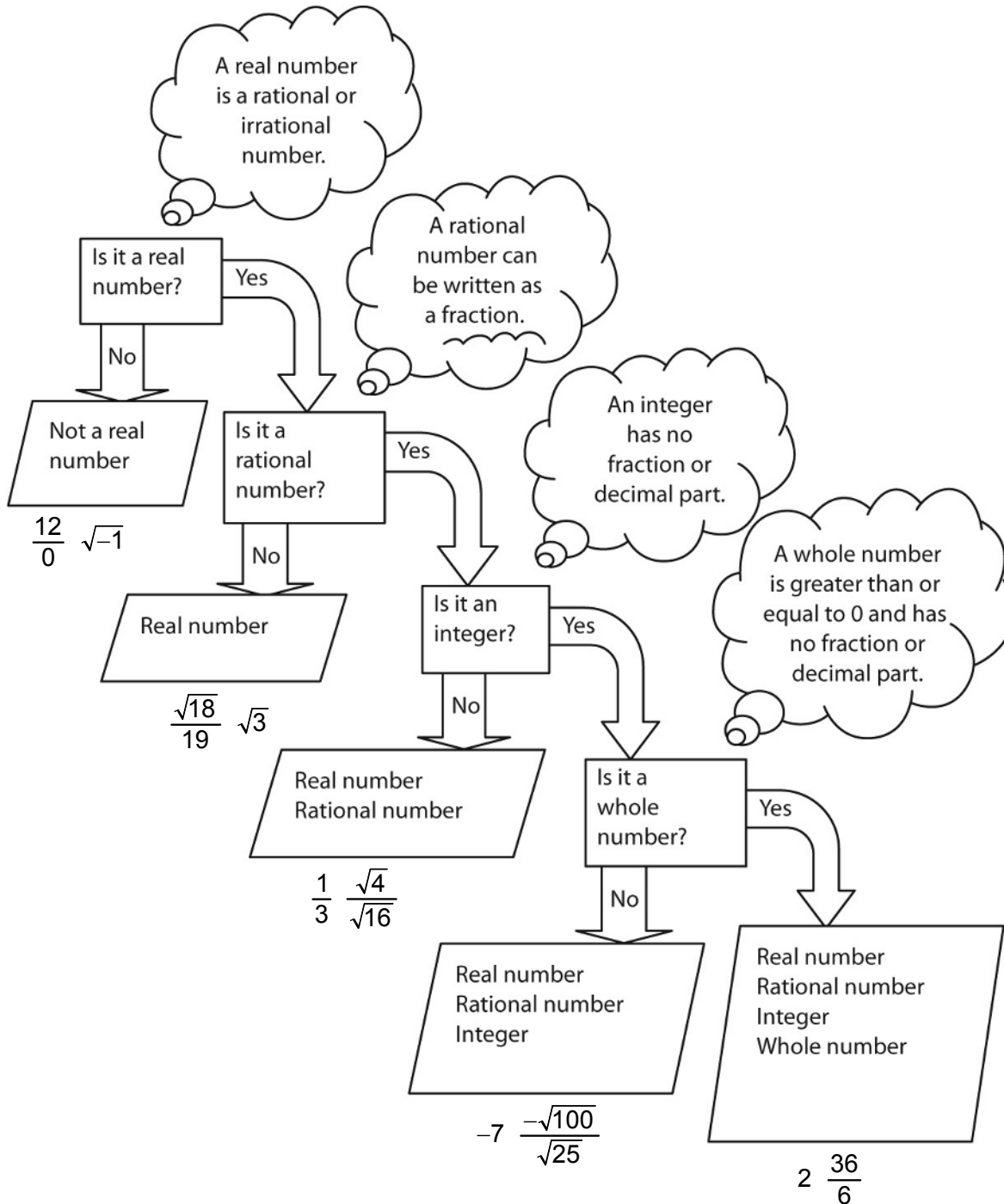
1. A real number is a \_\_\_\_\_ or an \_\_\_\_\_ number.
2. A rational number can be written as a \_\_\_\_\_ or a \_\_\_\_\_.
3. Both \_\_\_\_\_ and \_\_\_\_\_ decimals are rational numbers.
4. A set of integers is the set of \_\_\_\_\_ and \_\_\_\_\_ whole numbers and zero.
5. The whole numbers are the set of \_\_\_\_\_ numbers and zero.
6. Place each number on the proper line on the Venn diagram.
  - a. -5
  - b. 0.34
  - c. 11
  - d.  $\pi$

**LESSON**  
**1-2**

**Sets of Real Numbers**

*Success for English Learners*

**Problem 1**



**Classify each number. Use the flowchart to help you.**

1.  $\sqrt{15}$  \_\_\_\_\_
2.  $\frac{3}{0}$  \_\_\_\_\_
3.  $\sqrt{\frac{1}{9}}$  \_\_\_\_\_
4.  $-13$  \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**LESSON**  
**1-2**

**Sets of Real Numbers**

*Practice and Problem Solving: D*

List all number sets that apply to each number. The first one is done for you.

1.  $-\frac{1}{2}$

2.  $\sqrt{3}$

real, rational \_\_\_\_\_

\_\_\_\_\_

3. 0.9

4. -3

\_\_\_\_\_

\_\_\_\_\_

5.  $0.\overline{6}$

6. 18

\_\_\_\_\_

\_\_\_\_\_

Tell whether the given statement is true or false. Explain your choice.

7. All fractions are real numbers.

\_\_\_\_\_

8. All negative numbers are integers.

\_\_\_\_\_

Identify the set of numbers that best describes each situation. Explain your choice.

9. the number of people in a movie theater

\_\_\_\_\_

10. roll a pair of number cubes and take the square root of the sum

\_\_\_\_\_

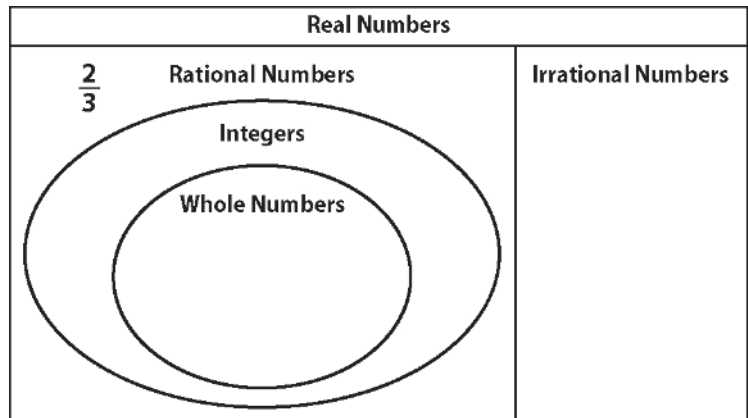
Place each of the given numbers in the correct location on the Venn diagram. The first one is done for you.

