Sample Grade 7 End-of-Unit Assessment: Proportional Reasoning

Name: _____ Date: _____

I can determine unit rates and scale factors.

1. Find the unit rate: 40 feet in $\frac{1}{2}$ minute. 1 point _____

2. Find the unit rate: $8.40 for 3 pounds. 1 point _____

3. Macy swims 3 $\frac{1}{2}$ laps in 2 $\frac{1}{3}$ minutes. Assume she swims the entire time at the same rate. What is her speed in laps per minute? Circle the correct answer, and show how you know your answer is correct. 2 points _____

   A. $\frac{2}{3}$ lap per minute

   B. 1 $\frac{1}{2}$ laps per minute

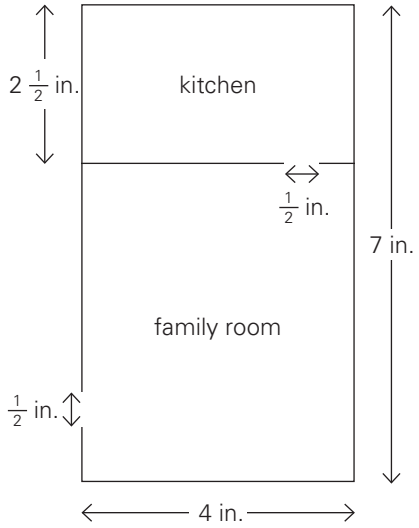
   C. 2 $\frac{1}{6}$ laps per minute

   D. 8 $\frac{1}{6}$ laps per minute

4. Mia runs 10 laps in 8 minutes. Shawna runs 4 laps in 3 minutes. Marcus says Mia is faster than Shawna. Is he correct? Explain why or why not. 3 points _____

5. A rectangular patio in your yard is 80 feet by 120 feet. The following drawing is a scale drawing of your patio. What is the scale factor? 2 points _____

6. Every 2-inch length on the following scale drawing corresponds to a length of 10 feet in the actual room. What is the area of the kitchen? 3 points _____



7. Two cities are 270 miles apart.
   a. One map showing the cities has a scale of 1 inch : 24 miles. How far apart are the two cities on the map? 1 point _____

   b. On another map, the cities are only 3 inches apart. What is the scale of this map? 1 point _____

I can determine if two quantities are proportional and explain my thinking.

8. The following table shows the proportional relationship between hours worked and money earned. Complete the table and then, explain why it shows a proportional relationship. 2 points _____

Hours Worked	1	2	2.5	
Money Earned		$21.00		$84.00

Explanation:

9. Which of the following tables is not a proportional relationship? Circle the answer and explain your choice. 2 points _____

A.

x	y
4	3
2	1.5
8	6
12	9
16	12

B.

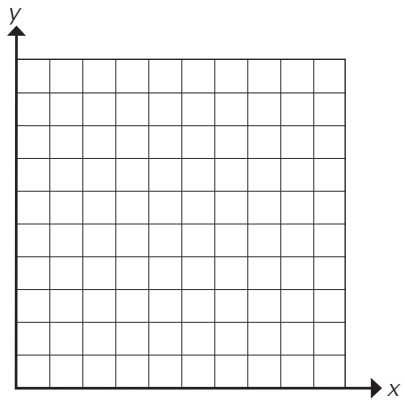
x	y
2	9
3	11
4	13
5	15
6	17

C.

x	y
3	9
1	3
5	15
8	14
2	6

Explanation:

10. Label and draw one graph that shows a proportional relationship, and explain why it is proportional. 2 points _____



Explanation:

