



Objective: REVIEW

Equivalent Ratios and Unit Rate

Remember, a **ratio** can be written in simplest form. For example, $\frac{8}{6}$ or 8:6 can be written in simplest form as $\frac{4}{3}$ or 4:3. The ratios $\frac{8}{6}$ and $\frac{4}{3}$ are **equivalent ratios**.

A **rate** is a ratio that compares two quantities with different units of measure. Some examples of rates are shown below:

- Miles per gallon: 540 miles on 18 gallons of gas, $\frac{540 \text{ miles}}{18 \text{ gallons}}$
- Cost: \$3.60 for 4 pounds, or $\frac{\$3.60}{4 \text{ pounds}}$
- Pay rate: \$285 for 30 hours, or $\frac{\$285}{30 \text{ hours}}$

Rates are often given as a unit rate, which is a rate in which the second measure is 1 unit. Each of the rates listed above can be simplified as unit rates.

- Miles per gallon: $\frac{540 \text{ miles}}{18 \text{ gallons}} = \frac{30 \text{ miles}}{1 \text{ gallon}}$
- Cost: $\frac{\$3.60}{4 \text{ pounds}} = \frac{\$0.90}{1 \text{ pound}}$
- Pay rate: $\frac{\$285}{30 \text{ hours}} = \frac{\$9.50}{1 \text{ hour}}$

In general, for every ratio a:b, the corresponding unit rate is $\frac{a}{b}$, where $b \neq 0$. For example, if there are 4 cups of cranberry juice to every 5 cups of orange juice in a punch recipe, the ratio of cranberry juice to orange juice is 4:5, or $\frac{4}{5}$. That means that there is $\frac{4}{5}$ cup of cranberry juice for every 1 cup of orange juice. You can see this mathematically by multiplying each quantity by 5:

$$\frac{\frac{4}{5}}{1} = \frac{\frac{4}{5} \times 5}{1 \times 5} = \frac{4}{5}$$



- Which ratio is equivalent to $\frac{3}{10}$?
 - $\frac{9}{10}$
 - $\frac{9}{13}$
 - $\frac{9}{20}$
 - $\frac{9}{30}$
- Which ratio is **not** equivalent to $\frac{5}{3}$?
 - $\frac{35}{21}$
 - $\frac{25}{15}$
 - $\frac{18}{12}$
 - $\frac{10}{6}$
- Which pair of ratios are equivalent?
 - $\frac{6}{9}$ and $\frac{12}{16}$
 - $\frac{9}{15}$ and $\frac{18}{30}$
 - $\frac{10}{18}$ and $\frac{16}{27}$
 - $\frac{12}{15}$ and $\frac{15}{20}$
- A television station shows 3 commercials every 12 minutes. At that rate, how many commercials will the station show in 60 minutes?
 - 30
 - 15
 - 12
 - 8

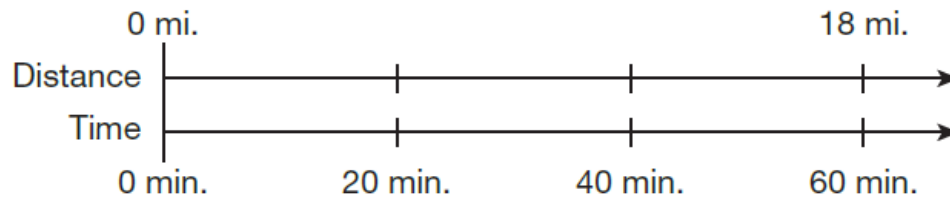
- The table below shows the number of cups of sugar and of flour needed to make some cookies. If Alex uses 5 cups of sugar to make cookies, how many cups of flour does he need?

Cookie Ingredients

Cups of Flour	6	9	12	?
Cups of Sugar	2	3	4	5

- 20 cups
 - 15 cups
 - 13 cups
 - 6 cups
- The ratio of blue marbles to red marbles in a bag is 11:9. If there are 99 blue marbles in the bag, how many red marbles are there?
 - 18
 - 35
 - 81
 - 121
 - The ratio of boys to girls in a chorus is 5 to 6. Which shows an equivalent ratio?
 - 10 boys to 12 girls
 - 15 boys to 19 girls
 - 20 boys to 25 girls
 - 24 boys to 28 girls

8. When biking at a constant speed, Abdul can travel 6 miles in 20 minutes. He made the double number line below to help him find how many miles he can bike in different amounts of time. How many miles can he bike in 40 minutes?

