

NAME _____ DATE _____ PERIOD _____ SCORE _____

Module Test Form A3 Proportional Relationships

1. The table shows how fast some of the world's fastest birds could travel in different portions of an hour at their top speed. Write the names of the fish in order from least to greatest speed in miles per hour.

Fastest Fish		
Fish	Distance (mi)	Time (h)
Bluefin Tuna	4	$\frac{1}{11}$
Marlin	$33\frac{1}{3}$	$\frac{2}{3}$
Sailfish	17	$\frac{1}{4}$
Tarpon	7	$\frac{1}{5}$

2. Carpet Plus advertises that they can install 1,400 square feet of carpet in $2\frac{1}{2}$ hours. Place an X in the correct cell to indicate whether each rate below is equivalent to this rate.

	equivalent	not equivalent
980 square feet of carpet in $1\frac{3}{4}$ hours		
1,200 square feet of carpet in 2 hours		
1,760 square feet of carpet in $3\frac{1}{4}$ hours		

3. Jaime ran the first $3\frac{1}{3}$ miles of a 5-mile race in $\frac{1}{3}$ hour. What was her average rate, in miles per hour, for this first part of the race? Explain how you solved the problem.

4. A cinnamon toast recipe calls for 6 parts sugar to 1 part cinnamon. Place an X to indicate if each set of ingredients is proportional to the recipe.

	proportional	not proportional
4.5 tsp sugar and 0.75 cinnamon		
9 tsp sugar and 1.5 tsp cinnamon		
12 tsp sugar and 3 tsp cinnamon		
18 tsp sugar and 4 tsp cinnamon		

5. Maurice and his family are planning a vacation that involves horseback riding. Horseshoe Ranch charges a \$10.95 ranch entrance fee plus \$15.95 per hour to rent horses.

Part A Complete the table to determine the total cost for 1, 2, 3, and 4 hours.

Number of Hours	Total Price (\$)
1	
2	
3	
4	

Part B Is the total price proportional or nonproportional to the number of hours spent horseback riding?

6. Determine whether the relationship between each pair of quantities is proportional. Explain your reasoning.

Side Length of Square (in.)	5.5	8.8	10.3	12.4
Perimeter of Square (in.)	22	35.2	41.2	49.6

Side Length of Cube (in.)	4.5	9	11	13.5
Volume of Cube (in ³)	91.125	729	1,331	2,460.375

7. Place an X under yes or no to indicate whether each situation represents a proportional relationship.

	yes	no
A small pizza costs \$8.00 and each additional topping costs \$0.25		
A health club charges \$50 per month		
A bike rental store charge \$15 as a flat fee, plus \$3 per hour		
A car travels 70 miles in 1 hour, 140 miles in 2 hours, and 210 miles in 3 hours		
A student earns \$17 for each hour of tutoring		

8. The table shows the cost to rent a jet ski from two different stores for 0, 1, 2, and 3 hours. Is either relationship proportional? Explain your reasoning.

Prices for Jet Ski Rental		
Time (h)	Water Fun (\$)	Super Ski (\$)
0	0	25
1	30	35
2	60	45
3	90	55

9. Morris is designing his garden. For every blue delphinium, he plans to plant three pink tulips. Using only these two types of flowers, he plans to plant 16 flowers in his garden. How many of each type of flower will Morris use?

_____ delphiniums

_____ tulips

10. The table shows the weight of an object on several planets, when the weight of that same object on Earth is 180 pounds. Use proportional reasoning to find each related weight. Round to the nearest tenth.

Earth: 85 pounds; Mercury: _____ pounds

Venus: 120 pounds; Saturn: _____ pounds

Mars: 320 pounds; Earth: _____ pounds

Mercury: 20 pounds; Venus: _____ pounds

Saturn: 90 pounds; Mars: _____ pounds

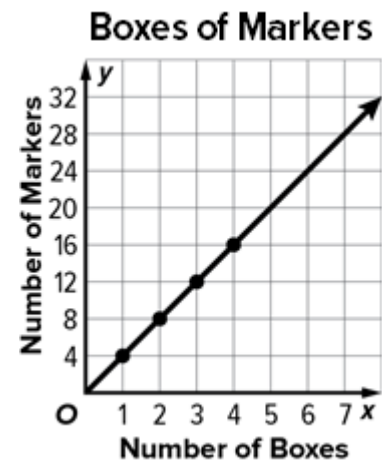
Weight on Different Planets	
Planet	Weight (lb)
Mars	68.4
Mercury	67.9
Saturn	190.8
Venus	163.1

11. Sara bought 7 red peppers for \$5.60.

Part A Find the unit rate. Then use the unit rate to write an equation relating the cost in dollars c to the number of red peppers p .