11.  $\frac{2}{3}$

12. -99

13.  $\frac{10}{11}$

14. 1,000





**LESSON**  
**1-3**

# Ordering Real Numbers

## Reteach

Compare and order real numbers from least to greatest.

Order  $\sqrt{22}$ ,  $\pi + 1$ , and  $4\frac{1}{2}$  from least to greatest.

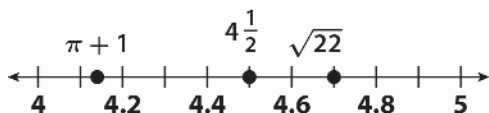
You can use a calculator to approximate irrational numbers.

$$\sqrt{22} \approx 4.69$$

You know that  $\pi \approx 3.14$ , so you can find the approximate value of  $\pi + 1$ .

$$\pi + 1 \approx 3.14 + 1 \approx 4.14$$

Plot  $\sqrt{22}$ ,  $\pi + 1$ , and  $4\frac{1}{2}$  on a number line.



On a number line, the values of numbers increase as you move from left to right. So, to order these numbers from least to greatest, list them from left to right.

$$\pi + 1, 4\frac{1}{2}, \text{ and } \sqrt{22}$$

**Order each group of numbers from least to greatest.**

1.  $4, \pi, \sqrt{8}$

\_\_\_\_\_

2.  $5, \frac{17}{3}, \pi + 2$

\_\_\_\_\_

3.  $\sqrt{2}, 1.7, -2$

\_\_\_\_\_

4.  $2.5, \sqrt{5}, \frac{3}{2}$

\_\_\_\_\_

5.  $3.7, \sqrt{13}, \pi + 1$

\_\_\_\_\_

6.  $\frac{5}{4}, \pi - 2, \frac{\sqrt{5}}{2}$

\_\_\_\_\_

**LESSON**  
**1-3****Ordering Real Numbers****Reading Strategies: Connect Words with Symbols**

To compare real numbers, you can use the symbols  $<$ ,  $>$ , and  $=$ .

To approximate irrational numbers, you can use the symbol  $\approx$ .

The symbol  $<$  means "less than."

$$\frac{1}{2} < 2 \quad \longleftarrow \quad \text{Read as "}\frac{1}{2}\text{ is less than 2."}$$

The symbol  $>$  means "greater than":

$$\sqrt{6} > \sqrt{5} \quad \longleftarrow \quad \text{Read as "The square root of 6 is greater than the square root of 5."}$$

The symbol  $=$  means "equal to":

$$\sqrt{16} = 4 \quad \longleftarrow \quad \text{Read as "The square root of 16 is equal to 4" OR "The square root of 16 equals 4."}$$

The sign  $\approx$  means "approximately equal to":

$$\pi \approx 3.14 \quad \longleftarrow \quad \text{Read as "}\pi\text{ is approximately equal to 3.14." OR "}\pi\text{ is approximately 3.14."}$$

**Write in words.**

1.  $\sqrt{13} < 4$

\_\_\_\_\_

2.  $0.501 \approx \frac{1}{2}$

\_\_\_\_\_

3.  $\sqrt{25} = 5$

\_\_\_\_\_

4.  $\pi + 1 > \frac{2}{3}$

\_\_\_\_\_

**Write using symbols.**

5. Eighteen-halves is equal to nine. \_\_\_\_\_

6. 5.17 is greater than the square root of twenty-three.

\_\_\_\_\_

7. Two-thirds is less than pi. \_\_\_\_\_

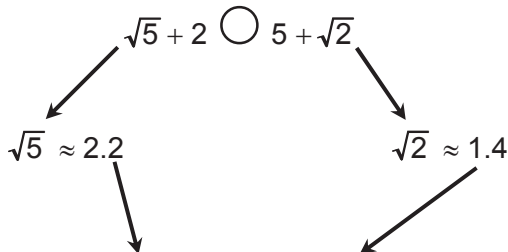
**LESSON**  
**1-3**

# Ordering Real Numbers

## Success for English Learners

### Problem 1

Compare. Write  $<$ ,  $>$ , or  $=$ .



Find approximate values for  $\sqrt{5}$  and  $\sqrt{2}$ . Use a calculator.

Substitute.  $2.2 + 2 \bigcirc 5 + 1.4$

Add.  $4.2 \bigcirc 6.4$

$4.2 < 6.4$ , so  $\sqrt{5} + 2 < 5 + \sqrt{2}$ .

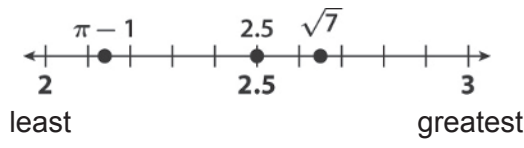
### Problem 2

Order  $\sqrt{7}$ ,  $\pi - 1$ , and 2.5 from least to greatest.

Find approximate values for  $\sqrt{7}$  and  $\pi - 1$ .

$$\begin{aligned} \sqrt{7} &\approx 2.65 & \pi - 1 &\approx 3.14 - 1 \\ & & &\approx 2.14 \end{aligned}$$

Plot the three values on a number line.



From least to greatest, the numbers are  $\pi - 1$ , 2.5, and  $\sqrt{7}$

1. Compare. Write  $<$ ,  $>$ , or  $=$ .  
 $\sqrt{13} + 8 \bigcirc \sqrt{8} + 13$
2. Order  $\sqrt{19}$ ,  $\pi + 1$ , and 4.4 from least to greatest. \_\_\_\_\_
3. Name a situation in which it would be very important to know the order of a series of numbers.

**LESSON**  
**1-3**

**Ordering Real Numbers**

*Practice and Problem Solving: D*

**Compare. Write  $<$ ,  $>$ , or  $=$ . The first one is done for you.**

1.  $\sqrt{2} + 1 < \sqrt{2} + 8$

2.  $\sqrt{2} + 5 \bigcirc \sqrt{2} + 3$

3.  $\sqrt{3} + 5 \bigcirc 5 + \sqrt{6}$

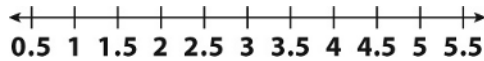
4.  $8 + \sqrt{2} \bigcirc \sqrt{8} + 2$

5.  $3 + \sqrt{3} \bigcirc \sqrt{7} - 3$

6.  $5 - \sqrt{3} \bigcirc -\sqrt{3} + 5$

**Graph the numbers on the number line. Then order them from least to greatest.**

7.  $\sqrt{2}$ ,  $\pi$ , 4.5



From least to greatest, the numbers are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

**Order the numbers from least to greatest. The first one is done for you.**

8.  $2, \frac{\sqrt{2}}{2}, -10$

9.  $7, \pi, \sqrt{3}$

$-10, \frac{\sqrt{2}}{2}, 2$

10.  $\sqrt{8}, -4, 1.5$

11.  $\sqrt{6}, -5.5, \frac{3}{2}$

**Solve.**

12. Four people have measured the height of a wall using different methods. Their results are shown in the table. Order their measurements from least to greatest.