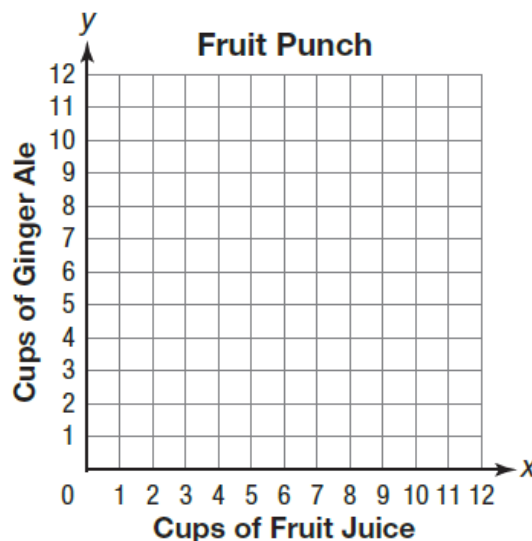


- A. 2 miles
 B. 12 miles
 C. 18 miles
 D. 46 miles
9. The table shows the number of cups of fruit juice and of ginger ale needed to make a fruit punch.

Fruit Punch

Cups of Fruit Juice (x)	2	4	6	8
Cups of Ginger Ale (y)	3	6	?	12

- A. Do the pairs of values in the table represent equivalent ratios? Show your work or explain how you determined your answer.
- B. Plot the ordered pairs from the table on the coordinate grid below. Then use the graph to determine how many cups of ginger ale must be mixed with 6 cups of fruit juice to make the punch.



10. The table shows the cost, in dollars, of additional pizza toppings. Decide whether each value is one of the correct missing values in the table. Select True or False for each statement.

Toppings	1	2	3	4	A	6
Cost (\$)	0.50	1.00	B	C	2.50	D

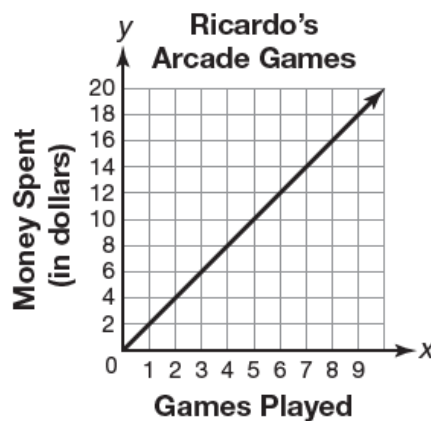
- A. $A = 5.00$ True False
 B. $B = 2.00$ True False
 C. $C = 2.00$ True False
 D. $D = 3.00$ True False

11. Use a number from the box to make a ratio that is equivalent to each given ratio.

$7:14 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$
 $6:5 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$
 $1:6 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

- 1
2
10
12

12. The graph shows the amount of money, in dollars, that Ricardo spent playing different numbers of games at an arcade. Decide whether each point lies on the line. Select Yes or No.



- A. $(5, 5)$ Yes No
 B. $(4, 8)$ Yes No
 C. $(7, 14)$ Yes No
 D. $(6, 10)$ Yes No



