### **Compare Fractions and Decimals**



# For 1–2, identify the points on the number line. Then write the greater number.



#### Locate each number on a number line. Then complete the sentence.

**3.** 1<sup>3</sup>/<sub>5</sub>, 1.85, 1.1

The number with the greatest value is \_\_\_\_\_.

Lesson 2 Reteach

### **Order Fractions and Decimals**

You can use a number line to help you order decimals, fractions, and mixed numbers.

In one day, a bakery sells 5.2 apple pies,  $4\frac{3}{5}$  cherry pies,  $5\frac{1}{3}$  blueberry pies, and 5.45 pumpkin pies. Order the number of pies the bakery sells from least to greatest.

Step 1 Draw a number line. Locate some benchmarks on the number line.

Benchmark decimals: 4, 4.25, 4.5, 4.75, 5, 5.25, 5.5, ...

Benchmark mixed numbers: 4,  $4\frac{1}{4}$ ,  $4\frac{1}{2}$ ,  $4\frac{3}{4}$ , 5,  $5\frac{1}{4}$ ,  $5\frac{1}{2}$ , . . .

**Step 2** Locate 5.2,  $4\frac{3}{5}$ ,  $5\frac{1}{3}$ , and 5.45 on the number line.



Step 3 Order the fractions and decimals.

**Remember**: The point farthest to the left is the least value. The point farthest to the right is the greatest value.

So, the number of pies the bakery sells from least to greatest is  $4\frac{3}{5}$ , 5.2,  $5\frac{1}{3}$ , and 5.45.

For 1–2, locate each set of numbers on a number line. Then write the numbers in order from least to greatest.

**1.** 2.32, 
$$2\frac{3}{4}$$
, 2.16,  $2\frac{3}{10}$  **2.**  $\frac{4}{7}$ , 0.4,  $\frac{1}{4}$ , 0.28

٦

### **Factor Trees**

You can use a <b>factor tree</b> to show the factors of a number that are all prime numbers. Remember a prime number must be greater than 1, and have only 1 and itself as factors.							
Use a factor tree to find the prime number factors that have a product of 18.							
Step 1 Draw two branches below 18.							
Step 2 Choose any two factors of 18. Try $6 \times 3$ . Write the factors under the branches. Include the multiplication sign.6 $\times 3$							
Step 3 Check if 6 and 3 are prime numbers. Think: $6 = 2 \times 3$ and $3 = 3 \times 1$ . Draw branches below 6 and write the factors. Since 3 has only 1 and itself as factors, do not draw any branches below 3.							
<b>Step 4</b> Check if 2 and 3 are prime numbers. <b>Think:</b> $2 = 2 \times 1$ and $3 = 3 \times 1$ . Each factor has only 1 and itself as a factor. Do not draw any more branches.							
Write the factors from least to greatest. Use each factor that has only 1 and itself as a factor.							
So, $18 = 2 \times 3 \times 3$							

### Use a factor tree to find the prime number factors.



### **Model Percent**

**Percent** means "per hundred" or "out of 100." For example, 40 percent means 40 out of 100. You can write 40 percent as 40%.

You can use a decimal model like the one below to represent percents. The model has 100 squares. Each small square represents 1%. All 100 squares represent 100%.



#### Use the model to write the percent.

How many whole rows and single squares are shaded? rows: 4 single squares: 3What percent is shaded? 4 rows:  $4 \times 10 = 40$  single squares:  $3 \times 1 = 3$ Total: 40 + 3 = 43 out of 100 squares, or 43% is shaded.