Wall Height (m)			
Allie	Byron	Justin	Rosa
$\sqrt{8}$	$\frac{5}{2}$	2.6	$1 + \sqrt{3}$

**LESSON**  
**2-1**

# Integer Exponents

## Reteach

A positive exponent tells you how many times to multiply the base as a factor. A negative exponent tells you how many times to divide by the base. Any number to the 0 power is equal to 1.

$$4^2 = 4 \cdot 4 = 16$$

$$4^5 = 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 1024$$

$$a^3 = a \cdot a \cdot a$$

$$4^{-2} = \frac{1}{4^2} = \frac{1}{4 \cdot 4} = \frac{1}{16}$$

$$4^{-5} = \frac{1}{4^5} = \frac{1}{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4} = \frac{1}{1024}$$

$$a^{-3} = \frac{1}{a^3} = \frac{1}{a \cdot a \cdot a}$$

When you work with integers, certain properties are always true. With integer exponents, there are also certain properties that are always true.

When the bases are the same and you multiply, you add exponents.

$$\begin{array}{l} 2^2 \cdot 2^4 = 2^{2+4} \\ \underbrace{2 \cdot 2} \cdot \underbrace{2 \cdot 2 \cdot 2 \cdot 2} = 2^6 \end{array}$$

$$a^m \cdot a^n = a^{m+n}$$

When the bases are the same and you divide, you subtract exponents.

$$\begin{array}{l} \frac{2^5}{2^3} = 2^{5-3} \\ \frac{2 \cdot 2 \cdot \cancel{2} \cdot \cancel{2} \cdot \cancel{2}}{\cancel{2} \cdot \cancel{2} \cdot \cancel{2}} = 2^2 \end{array}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

When you raise a power to a power, you multiply.

$$\begin{array}{l} (2^3)^2 = 2^{3 \cdot 2} \\ (2 \cdot 2 \cdot 2)^2 \\ (2 \cdot 2 \cdot 2) \cdot (2 \cdot 2 \cdot 2) = 2^6 \end{array}$$

$$(a^m)^n = a^{m \cdot n}$$

**Tell whether you will add, subtract, or multiply the exponents. Then simplify by finding the value of the expression.**

1.  $\frac{3^6}{3^3} \rightarrow$  \_\_\_\_\_

2.  $8^2 \cdot 8^{-3} \rightarrow$  \_\_\_\_\_

3.  $(3^2)^3 \rightarrow$  \_\_\_\_\_

4.  $5^3 \cdot 5^1 \rightarrow$  \_\_\_\_\_

5.  $\frac{4^2}{4^4} \rightarrow$  \_\_\_\_\_

6.  $(6^2)^2 \rightarrow$  \_\_\_\_\_

**LESSON**  
**2-1**

# Integer Exponents

## Reading Strategies: Using Patterns

You can use patterns to help evaluate powers.

Look at the patterns in each column. As you move down the column, you will note that the products are getting smaller. That is because there is one less factor when the powers are positive and one more factor when the powers are negative.

Column 1	Column 2	Column 3
$2^3 = 8$	$3^3 = 27$	$4^3 = 64$
$2^2 = 4$	$3^2 = 9$	$4^2 = 16$
$2^1 = 2$	$3^1 = 3$	$4^1 = 4$
$2^0 = 1$	$3^0 = 1$	$4^0 = 1$
$2^{-1} = \frac{1}{2}$	$3^{-1} = \frac{1}{3}$	$4^{-1} = \frac{1}{4}$
$2^{-2} = \frac{1}{4}$	$3^{-2} = \frac{1}{9}$	$4^{-2} = \frac{1}{16}$

Use the table to answer each question.

- Describe the pattern of the exponents in each column.

\_\_\_\_\_

- What is the base of column 2? \_\_\_\_\_
- In column 2, what is the product divided by each time to get the product in the cell below? \_\_\_\_\_
- What is the base of column 3? \_\_\_\_\_
- In column 3, what is the product divided by each time to get the product in the cell below? \_\_\_\_\_

Complete the table, using the table above as a guide.

6.

Column 1	Column 2	Column 3
$5^3 = 125$	$6^3 = 216$	$10^3 = 1000$
$5^2 = 25$	$6^2 = 36$	$10^2 = 100$

**LESSON**  
**2-1**

# Integer Exponents

## Success for English Learners

The set of integers is the set of whole numbers and their opposites, such as 3, 2, 1, 0, -1, -2, and -3. Integer exponents are powers of a number where the power is a whole number or its opposite.

### Problem 1

$$4^2 = 4 \cdot 4 = 16$$

$$4^5 = 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 1024$$

$$a^3 = a \cdot a \cdot a$$

$$4^{-2} = \frac{1}{4^2} = \frac{1}{4 \cdot 4} = \frac{1}{16}$$

$$4^{-5} = \frac{1}{4^5} = \frac{1}{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4} = \frac{1}{1024}$$

$$a^{-3} = \frac{1}{a^3} = \frac{1}{a \cdot a \cdot a}$$

### Problem 2

When you work with integers, certain properties are always true. With integer exponents, there are also certain properties that are always true.

Use properties of exponents to simplify each expression.

$$\underbrace{2^2 \cdot 2^4}_{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2} = 2^{2+4} = 2^6$$

$$a^m \cdot a^n = a^{m+n}$$

$$\frac{2^5}{2^3} = 2^{5-3}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$\frac{2 \cdot 2 \cdot \cancel{2} \cdot \cancel{2} \cdot \cancel{2}}{\cancel{2} \cdot \cancel{2} \cdot \cancel{2}} = 2^2$$

$$(2^3)^2 = 2^{3 \cdot 2}$$

$$(a^m)^n = a^{m \cdot n}$$

$$(2 \cdot 2 \cdot 2)^2$$

$$(2 \cdot 2 \cdot 2) \cdot (2 \cdot 2 \cdot 2) = 2^6$$

**Complete.**

1. Explain in your own words what a negative exponent means.

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Use properties of exponents to simplify each expression.

