Name: _____key_____   Date: _____   Period: _____

Comparing and Scaling RETAKE PRACTICE

7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

1. **This diagram shows how much apple juice is mixed with carrot juice for a recipe.**

Apple Juice: | 1 cup | 1 cup | 1 cup | 1 cup |

Carrot Juice: | 1 cup | 1 cup |

How many cups of apple juice are used for 1 cup of carrot juice? Show your work to find this unit rate and include units.

$$\frac{4 \text{ cups apple}}{2 \text{ cups carrot}} = \frac{x}{1 \text{ cup carrot}}$$

·0.5

$$x = 4 \cdot 0.5 =$$

2 cups apple juice per 1 cup carrot juice

2. **For a drink recipe, there is a ratio of 2 quarts papaya juice to 8 quarts of carrot juice.**

How many quarts of papaya juice are used for 1 quart of carrot juice? Show your work to find this unit rate and include units.

2 quarts papaya juice ÷ 8 quarts carrot juice

$$= \frac{1}{4} \text{ or } 0.25 \text{ quarts papaya juice to one quart carrot juice}$$

3. **The train ride at the zoo covers a distance of $2\frac{1}{2}$ miles in $\frac{1}{3}$ of an hour.**

How many miles per hour does the train go? Show your work to find this unit rate and include units.

$2\frac{1}{2}$ miles ÷ $\frac{1}{3}$ hour = $7\frac{1}{2}$ or 7.5 miles per hour

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Comparing and Scaling **RETAKE PRACTICE**

7.RP.2a: Decide whether two quantities are in a proportional relationship by testing for equivalent ratios in a table or by graphing and observing if it is a straight line through the origin.

1. For **EACH** table below, decide whether or not it represents a proportional relationship.

yes

x	y
0	0
1	10
2	20
3	30
4	40

$\frac{1}{10} = \frac{2}{20}$

no

x	y
0	10
1	12
2	14
3	16
4	18

$\frac{1}{12} \neq \frac{2}{14}$

no

x	y
1	5
2	7
3	9
4	11
5	13

$\frac{1}{5} \neq \frac{2}{7}$

yes

x	y
0	0
1	15
2	30
3	45
4	60

$\frac{1}{15} = \frac{2}{80}$

yes

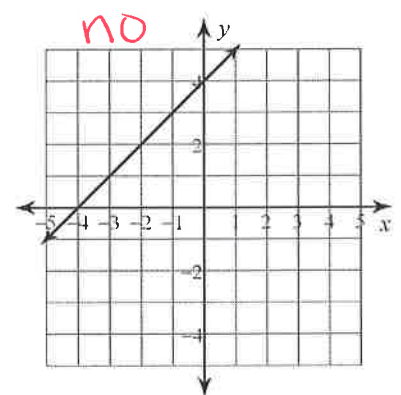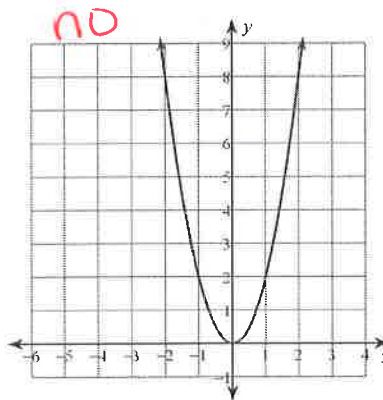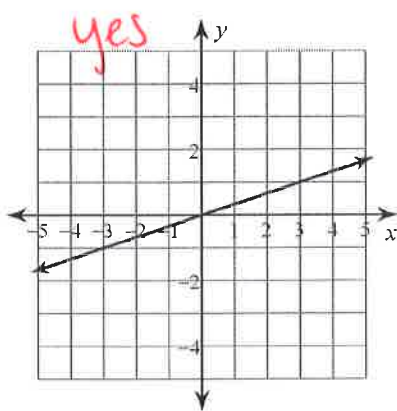| x	y
1	4
2	8
3	12
4	16
5	20

$\frac{1}{4} = \frac{2}{8}$

2. **Explain** how you know if a <u>table</u> represents a proportional relationship.

The table has equivalent ratios between the values.