**GRR4** 

#### Shade the grid to show the percent.

1. 16 percent

**3.** 45%

						$\square$
					_	
	-	-	-		-	$\square$

**2.** 83%

4. 97 percent

Lesson 5 Reteach

### **Relate Decimals and Percents**



#### Use the model. Complete each statement.

- **1a.** 0.89 = \_\_\_\_\_ out of 100
- **1b.** How many squares are shaded?
- 1c. What percent is shaded? \_\_\_\_\_

#### Write the percents as decimals.

**2.** 67%



**3.** 14%

Lesson 6 Reteach

### Fractions, Decimals, and Percents



#### Write a decimal, a percent, or a simplified fraction.

**1.**  $\frac{1}{5}$  as a decimal

- **2.**  $\frac{7}{10}$  as a percent
- 3. 60% as a fraction

### **Divide Fractions by a Whole Number**



Use the model to find the quotient. Write the quotient in simplest form.



Na	me
----	----

Lesson 8 Reteach

### **Ratios**

A ratio compares two numbers.						
Shawna is decorating a picture frame by repeating the tile pattern shown below.						
What is the ratio of triangles to circles?						
Step 1 Count the number of triangles and circles.						
triangles: <u>4</u>						
circles: <u>3</u>						
Step 2 Use the numbers to write a ratio of triangles to circles. 4 to 3						
So, the ratio of triangles to circles is $4 \text{ to } 3$ .						
You can also write this ratio as 4:3 and $\frac{4}{3}$ .						

#### Find the ratio of rectangles to circles.

**1a.** How many rectangles are there?



- **1b.** How many circles are there?
- 1c. What is the ratio of rectangles to circles?

#### Write the ratio.

2. dark circles to white circles



3. total rectangles to light rectangles



GRR8

## **Equivalent Ratios**

Equivalent ratios are equal forms of the same ratio. You can use multiplication or division to write equivalent ratios.						
Write the equivalent ratio.						
4 to 7 = <u>?</u> to 21	8 to 10 = 4 to <u>?</u>					
Step 1 Write the ratios as fractions.	Step 1 Write the ratios as fractions.					
$\frac{4}{7} = \frac{?}{21}$	$\frac{8}{10} = \frac{4}{?}$					
Step 2 Compare the denominators.	Step 2 Compare the numerators.					
$\frac{4}{7} = \frac{?}{21}$ Think: 21 > 7, so multiply.	$\frac{8}{10} = \frac{4}{\mathbf{?}}$ Think: 4 < 8, so divide.					
Step 3 Multiply the numerator and denominator by the same number.	<b>Step 3</b> Divide the numerator and denominator by the same number.					
$\frac{4 \times ?}{7 \times ?} = \frac{?}{21}$ Think: 7 × 3 = 21, so multiply by 3.	$\frac{8 \div ?}{10 \div ?} = \frac{4}{?}$ Think: $8 \div 2 = 4$ , so divide by 2.					
$\frac{4 \times 3}{7 \times 3} = \frac{12}{21}$ So, 4 to 7 is equivalent to 12 to 21.	$\frac{8 \div 2}{10 \div 2} = \frac{4}{5}$					
Write equivalent or not equivalent.						
<b>1.</b> 2 to 3 and 8 to 12	<b>2.</b> 15 to 20 and 3 to 5					
<b>3.</b> 5 to 6 and 25 to 36	<b>4.</b> 18 to 10 and 9 to 5					
Write the equivalent ratio.         5. 28 to 32 = to 8         6. 9 to 8 = 6	63 to <b>7.</b> 13:5 =:15					

Name \_\_\_\_\_

Lesson 10 Reteach

### Rates

A <b>rate</b> is a special kind of ratio. It compares two numbers with different units. A <b>unit rate</b> has a 1 as its second term.						
Find the unit rate of 12 ap	ples in 3 pounds.					
Step 1 Write a rate in fraction	on form. $\frac{12}{3}$					
Step 2 Divide the apples into 3 equal groups. Each group of apples weighs 1 pound.						
Step 3 Show your work by equivalent rate with denominator.	writing an $1$ in the $\frac{12}{3}$	$\frac{\div 3}{\div 3} = \frac{4}{1}$ unit rate				
So, the unit rate is $4$ apples	for <u>1</u> pound.					
You can read this as 4 apple	es per pound.					
Find the unit rate. 1. 20 oranges in 5 pounds	2. 180 miles in 3 hours	<b>3.</b> 140 pages in 7 days				
<b>4.</b> \$100 for 10 hours	<b>5.</b> 400 miles on 20 gallons	6. \$16 for 2 books				
<b>7.</b> \$15 for 5 boxes	8. 225 pages in 5 hours	<b>9.</b> 210 miles in 7 hours				
<b>10.</b> \$7.50 for 3 pounds	<b>11.</b> 84 miles on 7 gallons of gas	<b>12.</b> \$124 for 4 sweaters				