Part B How much would Sara pay for 13 red peppers?

12. The graph shows the total number of markers in 1, 2, 3, and 4 boxes of markers. What is the unit rate?



Number of Minutes	Number of Heartbeats
0.25	
0.5	
0.75	

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13. A veterinarian recorded a dog's resting heart rate to be 90 beats over a 45-second time period. Complete the table to find the number of heartbeats in different amounts of time. Then find the constant of proportionality in beats per minute.

1	
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14. A salad dressing recipe uses 10 parts oil 4 parts vinegar, and 2 parts honey. Which of the following sets of ingredients are in a proportional relationship with the recipe? Select all that apply.

- Ⓐ 4 Tbsp oil, 1.5 Tbsp vinegar, 1 Tbsp honey
 Ⓑ 6 Tbsp oil, 1.5 Tbsp vinegar, 1 Tbsp honey
 Ⓒ 15 Tbsp oil, 6 Tbsp vinegar, 3 Tbsp honey
 Ⓓ 20 Tbsp oil, 8 Tbsp vinegar, 4 Tbsp honey
 Ⓔ 24 Tbsp oil, 8.5 Tbsp vinegar, 4.5 Tbsp honey

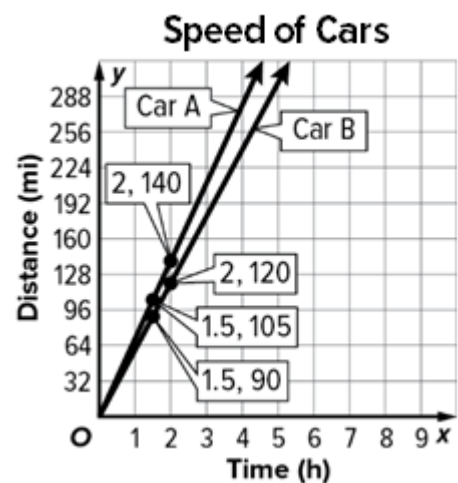
15. The Preston family and the Jackson family are each taking road trips. The Preston family travels at an average rate of 70 miles per hour and the Jackson family travels at an average rate of 60 miles per hour. How far does each family travel after 8 hours?

Preston family: _____ miles

Jackson Family: _____ miles

16. The graph shows the average speed of two cars. Place an X in the appropriate column to indicate whether each statement is true or false.

	true	false
The line for car A has a constant of proportionality of 70.		
Car B is traveling faster than car A.		
The line for car B has a constant proportionality of 90.		
The constant of proportionality of the line for car A is greater than the constant of proportionality for car B.		
Car B takes longer to travel the same distance as car A.		

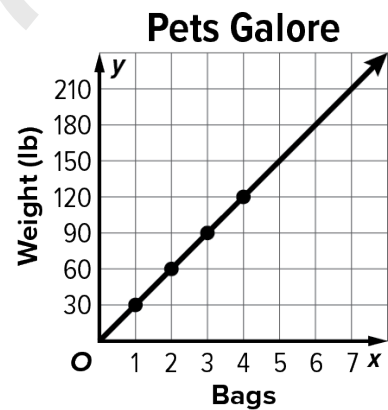


17. A painter can paint 135 square feet per hour. He charges \$0.46 per square foot. Today he paints for 4.5 hours. How much will he charge?

18. Which of the following ways can be used to determine whether a linear relationship is proportional? Select all that apply.

- Ⓐ The equation is in $y = kx$ form.
- Ⓑ The equation is in $y = mx + b$ form.
- Ⓒ The graph of the relationship is a straight line.
- Ⓓ In a graph, the line passes through the origin.
- Ⓔ In a table, the ratios are not equivalent.

19. Antonio needs to buy 150 pounds of dog food for the local dog shelter. The graph shows the relationship between the number of bags of dog food and the total weight of the dog food at Pets Galore. Another store, Healthy Pets, sells dog food in 50-pound bags for \$85.95 per bag. If one bag of food from Pets Galore costs \$48.15, how much would Antonio save by buying 150 pounds of dog food from Pets Galore instead of from Healthy Pets?



20. On average, Leisan can drive 32 miles on every gallon of gasoline. If she fills up her tank for \$2.39 per gallon, how much will it cost her to drive 448 miles?