2.  $\frac{3^6}{3^4} =$  \_\_\_\_\_

3.  $4^2 \cdot 4^1 =$  \_\_\_\_\_

4.  $(x^5)^4 =$  \_\_\_\_\_

5.  $(4^2)^3 =$  \_\_\_\_\_

6.  $12^3 \cdot 12^{-2} =$  \_\_\_\_\_

7.  $z^6 \cdot z^6 =$  \_\_\_\_\_

## LESSON

## 2-1

**Integer Exponents****Practice and Problem Solving: D**

Write each expression without exponents. Then find the value. The first one is done for you.

$$1. 4^{-4} = \frac{1}{4 \times 4 \times 4 \times 4} = \frac{1}{256}$$

$$2. 6^2 = \underline{\hspace{2cm}}$$

$$3. 3^5 = \underline{\hspace{2cm}}$$

$$4. 24^0 = \underline{\hspace{2cm}}$$

$$5. 7^{-2} = \underline{\hspace{2cm}}$$

$$6. 10^5 = \underline{\hspace{2cm}}$$

Simplify each expression. Show your work. The first is done for you.

$$7. \frac{(3 \cdot 2)^6}{(7-1)^4} = \frac{6^6}{6^4} = \frac{6^6}{6^4}$$

$$= 6^{6-4} = 6^2$$

$$= 36$$

$$8. (3)^2 \cdot (3^1)$$

$$9. 4^2 \cdot 4^3$$

$$10. (4^2)^3$$

$$11. (4-3)^2 \cdot (5 \cdot 4)^0$$

$$12. (2+3)^5 \div (5^2)^2$$

Answer the question.

13. Find the value of  $(2^2)^3$ . Then find the value of  $(2^3)^2$ . What is true about the results? Explain why.

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# Magnets

A magnet is a material that produces a magnetic field. A magnetic field is invisible to the human eye but can be seen with iron filings. They are attracted to things made of iron and steel. Materials like glass, plastic, and wood are not attracted to magnets. Each magnet has a north and south pole, and magnets are typically strongest at their poles. Opposite poles attract, and like poles repel. Magnets are very useful. We know they can be used to attract metal objects, but there are many other uses of magnets. They can be used to make electric motors and generators. Telephones, doorbells, and computers all use electromagnets. Magnets are also used in compasses. Some people are surprised to find that magnets are used for the black strip on top of credit cards.

## Magnets

Answer each question in a complete sentence. Underline or highlight where you located the answer in the text.

1. What are magnets attracted to? \_\_\_\_\_

\_\_\_\_\_

2. Where are magnets the strongest? \_\_\_\_\_

\_\_\_\_\_

3. What some items magnets not attracted to? \_\_\_\_\_

\_\_\_\_\_

4. What are some uses of magnets? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Using the information in the passage draw and label the poles of two magnets that are connected to each other.

Name \_\_\_\_\_

Date \_\_\_\_\_

# M A G N E T I S

P	T	T	O	Y	E	S	C	R	L	H	E	T
A	T	A	E	H	R	C	M	O	A	T	O	E
P	M	N	T	N	T	A	R	P	C	R	E	N
I	O	U	E	N	T	G	U	R	P	O	N	G
N	R	L	E	N	R	A	A	O	P	P	N	O
N	T	O	E	N	I	A	A	M	S	P	E	T
A	I	T	N	S	M	A	M	C	I	E	M	S
U	I	C	P	P	S	U	R	T	R	M	E	R
C	A	I	K	R	M	D	L	E	I	F	D	T
E	L	D	E	R	N	S	S	A	P	M	O	C
P	C	C	O	B	A	L	T	E	N	C	L	L
T	C	C	E	I	O	P	E	N	C	O	R	L
T	E	E	A	U	G	O	P	E	M	R	A	L

Copper

Attract

Nickel

Magnetic

South

Magnet

Repel

Cobalt

Field

Iron

Lodestone

Opposite



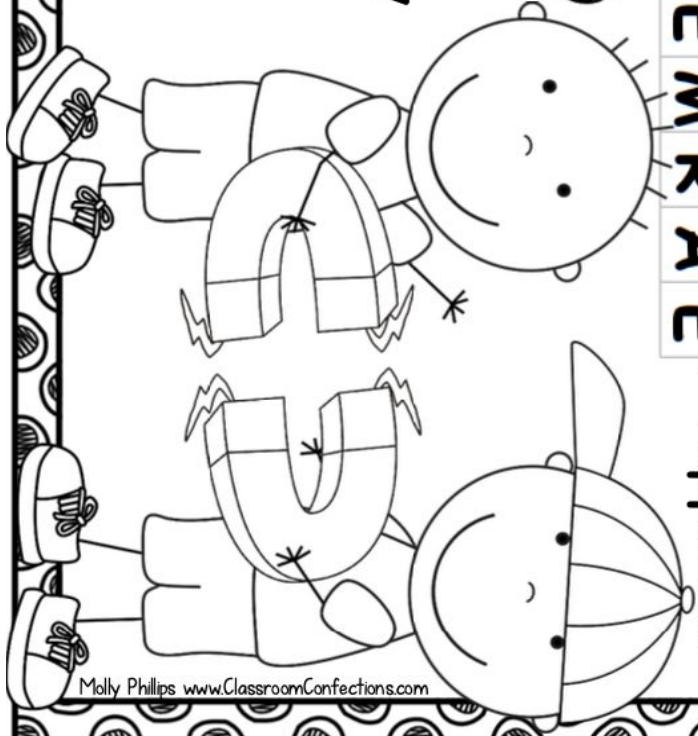
Poles       Aluminum

North       Temporary

Compass Needle

Electromagnet

Permanent



# Animal Adaptations

An animal adaptation is something special about an animal that helps the animal survive. It helps the animal do everything it needs to do. Animal adaptations can be physical, which describes the animal's body. The adaptations can also be behavioral, which is how an animal does things in its daily life. Camouflage is one type of adaptation. It helps an animal blend in to its environment. Snowy Owls use this type of adaptation to blend into the snow around them. Another adaptation is hibernation. That is when an animal sleeps or rests through most of the winter months. Some bats hibernate throughout the winter. Migration is another type of adaptation. When animals migrate, they move from one place to another in order to survive. The Monarch butterfly migrates to Mexico each year.

## Animal Adaptations

Answer each question in a complete sentence. Underline or highlight where you located the answer in the text.