### Distance, Rate, and Time

You can use the formula $d = r \times t$ to solve a problem about distance, rate, or time. In the formula, $d$ stands for distance, $r$ stands for rate (or speed), and $t$ stands for time.						
A car travels 300 miles in 5 hours. What is the car's speed?						
Step 1 Write the formula.	$d = r \times t$					
<b>Step 2</b> Replace the values you know in the formula. distance: $d = 300$ time: $t = 5$	$300 = r \times 5$					
<b>Step 3</b> Use patterns and the inverse operation, division, to solve.	$300 \div 5 = r$ Think: $30 \div 5 = 6$					
So, the car's speed is $60$ miles per hour.	300 ÷ 5 = <b>60</b>					

#### Use the formula $d = r \times t$ to solve. Include the units in your answer.

- **1.** A rower travels 750 feet in 5 minutes. What is the rower's speed?
- 2. A walker travels 3 miles per hour for 4 hours. What distance does the walker travel?
- **3.** A snake travels 60 feet in 10 minutes. What is the snake's speed?
- **4.** A bus travels 15 hours at 60 miles per hour. How far does the bus travel?
- **5.** A cyclist travels at a speed of 7 miles per hour. How long does it take the cyclist to travel 35 miles?
- **6.** A plane travels at an average speed of 300 miles per hour. How long does it take the plane to travel 1,200 miles?

Lesson 12 Reteach

### **Understand Integers**

You can use positive and negative integers to represent real world quantities. You have used a number line to show 0 and the whole numbers greater than 0. You can also use a number line to represent the <i>opposites</i> of whole numbers.						
<b>Opposites</b> are two numbers that are the same distance from 0 on the number line but in opposite directions. For example, 3 and -3 are opposites. The whole numbers, their opposites, and 0 are called <b>integers</b> .	-3 -2 -1 0 +1 +2 +3 negative integers positive integers					
You use a negative sign, $-$ , to represent negative integers. You can use a positive sign, $+$ , or no sign, to represent positive integers.						
The elevation of Mt. Washington is 6,288 feet above sea level. Write an integer to represent the situation. Then, tell what 0 represents.						
Step 1 Decide whether the integer is positive or negative.						
In this example, positive integers represent elevation <u>above</u> sea level. Negative integers represent elevation <u>below</u> sea level. So, the word <u>above</u> tells me that the integer is <b>positive</b> .						
Step 2 Write the integer: <u>+6,288</u> , or <u>6,288</u> .						
So, the elevation of Mt. Washington is						
Step 3 Decide what 0 represents.						
0 represents <u>at sea level</u> .						

#### Write an integer to represent the situation. Then, tell what 0 represents.

	Situation	Integer	What Does 0 Represent?
1.	The helicopter hovered 150 feet above the ground.		
2.	Miriam earned 25 bonus points.		
3.	Pete dove 15 feet into the water.		

### **Algebra • Write and Evaluate Expressions**

An **expression** is a mathematical phrase made up of numbers, variables, and operation symbols. A variable is a symbol that represents one or more numbers. You evaluate an expression by replacing each variable with a number and simplifying. Maura sells handmade soap at the farmers' market for \$4.00 per bar. • Write an expression for how much Maura earns selling bars of soap. Evaluate the expression to determine how much money she will earn if she sells 26 bars of soap. **Step 1** Choose a variable and explain Let s = the number of bars of soap what it stands for. Maura sells. **Step 2** Write a word expression. \$4 earned for each bar of soap sold **Step 3** Replace the word expression  $4 \times s$ with a multiplication expression using s.  $4 \times 26$ Step 4 Replace *s* with 26. Step 5 Multiply to evaluate.  $4 \times 26 = 104$ So, Maura will earn \$104 if she sells 26 bars of soap.