3. For **EACH** table below, decide whether or not it represents a proportional relationship.

yes

no

no

no

yes

no
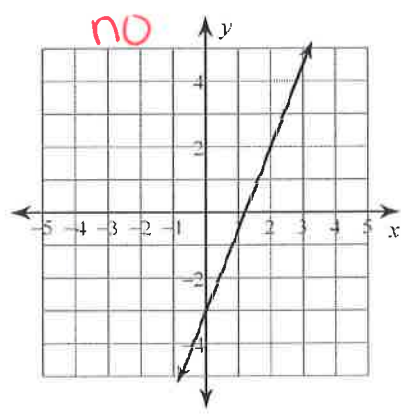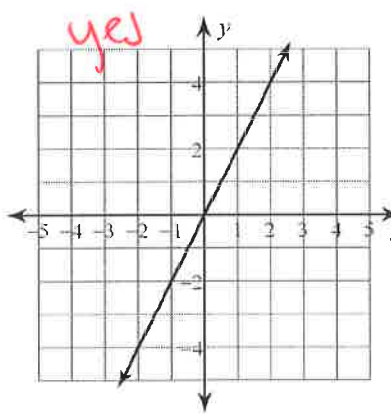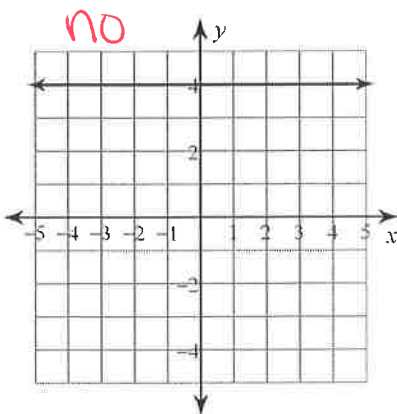
4. **Explain** how you know if a <u>graph</u> represents a proportional relationship.

The graph is a straight line through (0,0).

Name: _key_ Date: _____ Period: _____

Comparing and Scaling **RETAKE PRACTICE**

/.RP.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

1. **The following tables show a proportional relationship between x and y.**

A.

x	y
2	20
3	30
4	40
5	50
10	100

$\cdot 0.5$

$\dfrac{20}{2} = \dfrac{10}{1}$

$\cdot 0.5$

B.

x	y
3	0.75
5	1.25
10	2.5
15	3.75
20	5

$\cdot 0.1$

$\dfrac{2.5}{10} = \dfrac{0.25}{1}$

$\cdot 0.1$

   a. What is the constant of proportionality for table A? __10__

   b. What is the constant of proportionality for table B? __0.25__

2. **The following graphs show a proportional relationship between x and y.**

A.

(1,20)

B.

$\cdot 0.05$

$\dfrac{600}{20} = \dfrac{30}{1}$

$\cdot 0.05$
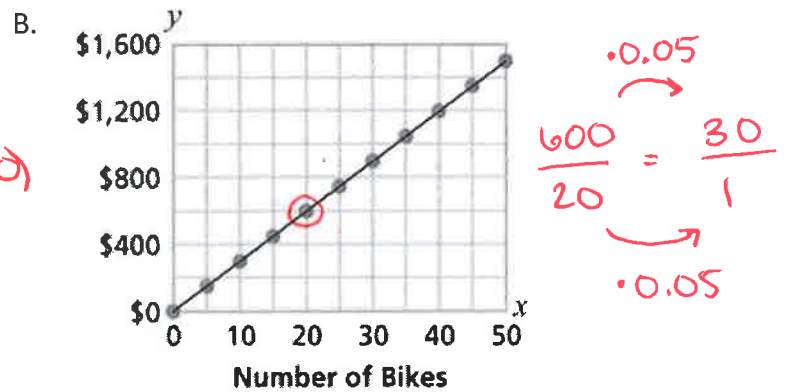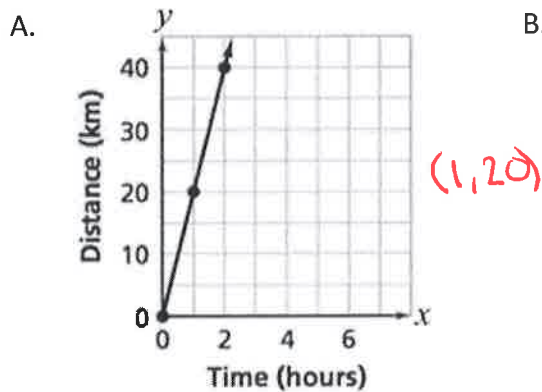
   a. What is the constant of proportionality for graph A? __20__

   b. What is the constant of proportionality for graph B? __30__

3. **The following equations show a proportional relationship between x and y.**

   A. $y = 2.5x$

   B. $y = \dfrac{5}{6}x$

   a. What is the constant of proportionality for equation A? __2.5__

   b. What is the constant of proportionality for equation B? __$\dfrac{5}{6}$__

Name: _key_   Date: _____   Period: _____

Comparing and Scaling **RETAKE PRACTICE**

7.RP.2c: Represent proportional relationships by equations.

1. **The following tables show a proportional relationship between x and y.**

A.

x	y
2	20
3	30
4	40
5	50
10	100

·0.5 →
$\frac{20}{2} = \frac{10}{1}$
→ ·0.5

B.

x	y
3	0.75
5	1.25
10	2.5
15	3.75
20	5

·0.1 →
$\frac{2.5}{10} = \frac{0.25}{1}$
→ ·0.1

a. Write an equation of the form $y = rx$ to represent table A. ___$y = 10x$___

b. Write an equation of the form $y = rx$ to represent table B. ___$y = 0.25x$___

2. **The following graphs show a proportional relationship between x and y.**

A.