1. What is an adaptation? \_\_\_\_\_

\_\_\_\_\_

2. What animal uses camouflage? \_\_\_\_\_

\_\_\_\_\_

3. What is migration? \_\_\_\_\_

\_\_\_\_\_

4. What is hibernation? \_\_\_\_\_

\_\_\_\_\_

5. In a paragraph share how migration and hibernation are similar and different.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Name \_\_\_\_\_

Date \_\_\_\_\_

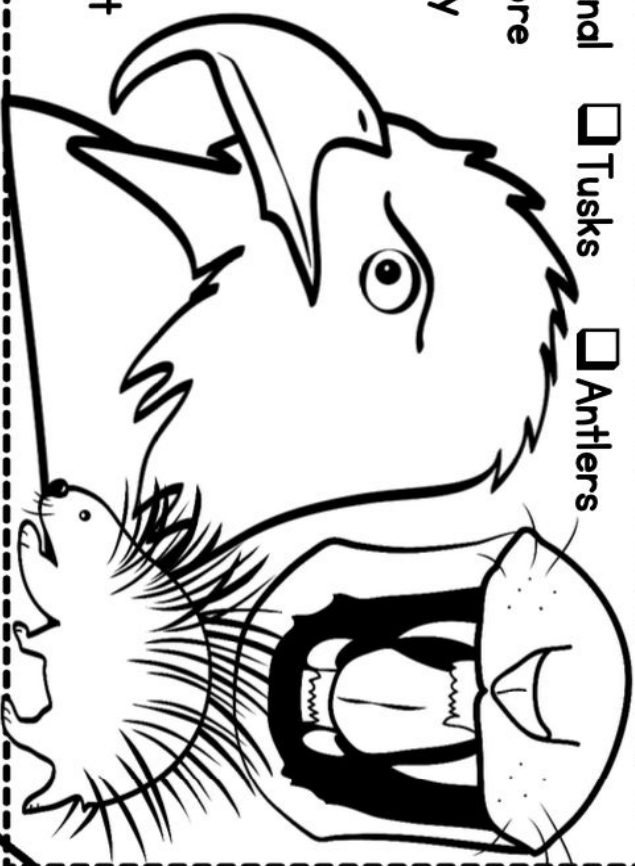
# ANIMAL ADAPTATIONS

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

- Survive
- Physical
- Behavioral
- Whiskers
- Claws
- Teeth
- Wings
- Beaks
- Hooves
- Scales
- Fur
- Feathers
- Paws
- Smell
- Eyes

Molly Phillips www.ClassroomConfections.com

- Fins
- Hibernates
- Webbed
- Carnivore
- Camouflage
- Waterproof
- Tail
- Snout
- Mimicry
- Nocturnal
- Omnivore
- Solitary
- Social
- Howl
- Molars
- Ears
- Instinct
- Spikes
- Tusks
- Antlers



# Heat

We can see and feel examples of heat all around us. We can feel heat when we go outside in the sunshine. The Sun is the most important source of heat on earth, and nearly all-living things rely on the Sun in order to survive. Heat energy from the sun is called solar energy.

There are many different ways heat is produced. One way to produce heat is through a chemical reaction, such as burning. A fuel is something that can be burned for heat and energy. Wood, coal, oil, and gas are all examples of fuels. Our bodies produce heat through a chemical reaction in the digestive system. Friction is another source of heat. When two things rub together, they create friction. You can feel this type of heat when you rub your hands together or rub a piece of sandpaper on wood. The inside of the earth also produces heat, which results in volcanoes and geysers. Heat is frequently produced through electricity.

# Heat

Answer each question in a complete sentence. Underline or highlight where you located the answer in the text.

1. What do we call heat energy from the sun?
2. What is an example of a chemical reaction?
3. How is friction produced?
4. Where does the heat from volcanoes come from?
5. In a paragraph describe why solar energy is the most important source of heat on Earth.

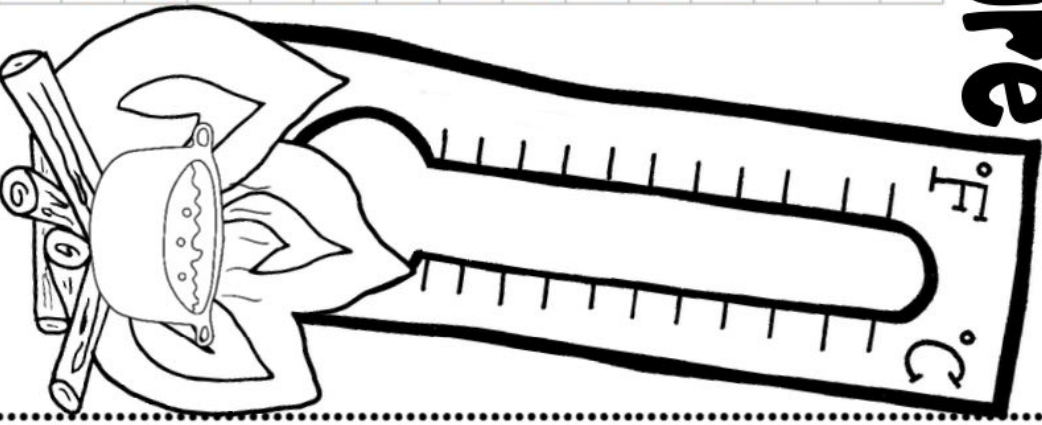


Name \_\_\_\_\_

Date \_\_\_\_\_

# Heat & Temperature

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



Heat

Produce

Thermometer

Molecules

Measure

Hot

Cold

Conduction

Convection

Radiation

Insulator

Friction

Rub

Mixing

Cook

Stove

Potholder

Metals

Transfer

Plastic

Wood

Temperature

Expansion

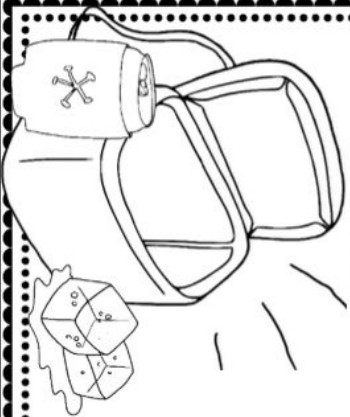
Contraction

Sun

Solid

Liquid

Gas



## Using and Verifying Word Meanings

### Learning the Skill

As you read, you often will come across unfamiliar words. You can often look up words in a dictionary to figure out what they mean. What if you do not have a dictionary handy? There are ways for you to determine on your own the definition of an unfamiliar word. When you see a word you do not know, use the following techniques:

- Use context clues to determine meaning. Think about how the word is being used in the sentence. What is being discussed in the lines before and after the unfamiliar word?
- Think of a different word or phrase you might use in place of the unfamiliar one. Does the new word or phrase make sense in the sentence?
- Look for root words, prefixes, and suffixes in the unfamiliar word to help you determine its meaning. For example, *cycl-* is a root word meaning "circle" or "wheel." *Uni-* is a prefix meaning "one." Put together, the words form *unicycle*, or a vehicle that has one wheel.

### Practicing the Skill

George Mason was a delegate to the Constitutional Convention held in Philadelphia in 1787. He wrote the following comments just before the convention began.