- Which of the following is **not** an example of a rate?
 - 2 cups for every 3 cups
 - 120 beats per minute
 - 16 ounces for \$2
 - 8 inches per 12 hours
- Ling is driving at a constant speed of 55 miles per hour. At that rate, how long will it take him to drive 275 miles?
 - 4 hours
 - 5 hours
 - 6 hours
 - 7 hours
- Callie's family spends an average of \$70 per month on electricity. At that rate, what can Callie's family expect to pay for electricity over 1 year?
 - \$70
 - \$480
 - \$700
 - \$840
- Mandy is on a bus that is traveling at a constant speed of 60 miles per hour. How far will she travel in $3\frac{1}{2}$ hours?
 - 185 miles
 - 195 miles
 - 210 miles
 - 230 miles
- A party mix has 8 ounces of pretzels, 3 ounces of mini marshmallows, and 6 ounces of nuts. How many ounces of nuts are there for every ounce of pretzels?
 - $\frac{6}{17}$ ounce of nuts for 1 ounce of pretzels
 - $\frac{3}{8}$ ounce of nuts for 1 ounce of pretzels
 - $\frac{1}{2}$ ounce of nuts for 1 ounce of pretzels
 - $\frac{3}{4}$ ounce of nuts for 1 ounce of pretzels
- Nate biked 54 miles in $4\frac{1}{2}$ hours. What was Nate's average speed in miles per hour?
 - 11 miles per hour
 - 12 miles per hour
 - 13 miles per hour
 - 14 miles per hour

7. Which of the following does **not** have a unit price of \$24 for one sweater?
- A. \$38 for 2 sweaters
 - B. \$72 for 3 sweaters
 - C. \$96 for 4 sweaters
 - D. \$120 for 5 sweaters
8. Fred's car can travel 368 miles on one tank of gas. His gas tank holds 16 gallons. What is the unit rate for miles per gallon?
- A. 22 miles per gallon
 - B. 23 miles per gallon
 - C. 26 miles per gallon
 - D. 28 miles per gallon

9. A soup recipe uses 6 cups of water, 4 cups of tomato sauce, and 5 cups of tomato puree.
- A. How many cups of tomato sauce are there for every cup of water?

- B. If 4 cans of tomato sauce cost \$2, what is the unit price for 1 can of tomato sauce?
Show your work.

10. Each batch of muffins uses 3 cups of applesauce. Circle the number that shows how many cups of applesauce are used for each given number of batches.

4 batches =

4
7
12

 cups of applesauce

7 batches =

7
10
21

 cups of applesauce

11. A city charges \$4.80 per 1,000 gallons of water used each month. Circle every water bill usage summary that could belong to a resident of that city.
- A. \$2.20 for 500 gallons
 - B. \$12.60 for 2,500 gallons
 - C. \$14.40 for 3,000 gallons
 - D. \$16.00 for 4,000 gallons
 - E. \$19.20 for 4,500 gallons
 - F. \$26.40 for 5,500 gallons
 - G. \$28.80 for 6,000 gallons
12. Raghav traveled at a rate of 50 miles per hour. At that rate, decide whether Raghav can travel each given distance in the given amount of time. Select Yes or No.
- A. 700 miles in 10 hours Yes No
 - B. 350 miles in 7 hours Yes No
 - C. 200 miles in 2 hours Yes No
 - D. 125 miles in 2.5 hours Yes No
13. Avocados are on sale for a unit price of \$0.50 per avocado. Circle every description that has a unit rate of \$0.50 per avocado.
- A. 6 avocados for \$3.00
 - B. 4 avocados for \$1.00
 - C. 2 avocados for \$1.00
 - D. 10 avocados for \$5.00
 - E. 5 avocados for \$5.00
 - F. 7 avocados for \$3.50
 - G. 12 avocados for \$4.00



LESSON SE 2a



Objective

Gabriel walks at a constant speed of 3 miles per 60 minutes. Circle the number that shows how many miles Gabriel can walk in the given number of minutes.

In 20 minutes, Gabriel can walk

1
3
9

 mile(s).

The ratio of cups of rice to cups of water in a recipe is 4:1. Circle every ratio that is equivalent to $\frac{4}{1}$.

- A. 20 to 5
- B. 12 to 3
- C. 16:4
- D. 2:8
- E. $\frac{1}{4}$
- F. $\frac{8}{2}$

The table shows the amounts that Renee earned babysitting for different numbers of hours. Select True or False for each statement.

Hours	1	2	?	6	7	1
Amount Earned (\$)	?	13.00	32.50	?	45.50	?

- A. Renee earned \$5.50 in 1 hour. True False
- B. Renee earned \$32.50 in 5 hours. True False
- C. Renee earned \$39.00 in 6 hours. True False
- D. Renee earned \$55.00 in 10 hours. True False