11. Which of the following show a proportional relationship? Circle all that apply. 2 points _____

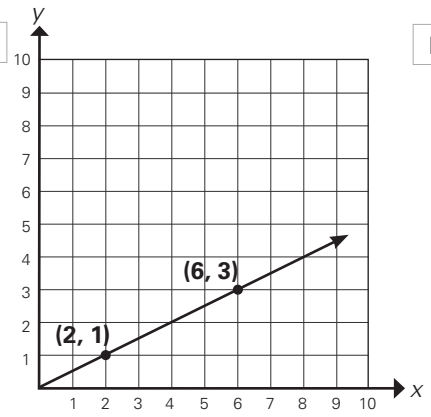
A. $y + = \frac{3}{x}$

B. $y + 0.8x$

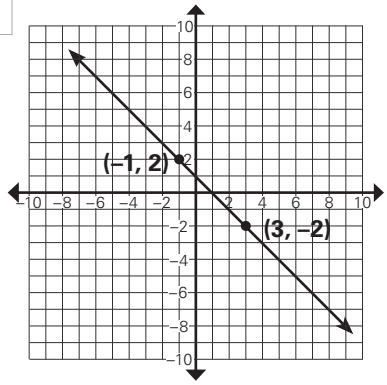
C. After one hour of work Jon earns \$8, and after 3 hours of work he earns \$25.

D. After 30 minutes, Paul walks 2 miles and after 1.5 hours, Paul walks 6 miles.

E.



F.

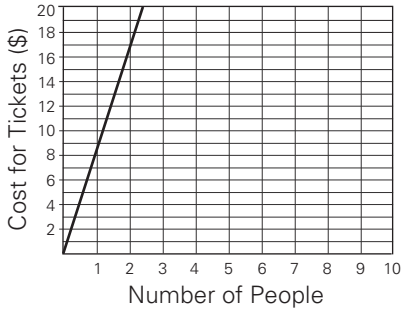


I can identify the constant of proportionality, write equations for, and explain the meaning of points on a graph for a proportional relationship.

12. Two movie theaters charge different ticket prices. The following are the costs for a number of people to attend a movie at each theater.

Star Cinema Price	
Number of Tickets	**Cost for Tickets (\$)**
2	17.00
3	25.50
4	34.00

Movie Express Prices



a. For each movie theater, find the constant of proportionality and explain its meaning in the context of the information. Write an equation to model the relationship between the number of tickets purchased and the total cost. 6 points _____

	Star Cinema	Movie Express
Constant of proportionality		
Meaning of the constant in the context of the situation		
Equation		

b. What will be the total ticket cost for six friends to go to a movie at each theater? Which theater is cheaper? 3 points _____

c. What does the point (1, 8) mean on the graph showing Movie Express prices? 1 point _____

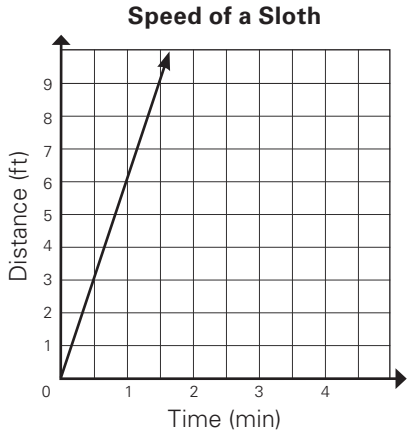
d. If you graph the Star Cinema prices, what does the point (0, 0) mean? 1 point _____

13. Paul earns money when he washes cars. After 2 hours, he earns $14 and after 3 hours he earns $21. 2 points ____

a. What is the unit rate for the money Paul earns?

b. Write an equation showing the amount of money Paul earns, *y*, for the number of hours spent washing cars, *x*.

14. Use the graph to the right to answer the following questions. 5 points _____



a. Describe the relationship the graph shows.

b. Identify a point on the line, and explain what it means in the context of the graph.

c. What is the unit rate?

d. Write an equation to model the data in the graph.

e. Which point represents the unit rate?

I can solve multistep ratio and percent problems.

15. A store is having a close-out sale and says everything is $\frac{1}{4}$ off the original price. If an item is marked with a sale price of \$120, which of the following methods could you use find the original cost? Select two correct answers. 2 points _____

A.

\$40	\$40	\$40	\$40
\$120			

B.

