Name _____ Class _____ Date _____

Practice 12-2

Recognizing Proportionality

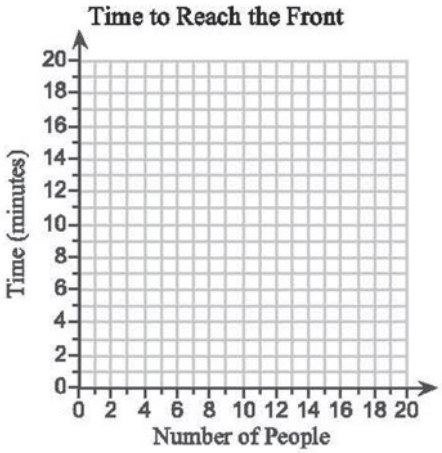
1. Check all ratios that are proportional to $\frac{20}{50}$.

- ❑ A. $\frac{16}{40}$
- ❑ B. $\frac{25}{55}$
- ❑ C. $\frac{5}{2}$
- ❑ D. $\frac{8}{20}$
- ❑ E. $\frac{100}{250}$
- ❑ F. No ratios here are proportional to $\frac{20}{50}$.

2. Are the ratios $\frac{24}{42}$ and $\frac{40}{90}$ proportional?

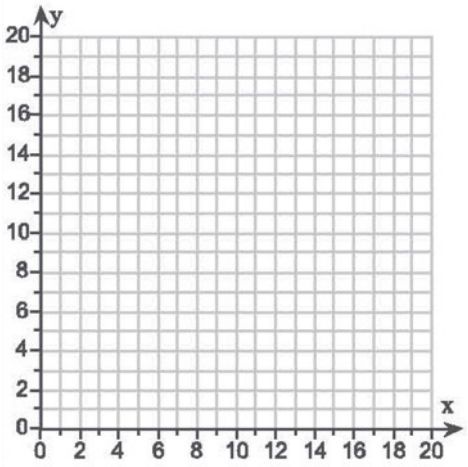
3. Suppose you are waiting in a line. The time it takes for you to reach the front depends on the number of people ahead of you. This is shown in the table. Use the given graph setup to plot the pairs of values shown in the table. Does the table show a proportional relationship?

Time to Reach the Front				
Number of People	1	4	5	7
Time (minutes)	2	8	10	14



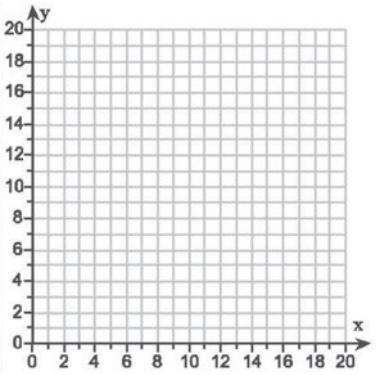
4. Use the given graph setup to plot the pairs of values shown in the table. Does the table show a proportional relationship?

x	2	3	4	5
y	3	4	5	6

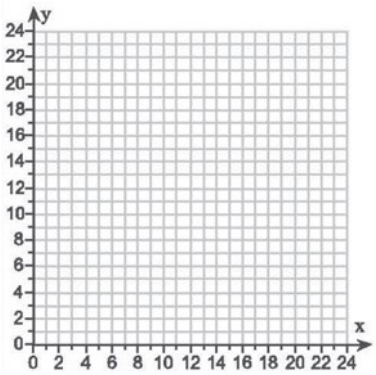


5. Use the given graph setup to graph the equations $y = 2x$ and $y = 2x + 4$. Which of the equations, if either, represents a proportional relationship?

- ❍ A. both equations
- ❍ B. neither equation
- ❍ C. only $y = 2x$
- ❍ D. only $y = 2x + 4$



6. Use the given graph setup to graph the equation $y = 2x + 7$. Does the equation represent a proportional relationship?



7. a) Writing Are the ratios $\frac{12}{9}$ and $\frac{20}{15}$ proportional? Explain your reasoning.

b) Describe a situation in which these ratios might come up. Explain why it would be important to know whether the ratios are proportional.

8. a) **Reasoning** There are different ways to tell whether an equation represents a proportional relationship. Is there one way that is always best? Explain your reasoning.

b) Which of the equations $y = 2x$ and $y = 2x + 15$, if either, represents a proportional relationship?

- ❍ A. only $y = 2x + 15$
- ❍ B. neither equation
- ❍ C. both equations
- ❍ D. only $y = 2x$

9. **Error Analysis** Mr. Greene gave his class a list of ratios. Then he asked which of the ratios, if any, are proportional to $\frac{4}{5}$. One of his students incorrectly said that only $\frac{8}{10}$ is proportional to $\frac{4}{5}$.

a) Which of the given ratios are proportional to $\frac{4}{5}$? Check all that apply.