**Directions:** Read the excerpt below, and then answer the following questions.

Upon our arrival here on Thursday evening, seventeenth May, I found only the States of Virginia and Pennsylvania fully represented; and there are at this time only five—New York, the two Carolinas, and the two before mentioned. All the States, Rhode Island *excepted*, have made their appointments; but the members drop in slowly; some of the deputies from the Eastern States are here, but none of them have yet a *sufficient* representation, and it will probably be several days before the Convention will be authorized to proceed to business. The expectations and hopes of all the Union center in this Convention. God grant that we may be able to concert effectual means of preserving our country from the evils which threaten us.

The Virginia deputies (who are all here) meet and *confer* together two or three hours every day, in order to form a proper *correspondence* of sentiments; and for form's sake, to see what new deputies are arrived,

## Using and Verifying Word Meanings

and to grow into some *acquaintance* with each other, we regularly meet every day at three o'clock. These and some occasional conversations with the deputies of different States, and with some of the general officers of the late army, are the only opportunities I have *hitherto* had of forming any opinion upon the great subject of our mission, and, consequently, a very imperfect and *indecisive* one. Yet, upon the great principles of it, I have reason to hope there will be greater *unanimity* and less opposition, except from the little States, than was at first *apprehended*. The most prevalent idea in the principal States seems to be a total alteration of the present federal system, and substituting a great national council or parliament, consisting of two branches of the legislature, founded upon the principles of equal *proportionate* representation, with full legislative powers upon all the subjects of the Union; and an executive: and to make the several State legislatures *subordinate* to the national, by giving the latter the power of a negative upon all such laws as they shall judge contrary to the interest of the federal Union. It is easy to *foresee* that there will be much difficulty in organizing a government upon this great scale, and at the same time reserving to the State legislatures a sufficient portion of power for promoting and securing the *prosperity* and happiness of their respective citizens; yet with a proper degree of coolness, liberality and *candor* (very rare commodities by the bye), I doubt not but it may be *effected*. There are among a variety some very eccentric opinions upon this great subject; and what is a very *extraordinary* phenomenon, we are likely to find the republicans, on this occasion, issue from the Southern and Middle States, and the anti-republican from the Eastern; however extraordinary this may at first seem, it may, I think be accounted for from a very common and natural impulse of the human mind. Men disappointed in expectations too hastily and *sanguinely* formed, tired and disgusted with the unexpected evils they have experienced, and anxious to remove them as far as possible, are very *apt* to run into the opposite extreme; and the people of the Eastern States, setting out with more republican principles, have consequently been more disappointed than we have been.

Source: *Eyewitness to History*. Edited by David Colbert. New York: Vintage Books, 1998.



## Using and Verifying Word Meanings

1. Which bold word from the article do you think means *talk* or *discuss*? How did you determine this?

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2. Find the word *extraordinary* in the article. Define it and tell how you determined its meaning.

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### Applying the Skill

**Directions:** Next to the words below, write the bold word from the article that you think best fits the definition.

1. unable to make up one's mind \_\_\_\_\_
2. predict \_\_\_\_\_
3. until now \_\_\_\_\_
4. adequate \_\_\_\_\_

**Directions:** Next to the words below, write a definition for the bold word from the article. (*Hint:* Find the word in the article and read the lines in which it appears.)

5. prosperity \_\_\_\_\_
6. acquaintance \_\_\_\_\_
7. excepted \_\_\_\_\_
8. apt \_\_\_\_\_

## Using and Verifying Word Meanings

**Directions:** Read and answer the following questions.

9. Which word shown in bold do you think probably means "agreement"? How did you determine this?

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10. Find the word *subordinate* in the story. Define it and tell how you determined its meaning.

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# George Washington

George Washington is best known for his roles as commander of the Continental Army during the American Revolution and as the first president of the United States. However, he played another significant role. He presided over the convention that gave us our Constitution.

When Washington was born in 1732, the United States did not exist. Instead, 13 colonies under British rule stretched along the eastern coast of North America. Washington was from Virginia, one of the most important of these colonies.

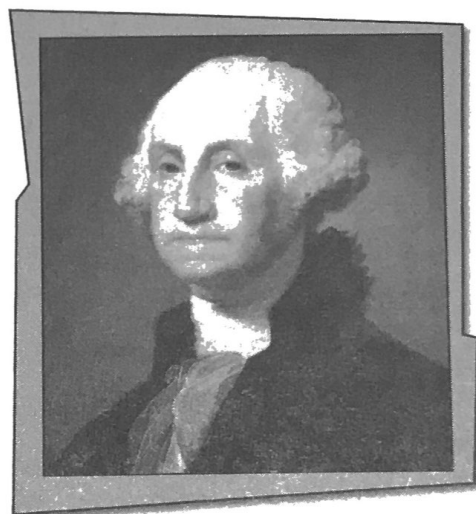
In his early years, Washington was a surveyor and an army officer during the French and Indian War. He served with distinction in the British army during the war. After the war he served in the Virginia House of Burgesses, the colony's governing body.

### **"First in War"**

When war broke out in the spring of 1775, Washington was named commander of the Continental Army. He enjoyed early success, forcing the British to evacuate Boston. However, he lost New York and was forced to retreat. On Christmas night 1776, he captured Trenton but lost several battles the following year. He and his troops spent a harsh winter at Valley Forge. During that time, he received aid from French and Prussian army officers. They helped train his troops to become a fierce fighting force. By 1781 Washington had led the American army to victory, and independence was won.

### **"First in Peace"**

Six years after the war ended, Washington was chosen to preside over the



George Washington

convention in Philadelphia that wrote the Constitution of the United States. He made few direct contributions to the document, but his presence helped stabilize the discussions. Many quarrels erupted during the convention, especially over states' rights. Washington favored a strong central government. However, he was responsive to the states' rights supporters and he helped keep the convention focused on its goals.

### **"First in the Hearts of His Countrymen"**

After the Constitution was approved by a majority of the states, Washington was chosen as the first president of the new nation. He served from 1789 to 1797. During his administration, he tried to maintain a balance between states' rights and the federal government. He also kept the United States out of the conflict between England and France. When he left office, he warned the nation to "steer clear" of foreign alliances. He died in 1799.

# George Washington

**Directions:** Answer the questions below.

1. Name three important roles that Washington played in the early history of this country.

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2. From which two nations did Washington receive military aid during the winter at Valley Forge?

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3. What type of government did Washington favor at the Constitutional Convention?

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4. Between which two factions did Washington try to maintain a balance during his presidential administration?

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5. **Drawing Conclusions** Why do you suppose Washington cautioned the United States to “steer clear” of foreign alliances?

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“I look up. There she is, in her favorite church outfit, standing in front of the class.”