Distance (km) vs Time (hours)

(1, 20)

B.

y values: $1,600, $1,200, $800, $400, $0
Number of Bikes: 0, 10, 20, 30, 40, 50

·0.05 →
$\frac{600}{20} = \frac{30}{1}$
→ ·0.05
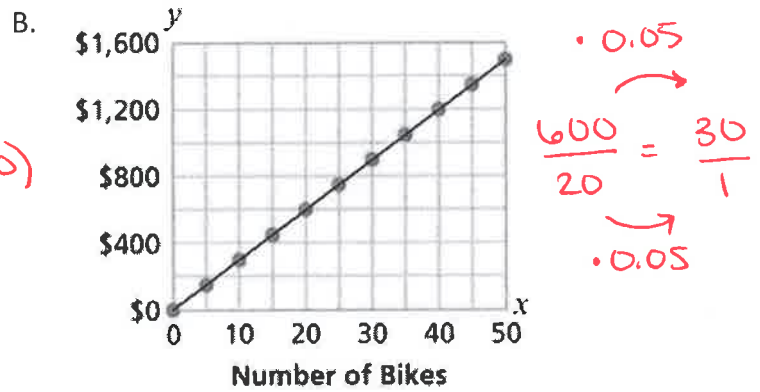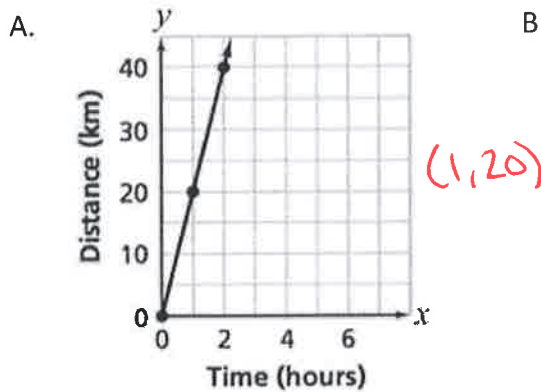
a. Write an equation of the form $y = rx$ to represent graph A. ___$y = 20x$___

b. Write an equation of the form $y = rx$ to represent graph B. ___$y = 30x$___

7.RP.2d: Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.

Graphs A and B above show a proportional relationship between x and y. What do the following points represent in terms of the situation?

1. Graph A
   (0, 0) in 0 hours you travel 0 km
   (1, 20) in 1 hour you travel 20 km
   (2, 40) in 2 hours you travel 40 km

2. Graph B
   (0, 0) 0 bikes cost $0
   (1, 30) 1 bike costs $30
   (40, 1200) 40 bikes cost $1,200

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Comparing and Scaling Unit Test Practice

7.RP.3: Use proportional relationships to solve multistep ratio and percent problems.

1. The ratio of blueberries to pomegranate in a fruit smoothie drink is 5 to 15. What percent of the total drink is pomegranates? Write and solve a proportion to find the answer, and include units.

total = 5 + 15 = 20 $\frac{15 \text{ pomegranate}}{20 \text{ total}} = \frac{x\% \text{ pomegrante}}{100\% \text{ total}}$

x = 15 · 5 = **75% pomegranate**   · 5

2. You have lunch at a sushi restaurant with your friends. The bill before tax is $47.90, and the sales tax is 9%. You decide to leave a 15% tip for the waitress based on the pre-tax amount. What will be the amount of the total bill, including tax and tip?

$\frac{\$47.90}{100\%} = \frac{\$x}{109\%}$ $\frac{\$47.90}{100\%} = \frac{\$x}{15\%}$

· 1.09   · 0.15

x = 47.90 · 1.09 = $52.211 after tax   x = 47.90 · 0.15 = $7.185 tip

52.211 + 7.185 = 59.396 = **$59.40 total**

Bill has a paper route in his neighborhood. It takes him 50 minutes to deliver newspapers to the 40 customers on his route. How long will it take Bill to complete his route if he adds 20 more customers in his neighborhood? Write and solve a proportion to find the answer, and include units with your answer.

40 + 20 = 60 customers

$\frac{50 \text{ minutes}}{40 \text{ customers}} = \frac{x \text{ min}}{60 \text{ customers}}$ x = 50 · 1.5 = **75 minutes**

· 1.5

4. Bulky Store normally charges $4.99 for a frozen pizza, but Bulky is having a sale for 25% off. Streamline Market normally charges $3.49 for a frozen pizza, but Streamline is having a sale for 15% off. Which store offers the better price, after the discount? Write and solve proportions to find the answer, and include units with your answer.

$\frac{\$4.99}{100\%} = \frac{\$x}{75\%}$ x = 4.99 · 0.75 = $3.7425 at Bulky

· 0.75

$\frac{\$3.49}{100\%} = \frac{\$x}{85\%}$ x = 3.49 · 0.85 = $2.9665 at Streamline

0.85

Streamline has the better price.