UNIT 3: Rates, Ratios and Proportions STUDY GUIDE

Unit Rate

|  |  |
| --- | --- |
| 1. Four gallons of gasoline cost $16.80. What is the price per gallon? | 2) Which is the best buy?  6 shirts for $25.50 4 shirts for $18.00 5 shirts for $21 |

Unit Rate with Complex Fractions

|  |  |
| --- | --- |
| 3) Emma drank 1/4 of a milkshake in 1/10 of an hour. How many minutes will it take her to drink a full milk shake? | 6) Lillian eats 1/4 of a pound of grapes in 1/17 of a minute. How many minutes will it take her to eat a full pound of grapes? |
| 4) A bucket of water was ⅙ full, but it still has 2 ¾ gallons of water in it. How much water would be in one fully filled bucket? | 7) Lauren bikes 1 ⅓ miles in 1/10 hour. What is her rate of speed in miles per hour? |
| 5) A recipe calls for using ¾ cup of brown sugar for each ⅔ cup of white sugar. How many cups of brown sugar are used per cup of white sugar? | 8) Joey plans to jog 6 miles to the store. He can jog at a constant rate of ½ of a mile every ¼ of an hour. How many hours will it take him get to the store? |

Proportional Relationships from a Graph

9) List the 3 things a graph must have to show a Proportional Relationship.

1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Does the graph represent a Proportional Relationship? (Circle Proportional or Nonproportional)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 10) Proportional Non-proportional | 11)Proportional Non-proportional | 12)Proportional Non-proportional | 13)Proportional Non-proportional | 14)Proportional Non-proportional |

|  |  |
| --- | --- |
| 15) The graph below represents the number of balls thrown over time. What is the constant of proportionality? | 16) The graph below represents the number of vertical jumps Ava can do over time. How many jumps can she do per minute? |

Proportional Relationship from a Table

Do the values represent a Proportional Relationship? (Circle Proportional or NonProportional)

|  |  |  |
| --- | --- | --- |
| 17)  Proportional Non-Proportional | 18) (0,0) , (3,4) , (6,8) , (9,12)  Proportional Non-Proportional | 19)  Proportional Non-Proportional |
| 20)  Proportional Non-Proportional | 21) (0,0) , (1,2) , (2,4) , (4,16)  Proportional Non-Proportional | 22) (1,1) , (2,2) , (3,3) , (4,4)  Proportional Non-Proportional |

|  |  |
| --- | --- |
| 23) Find the ratio of y to x for Table 1 and Table 2, simplify the fraction to simplest form.     1. Which table shows a proportional relationship?   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  b) What makes it a proportional relationship?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| 24) Isabella made necklaces with beads. If the quantities are proportional, what is the constant of proportionality? | 25) |
| 26) Write an equation that represents the relationship. | 27) Write an equation to represent the data in the table. |
| 28) At a candy store, all the candy is sold by weight. The table below shows the cost to purchase candy by weight.   |  |  | | --- | --- | | Weight of Candy (pounds) | Cost ($) | | 2 | 5.12 | | 4 | 10.24 | | 6 | 15.36 |   Write an equation to calculate the cost of pounds of candy, x. | 29) The table shows how the number of people who ride a roller coaster depends on the number of cars on the rollercoaster.     1. How many people can ride in 1 car?\_\_\_\_\_\_ 2. In 10 cars?\_\_\_\_\_\_ |

Answer Key

1) $4.20

2) 5 shirts for $21 ($4.20)

3) 24

4) 16 ½

5) 4/17

6) 13 ⅓

1) straight line (linear) 2) constant of proportionality 3) goes through origin

10) Nonproportional

11) nonproportional

12) nonproportional

13) proportional

14) nonproportional

15) 5

16) 10

17) proportional

18) proportional

19) nonproportional

20) proportional

21) nonproportional

22) proportional

23) a) table 2 b) constant rate of change

24) 3.5

25) 7

26) y = 3.5x

27) y = -3.25x

28) y = 2.56x

29) a) 6 b) 60