NOTES



## FIRST READ

- 1 “Be nice to Mom today,” my dad tells me, setting my sack lunch on the counter. It’s not even 7:30 am on Monday and already I’m wishing the week were over. How will I possibly survive a week with my mother as my substitute teacher? “Make her feel welcome,” my dad continues. “Remember what school felt like on *your* first day?”
- 2 Just then my mother enters the kitchen. As she **flutters** between the coffee pot and the refrigerator, she looks as nervous as the hummingbird that **hovers** outside the window. To my horror, she is dressed in one of her church outfits: a green silk dress with beige pumps. I am about to tell her she is way too **dressy** for school, when I remember my father’s words.
- 3 None of this would be happening if Pepe hadn’t been born. For years, Mom had a job teaching science at a private school in town, but she quit toward the end of her pregnancy. She’s pretty much been home with Pepe ever since. If I were her, I’d want to get out of the house, too. Don’t get me wrong, Pepe is cute and everything, but he cries a lot, and it’s a safe bet there’s something wet on his body at all times.
- 4 Lucky for me, my best friend Katie and I have science class together. We get there early and sit in the back. As the class fills up around us, I **slump** low in my seat and doodle in my notebook, keeping my head down. As the minutes tick by, my worries increase. What if people laugh at her? What if they laugh at me because she’s my mom? Suddenly, everybody gets quiet.
- 5 I look up. There she is, in her favorite church outfit, standing in front of the class. For a moment, I think she is going to single me out, but she just gives me a little, knowing smile and starts her lesson.

To my surprise, Mom does a good job. She even makes the class laugh a few times. But still I keep my eyes on the clock, praying for the hands to move faster.

Finally the bell rings. Katie and I jump up. We are almost out the door when I hear her.

"Yvette," she says. She's holding my sack lunch. "You forgot your lunch."

"Thanks," I mumble. I take it from her without meeting her eyes.

"Love you," says Mom, just like she often does, only this time it's in front of my classmates. Everybody freezes. I feel my cheeks start to burn. I'm so **humiliated**, all I can do is turn and bury my face in Katie's shoulder. To my relief, the kids around me start to laugh, and so I laugh, too. But then, almost by accident, I see the sad expression on my mother's face. Her disappointment hits like a **tidal wave**. I don't know what to call this new feeling, but I know I'll be left thinking about it for a long time.





# USING LANGUAGE

CA-CCSS: ELD.PI.8.6.c.Ex, ELD.PI.8.12.b.Ex

Read each word. Complete each row by filling in the correct root or affix meaning in the second column and definition in the third column.

Root/Affix Meaning Options		Definition Options
<i>priv-</i> meaning "separate"	<i>qui-</i> meaning "rest"	separate from others; being alone
<i>super-</i> meaning "above, over"	<i>sci-</i> meaning "know"	resting one's lips; not talking
<i>viv-</i> meaning "live"	<i>-ence</i> meaning "the state of having"	to live through or overcome something
		knowledge about the natural world

Word	Root/Affix Meaning	Definition
survive		
private		
science		
quiet		





# REREAD

Reread paragraphs 1–3 of "Mom's First Day." After you reread, complete the Using Language and Meaningful Interactions activities.



## USING LANGUAGE CA-CCSS: ELD.PII.8.1.Ex

Complete the chart by arranging the events from the story into chronological order, starting with what happens first and ending with what happens last.

### Event Options

Mom quits her job.

Mom becomes a substitute teacher at Yvette's school.

Mom stays home with Pepe.

Mom teaches at a private school.

First

Next

Then

Last

First	Next	Then	Last





# MEANINGFUL INTERACTIONS CA-CCSS: ELD.PI.8.1.Ex

Based on what you have read in "Mom's First Day," describe the conflict between Yvette and her mother. What happened? How do the characters feel about it? Whose fault is it? In small groups, identify and paraphrase details from the text about the events and feelings that led to the conflict. Use the writing frames to support your discussion. Then, use the self-assessment rubric to evaluate your participation in the discussion.

- In the story, the main conflict is \_\_\_\_\_.
- In the text, Yvette says " \_\_\_\_\_ " about her mother substitute teaching at her school.  
In other words, Yvette feels \_\_\_\_\_ because \_\_\_\_\_.
- At the end of Yvette's science class, Yvette's mother says " \_\_\_\_\_ " .  
The text says Yvette's reaction is " \_\_\_\_\_ " .  
In other words, Yvette feels \_\_\_\_\_ because her mother \_\_\_\_\_.
- Then the text says Yvette's mother feels " \_\_\_\_\_ " because Yvette " \_\_\_\_\_ " .  
In other words, Yvette's mother feels \_\_\_\_\_ because \_\_\_\_\_.
- I think the conflict is \_\_\_\_\_'s fault because \_\_\_\_\_.



# SELF-ASSESSMENT RUBRIC CA-CCSS: ELD.PI.8.1.Ex

	4 I did this well.	3 I did this pretty well.	2 I did this a little bit.	1 I did not do this.
I identified details in the text that told about the conflict.				
I identified details in the text that told about how the characters feel about the conflict.				
I used my own words to paraphrase details from the text.				
I used details from the text to support my ideas about who is to blame for the conflict.				



## REREAD

Reread paragraphs 4–10 of “Mom’s First Day.” After you reread, complete the Using Language and Meaningful Interactions activities.



## USING LANGUAGE CA-CCSS: ELD.PI.8.8.Ex

Read each sentence from “Mom’s First Day,” and note the figurative language in bold. Then choose the meaning of the figurative language in each sentence.

1. Everybody **freezes**.
  - Everyone stands still.
  - Everyone is covered in ice.
  
2. I’m so humiliated, all I can do is **bury my face** in Katie’s shoulder.
  - Yvette puts her face in a hole.
  - Yvette hides her face.
  
3. Her disappointment hits **like a tidal wave**.
  - Mom has very strong feelings.
  - Mom was hit by a large wave.



## MEANINGFUL INTERACTIONS CA-CCSS: ELD.PI.8.1.Ex

What has Yvette done to make her mother feel unwelcome? What should she have done to make her feel welcome? Work with a partner to practice sharing and discussing your opinion. Use the speaking frames to add relevant information and evidence from the text to support your opinion.

- Yvette made her mother feel unwelcome by ...
- I think this makes her mother feel unwelcome because ...
- My opinion is that Yvette should have ...
- Evidence supporting my opinion is ...
- Do you think that Yvette should have ... ?
- I think you said ...
- I agree / don’t agree because ...