#### Write an expression.

 Jack's dog weighs *p* pounds and his puppy weighs 15 pounds less. How much does the puppy weigh?
 Paul saved *d* dollars. Sally saved \$25 more than Paul saved. How much did Sally save?

#### Evaluate each expression for the value given.

- **3.** n 17 for n = 50 **4.** 27 + t for t = 30
- **5.**  $q \times 15$  for q = 7

**6.** 88 ÷ *p* for p = 4

## Algebra • Understand Inequalities

	In	equality Symbo	ols			
< less than	> greater than	$\leq$ less than or equal to	$\geq$ greater than or equal to	$\neq$ not equal to		
The speed lim not want to ex to represent th	it on a certain ceed the speed le driver's spee	road is 45 mile d limit. Write a ed.	es per hour. A n inequality us	driver does ing a variable		
Step 1 Write th	e inequality in v	words. spe	eed is less than	or equal to 45		
Step 2 Replac	e speed with the	e variable s.	s is less than	or equal to 45		
Step 3 Replace	e less than or e	<i>qual to</i> with $\leq$ .	S ≤	i 45		
So, the inequal speed if he doe limit of 45 miles	ty $s \le 45$ represive to except the solution of the second secon	sents a driver's eed the speed	3			
Of 4, 8, 12, and for <i>f</i> ≥ 8? Graj	l 16, which nur oh the solution	nbers are solu Is on a numbe	itions r line.			
<b>Step 1</b> In $f \ge 8$	, replace f with	4. Repeat the p	process for $f = 3$	8, 12, 16.		
Step 2 Identify	the values that	make $f \ge 8$ tru	ie. $f \ge 8$			
True values are	e solutions: $f = 3$	8, 12, 16	$4 \ge 0$ false $8 \ge 8$ true			
False values a	e not solutions:	$f \neq 4$	$12 \ge 8$ true $16 \ge 8$ true			
Step 3 Graph t	he solutions on	a number line.	Use filled circle	es.		
	4 5 6 7	8 9 10 11	12 13 14 15	- <b>↓→</b> 16		
3, 5, and 8, wh	ich numbers a	are solutions f	or the			
equality k > 5?	Graph the sol	utions on the	number line.			
<ul> <li>Replace K wi</li> </ul>	th 3. True or fa			+ + + +	+ + + +	-+
Doplood kuui	th 5. Irue or fa	lse?	1 1			10
			0 1	2 3 4 5	6789	IC.

Lesson 15 Reteach

### **Polygons on a Coordinate Grid**



# Plot the polygon with the given vertices on a coordinate grid. Identify the polygon.



**2.** (1, 1), (1, 5), (9, 5), (9, 1)



3.

. \_ \_ \_ *\_* \_ 5 cm

15 cm

Lesson 16 Reteach

### Area of a Parallelogram



4.

Area = \_\_\_\_\_



Area =



### Median and Mode

The **median** of a set of data is the middle value when the data are written in order.

If a set of data contains an even number of items, the median is the sum of the two middle terms divided by 2.

The **mode** of a set of data is the data value or values that occur most often. A set of data may have no mode, one mode, or more than one mode.

> 1, 4, 2, 3, 1 0.

In the data set above, 1 is the mode because it occurs the most often.

The list shows the numbers of books 12 students read during summer vacation.

2, 3, 4, 1, 4, 5, 3, 6, 2, 4, 3, 4

What are the median and mode of the data?

**Step 1** Order the numbers from least to greatest.

Step 2 To find the median, circle the middle value. Since there are 12 values, circle the two middle values. Find the sum of the two middle values and divide by 2.

3 + 4 = 7  $7 \div 2 = 3.5$ 

So, the median is 3.5 books.