\$30	\$30	\$30	\$30
\$120			

C. Find $\frac{1}{4}$ of \$120.

D. \$120 is $\frac{3}{4}$ of what number?

16. Marta buys a new chair in California. The chair costs \$950. California has an 8% sales tax. How much did Marta pay for the chair, including sales tax? Show your work to justify your answer. 2 points ____

17. Carla decides to make lemonade. The directions say to mix 3 scoops of powdered mix with a half-gallon of water to make each pitcher of lemonade. Carla wants to make 4 pitchers of lemonade so she says she needs 12 scoops of powdered mix and 2 gallons of water. Is Carla correct? Show why or why not using a table, graph, or equation. 2 points _____

18. Nyla decides to buy a jacket at the store that originally cost \$85. It had been previously discounted for 15% off the original price and was now on a sale rack for an additional 20% off the old sale price. What is the cost of the jacket? 2 points _____

Grade 7 Proportional Reasoning End-of-Unit Sample Assessment Scoring Rubric

1. I can determine unit rates and scale factors.

Question	Total Points	Scoring Guidelines (Students must score 10 out of 14 points for proficiency.)
1	1	1 point for correct answer of 80 feet per minute
2	1	1 point for correct answer of $2.80 per pound
3	2	1 point for correct answer B 1 point for explanation, which could be work shown
4	3	1 point for correct answer: Marcus is wrong. 2 points for work supporting the answer, which might include Mia's rate of 1.25 laps per minute and Shawna's rate of $1\frac{1}{3}$ laps per minute
5	2	1 point for conversion to inches or feet 1 point for correct answer: $\frac{1}{240}$
6	3	1 point for evidence one side of the kitchen is 20 feet 1 point for evidence the other side of the kitchen is 12.5 feet 1 point for correct answer of 250 square feet or 1 point for area of scale drawing at 10 square inches 2 points for using a squared proportion to find the actual area of 250 square feet (for example, $\frac{1}{25} = \frac{10}{x}$)
7	2	1 point for correct answer of 11.25 inches 1 point for correct answer of 1 inch : 90 miles

2. I can determine if two quantities are proportional and explain my thinking.

Question	Total Points	Scoring Guidelines (Students must score 6 out of 8 points for proficiency.)
8	2	1 point for completing the table ($10.50, $26.25, 8) 1 point for explaining the constant rate of $10.50 per hour and that for 0 hours of work the pay would be $0
9	2	1 point for correct answer B 1 point for explanation: ratio of $\frac{x}{y}$ is not constant
10	2	1 point for graph: a straight line through (0, 0) 1 point for explanation to include constant slope (rate of change or constant of proportionality) and passes through (0, 0)
11	2	2 points for correct answers B, D, and E 1 point for one or two correct answers with no incorrect answers

3. I can identify the constant of proportionality, write equations for, and explain the meaning of points on a graph for a proportional relationship.

Question	Total Points	Scoring Guidelines (Students must score 13 out of 18 points for proficiency.)
12	11	a. 1 point per correct answer in the table (6 points total); Star Cinemas: 8.5; $8.50 per ticket; $y = 8.5x$; Movie Express: 8, $8.00 per ticket; $y = 8x$ b. 1 point for Star Cinemas: $51.00, 1 point for Movie Express: $48.00, 1 point for correct answer: Movie Express is cheaper c. 1 point for correct answer: 1 ticket costs $8 (or each ticket costs $8) d. 1 point for correct answer: There is no cost for 0 tickets
13	2	a. 1 point for correct answer: $7 per hour b. 1 point for correct answer: $y = 7x$
14	5	a. 1 point for correct answer: for example, the graph shows the total distance in feet traveled by a sloth after a given number of minutes b. 1 point for correct answer: Identification of a point with an explanation about the x coordinate showing minutes and the y coordinate showing the total distance traveled in feet c. 1 point for correct answer: Unit rate is 6 feet per minute d. 1 point for correct answer: $y = 6x$ e. 1 point for correct answer: (1, 6)

4. I can solve multistep ratio and percent problems.

Question	Total Points	Scoring Guidelines (Students must score 6 out of 8 points for proficiency.)
15	2	2 points for correct answers A and D or 1 point for answering only A or only D
16	2	1 point for correct answer $1026 1 point for work to support the answer
17	2	1 point for correct answer: Carla is correct 1 point for work to justify that Carla is correct
18	2	2 points for correct answer of $57.80: 1 point for 15% off cost of $72.25 1 point for final answer