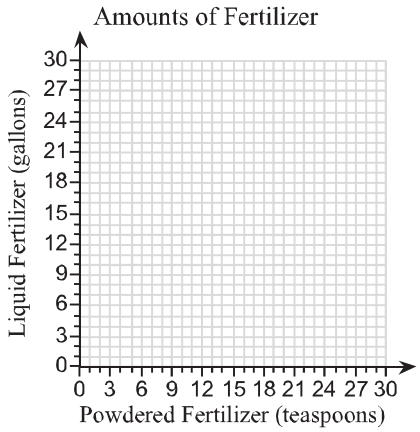
- ❑ A. $\frac{9}{10}$
- ❑ B. $\frac{28}{35}$
- ❑ C. $\frac{40}{50}$
- ❑ D. $\frac{8}{10}$
- ❑ E. $\frac{5}{4}$
- ❑ F. $\frac{56}{55}$
- ❑ G. none of these

b) What was the student's error?

- ❍ A. The ratio $\frac{8}{10}$ is not the only ratio in the list that is proportional to $\frac{4}{5}$.
- ❍ B. At lease one of the given ratios is proportional to $\frac{4}{5}$, but $\frac{8}{10}$ is not one of them.
- ❍ C. None of the given ratios is proportional to $\frac{4}{5}$.

10. Fertilizer You can make liquid fertilizer by mixing powdered fertilizer with water. The amount of liquid fertilizer you make depends on the amount of powdered fertilizer you use. This is shown in the table. Plot the pairs of values shown in the table. Does the table show a proportional relationship?

Amounts of Fertilizer			
Powdered Fertilizer (teaspoons)	6	12	18
Liquid Fertilizer (gallons)	7	14	21



11. Multiple Representations Check all ratios that are proportional to $\frac{36}{21}$.

- ❑ A. $\frac{108}{63}$
- ❑ B. 84 to 49
- ❑ C. $\frac{28}{48}$
- ❑ D. 156 : 91

12. a) Mental Math Check all ratios that are proportional to $\frac{9}{10}$.

- ❑ A. $\frac{90}{100}$
- ❑ B. $\frac{20}{18}$
- ❑ C. $\frac{180}{200}$
- ❑ D. $\frac{45}{50}$

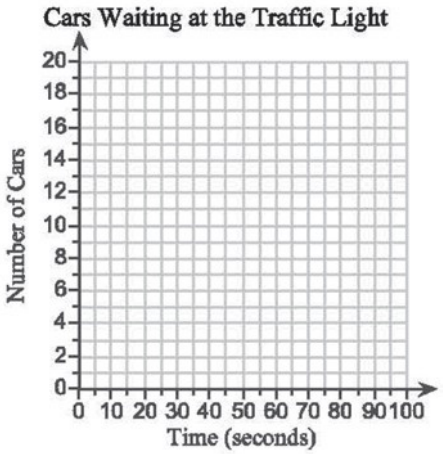
b) Explain how you were able to get the answer using mental math.

13. a) Which of the equations $y = \frac{3}{4}x + 2$ and $y = \frac{3}{4}x$, if either, represents a proportional relationship?

- ❍ A. neither equation
- ❍ B. only $y = \frac{3}{4}x + 2$
- ❍ C. both equations
- ❍ D. only $y = \frac{3}{4}x$

b) If either equation represents a proportional relationship, write two proportional ratios represented by the equation.

14. **Challenge** A police officer studies how the length of time a certain traffic light is red affects the number of cars waiting. At 11:24 A.M., the light turns red. After 30 seconds, 6 cars are waiting. After 50 seconds, there are 10 cars. Twelve cars are waiting after 60 seconds. When the light changes after 80 seconds, there are 16 cars waiting. The police officer puts this data into a table. Plot the pairs of values that would be shown in the table. Does the table show a proportional relationship?



15. **Challenge** A girl is making bracelets and necklaces to sell at a yard sale. Each bracelet uses 3 red beads, 9 blue beads, and 21 white beads. Each necklace uses 4 red beads, 16 blue beads, and 20 white beads.

a) What is the ratio in simplest fraction form of the number of red beads to the total number of beads for the bracelets?

b) What is the ratio in simplest fraction form of the number of red beads to the total number of beads for the necklaces?

c) Are these ratios proportional? Explain your reasoning.

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1. A, D, E
2. No
3. Yes
4. No
5. C
6. No
7. **a)** Yes
   b) Answers will vary
8. **a)** Answers will vary
   b) D
9. **a)** B, C, D
   b) A
10. Yes
11. A, B, D
12. **a)** A, C, D
    b) Answers will vary
13. **a)** D
    b) Answers will vary
14. Yes
15. **a)** $\frac{1}{11}$
    b) $\frac{1}{10}$
    c) No