**Step 3** To find the mode, identify the data value that occurs most often.

4 occurs 4 times. So, the mode is 4 books.

#### Find the median and mode of the data.

9, 7, 9, 8

median:

mode:\_\_\_\_\_

**1.** number of minutes to run 1 mi: 7, 9, 8, **2.** Callie's guiz scores: 95, 87, 93, 100, 87,95

median:

mode:\_\_\_\_\_

### **Finding the Average**

An <b>ave</b> by the t	rage of a set o otal number of	of data is the f data values	sum of the d	ata values c	livided				
For exa The su There a	mple, suppose m of the data v are a total of 5	<ul> <li>you have the set of the set of</li></ul>	ne data set 4, 0 + 24 + 28 So the avera	0, 24, 28, a 3 + 14, or 70 ge is 70 ÷ 5	and 14. D. 5, or 14.				
Severa for cha	l friends are p rity. The table	participating at the right	g in a walk-a <sup>.</sup> t shows the a	-thon amount	Name	Amount of Money Raised (\$)			
of mon	ey each frien	d raised. Wi	erage	Aki	85				
amoun	t of money ra	ised by eac		Stephen	90				
Step 1	Find the total	amount of m	noney the		Lainie	100			
•	friends raised			Janelle	75				
85 + 90	0 + 100 + 75	+ 115 = 46	5		Azumi	115			
Step 2	Determine ho money for the	w many frier walk-a-thor	- nds raised 1.						
Aki	Stephen	Lainie	Janelle	Azumi					
1	2	3	4	5					
A total of <u>5</u> friends raised money.									
Step 3 Divide the total amount of money, <u>465</u> , by the total number of friends, <u>5</u> , who raised the money.									
<u>465</u> ÷ <u></u>	<u>5 = 93</u>								
So, the	So, the average amount of money raised by each friend is \$93.								

# Ana Lisa's runs batted in (RBI) record is shown for this month. What was the average number of runs that Ana Lisa batted in per game?

**1.** Find the total number of runs Ana Lisa batted in.

Game	1	2	3	4	5	6	7	8	9	10
Number of RBIs	3	4	1	0	2	2	2	3	1	2

2. In how many games did Ana Lisa play?

3.	Divide the sum by the number of games.
	What is the average number of runs
	batted in per game?

#### Find the average of the set of numbers.

- **4.** 16, 22, 19, 14, 24 \_\_\_\_\_
- **5.** 40, 36, 51, 36, 29, 18 \_\_\_\_\_

## **Histograms**

A **histogram** is a graph that uses bars to show the number of data values that occur within equal intervals. The table below shows the test scores of the students in Omar's science class.

Science Test Scores												
82	76	92	65	84	80	98	81	89	90	94	78	91
100	74	90	76	95	68	75	83	92	85	85	83	94

Step 1 Make a frequency table, using intervals of 10, and then start a bar graph. Write the intervals on the

Use the data to make a histogram.

	Scores	Tally	Frequency
	61–70		2
,	71–80	I III I	6
1	81–90	I M M	10
	91–100	J#ĭ III	8

**Science Test Scores** 

61-70 71-80 81-90 91-100

Scores

12

Number of Students

2

0



horizontal axis of the graph and label the axis.

**Step 4** Give the histogram a title.

#### For 1–2, use the data below.

The ages of the children in a swim club are given below.

6, 8, 11, 10, 7, 9, 8, 8, 7, 7, 12, 8, 8, 10, 10, 11, 12, 10, 9, 13, 14, 10, 11

**1.** Complete the frequency table. Use 3 years for each interval.

Ages	Tally	Frequency
6–8		

**2.** Complete the histogram.



## **Analyze Histograms**



#### For 1–2, use the histogram at the right.

The histogram shows the number of hours of TV that students watched last week.

- 1. How many students watched between 10 and 14 hours of TV last week?
- 2. How many students watched less than 10 hours of TV last week?



**GRR20** 

Lesson 20 Reteach