# “A satisfied smile crept across Cassie’s face.”

NOTES



## FIRST READ

- 1 Cassie imagined the taste of caramel apples and the feel of the wind in her hair at the top of the Ferris wheel. She could practically smell the freshly made popcorn and hear the sounds of children’s laughter. Her despair deepened. It was bad enough that she got roped into planting her aunt’s garden. Now she had to do it on the same day as the county fair. It wasn’t fair. The path leading to the fairgrounds ran along her aunt’s property. Cassie’s friends would skip along this path on their way to a world of wonders she could only dream about, and she was certain they’d stop to ridicule her about how she had to work while they had the time of their lives at the fair. The mere thought of it was enough to make her wish she could bury her head in the dirt instead of the flower bulbs she was supposed to plant.
- 2 Cassie took up the **trowel** and started to dig. Bella Stevenson, the most popular girl in class and the person Cassie was dreading the most, **ambled** down the path. She was dragging a red wagon behind her, which was carrying an apple pie.
- 3 Cassie kept digging. A plan was forming in her brain. She remembered reading how Tom Sawyer convinced his friends to whitewash a fence for him. If she played the role perfectly, she could accomplish the same task.
- 4 “It’s too bad you’re stuck here while the rest of us get to have fun at the fair!” Bella called out.
- 5 “Fun? This is more fun than that silly fair. The same food and rides every year! Planting bulbs under the sweet spring sunshine? That’s a **novelty!**”
- 6 “If it’s that much fun, it’s not fair that you keep it all to yourself.”
- 7 A satisfied smile crept across Cassie’s face. Her plan had worked.

8 "I don't know. Aunt Lucy entrusted this job to me. I can't let just anyone do it. Tell you what. I'll trade you a few **bulbs** for some of that pie you made."

9 Bella was planning on entering the pie in the contest at the fair, but she didn't want to miss this chance. She accepted, handing Cassie a slice of pie and taking the trowel in exchange.

10 When Bella had grown tired, Penelope Winters strolled by. Cassie pulled the trick on her—this time trading the trowel for Penelope's sunglasses. By the end of the afternoon, Cassie had Bella's pie, Penelope's sunglasses, Randy's harmonica, Betty's kite, and Clark's bag of marbles.

11 Cassie was amazed at her classmates' **gullibility** and her own good fortune. "Tom Sawyer was right," she thought, "All you have to do to make somebody want something is make it seem hard to get."



## USING LANGUAGE

CA-CCSS: ELD.PI.8.6.c.Ex


Read each quotation and think about the meaning of the word in bold. Then choose the context clue that helped you determine the meaning of the word.

- ... the mere thought of it was enough to make her wish she could bury her head in the dirt instead of the flower **bulbs** she was supposed to plant.
  - flower
  - wish
- Cassie took up the **trowel** and started to dig.
  - took up
  - to dig
- Bella Stevenson, the most popular girl in class and the person Cassie was dreading the most, **ambled** down the path.
  - popular girl
  - down the path
- Cassie pulled the trick on her — this time trading the trowel for Penelope's sunglasses. ... Cassie was amazed at her classmates' **gullibility** and her own good fortune.
  - good fortune
  - pulled the trick



# REREAD

Reread paragraphs 1–3 of "It's Not Fair." After you reread, complete the Using Language and Meaningful Interactions activities.



## USING LANGUAGE CA-CCSS: ELD.PI.8.8.Ex

Read the first draft of each sentence from the text and note the bold word or phrase. Then read the final draft of the text and consider the change the author made in bold. Then complete the chart by choosing the correct option for how the author's word choice helps readers understand.

Helps readers understand... Options		
how Cassie feels about Bella	how much fun Cassie's friends had	how strongly Cassie feels
how great the fair is	how carefree the other children are	

First Draft	Final Draft	Helps readers understand...
Her <b>sadness</b> deepened.	Her <b>despair</b> deepened.	
Cassie's friends would <b>walk</b> along this path on their way to the fair...	Cassie's friends would <b>skip</b> along this path on their way to a world of wonders she could only dream about...	
Cassie's friends would travel along this path on their way to <b>the fair</b> ...	Cassie's friends would skip along this path on their way to <b>a world of wonders she could only dream about</b> ...	
... she was certain they'd stop to ridicule her about how she had to work while they had <b>fun</b> at the fair...	...she was certain they'd stop to ridicule her about how she had to work while they had <b>the time of their lives</b> at the fair...	
Bella Stevenson, <b>a girl from Cassie's class</b> , ambled down the path.	Bella Stevenson, <b>the most popular girl in class and the person Cassie was dreading the most</b> , ambled down the path.	



## MEANINGFUL INTERACTIONS CA-CCSS: ELD.PI.8.1.Ex

Based on what you have read in "It's Not Fair," what do you think the conflict suggests about human nature? Would you try to resolve the conflict in the same way as Cassie? Why or why not? Work in small groups to practice sharing and discussing your opinions, using the speaking frames. Then, use the self-assessment rubric to evaluate your participation in the discussion.

- I would / would not resolve the conflict in the same way as Cassie because ...
- In my opinion, the conflict shows that humans are ... because ...
- I think ... said that ...
- I agree / don't agree with ... that ...



## SELF-ASSESSMENT RUBRIC CA-CCSS: ELD.PI.8.1.Ex

	4 I did this well.	3 I did this pretty well.	2 I did this a little bit.	1 I did not do this.
I expressed my opinion clearly.				
I listened carefully to others' opinions.				
I spoke respectfully when disagreeing with others.				
I was courteous when persuading others to share my view.				



# REREAD

Reread paragraphs 4–11 of “It’s Not Fair.” After you reread, complete the Using Language and Meaningful Interactions activities.



## USING LANGUAGE CA-CCSS: ELD.PII.8.4.Ex

Complete the sentences by filling in the blanks.

1. Find the sentence in paragraph 5 that shows a comparison Cassie makes.

This is more fun than that \_\_\_\_\_.

2. Find the sentence in paragraph 5 that shows what Cassie pretends to think about the fair.

The \_\_\_\_\_ and \_\_\_\_\_ every year!

3. Find the sentence in paragraph 7 that shows how Cassie reacts when Bella falls for her trick.

A \_\_\_\_\_ crept across Cassie’s face.

4. Find the sentence in paragraph 8 that shows what Cassie wants to trade.

I’ll trade you a \_\_\_\_\_ for some of \_\_\_\_\_ you made.

5. Find the sentence in paragraph 10 that shows what Cassie is doing to her friends.

Cassie pulled \_\_\_\_\_ on her—this time trading the trowel for Penelope’s sunglasses.

6. Find the sentence in paragraph 11 that shows what Cassie thinks about her classmates and the results of her plan.

Cassie was amazed at her \_\_\_\_\_ and her own \_\_\_\_\_.





# MEANINGFUL INTERACTIONS

CA-CCSS:ELD.PI.8.1Ex

What do you think of Cassie and the way she treats her classmates? What evidence from the text supports your opinion? Work with a partner to practice sharing and discussing your opinions, using the writing and speaking frames.

- My opinion is that the way Cassie treats her classmates is \_\_\_\_\_  
because \_\_\_\_\_
- The evidence I used to form my opinion is \_\_\_\_\_
- I think you said that . . . , but the text says . . .
- Why do you think that . . . ?
- I agree / disagree with your opinion because . . .