Name:_____ Date:_____ Per:_____ Folder #: _____

Math 7 Unit 4 Study Guide

Directions: Answer each question completely. <u>Show ALL work</u> to defend your answers.

1. Solve the proportion $\dfrac{x}{12} = \dfrac{25}{75}$

2. Mr. Harrington drove 528 miles in 9 hours. What is his average rate of speed to the nearest (mph)?
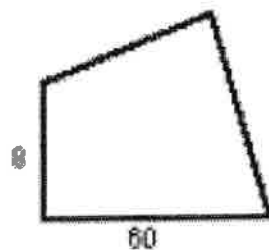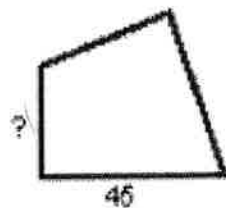
3. One batch of cookies requires two eggs and two and a half cups of flour. How many cups of flour are needed to make three and a half batches of cookies? Write and solve a proportion.

   a. How much flour do we need? _____

   b. How many eggs should we use? _____

4. According to the scale on a map, 1 inch on the map = 16 miles. How many inches on the map would represe 24 miles?

5. The shapes below are similar. Use proportions to solve for the variable and find the length of the missing side.

6. Jennifer babysat for 6 hours and earned $43.50. What is her hourly rate of pay? Is this a proportional relationship? Why or why not? Create a table, a graph, and a rule to justify your answer.

Name: **Answer key** Date:_____ Per:_____ Folder #: _____
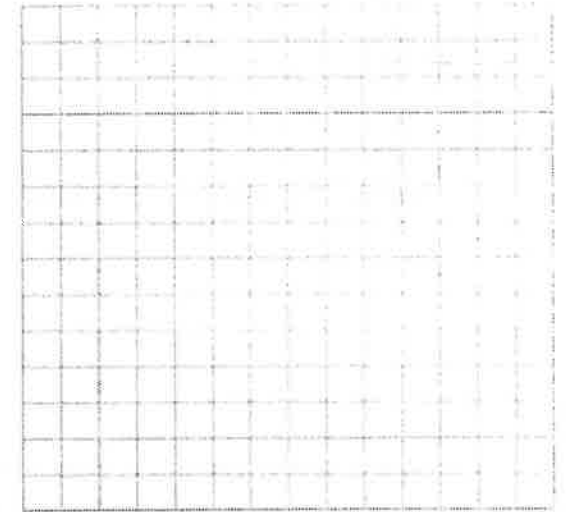
Math 7 Unit 4 Study Guide

Directions: Answer each question completely. <u>Show ALL work</u> to defend your answers.

1. Solve the proportion $\dfrac{x}{12} = \dfrac{25}{75}$

    $75 \cdot x = 25 \cdot 12$

    $\dfrac{75x}{75} = \dfrac{300}{75}$

    $\boxed{x = 4}$

2. Mr. Harrington drove 528 miles in 9 hours. What is his average rate of speed to the <u>nearest (mph)</u>?

    $\dfrac{528 \text{ miles} \;\div 9}{9 \text{ hours}} = \dfrac{x}{1 \text{ hour}} \;\div 9$

    $528 \div 9 = 58.\overline{6} = 59$

    $\boxed{59 \text{ miles per hour}}$

3. One batch of cookies requires two eggs and two and a half cups of flour. How many cups of flour are needed to make three and a half batches of cookies? Write and solve a proportion.

    #multiply mixed numbers

    a. How much flour do we need? $\underline{4\frac{3}{4} \text{ cups flour}}$

    $\dfrac{1 \text{ batch}}{2\frac{1}{2} \text{ flour}} = \dfrac{3\frac{1}{2} \text{ batches}}{x \text{ flour}}$

    $2\frac{1}{2} \cdot 3\frac{1}{2} = \frac{5}{2} \cdot \frac{7}{2} = \frac{35}{4} = 4\frac{3}{4}$

    b. How many eggs should we use? $\underline{7 \text{ eggs}}$

    $\dfrac{1 \text{ batch}}{2 \text{ eggs}} = \dfrac{3\frac{1}{2} \text{ batches}}{x \text{ eggs}}$

    $2 \cdot 3\frac{1}{2} = \frac{2}{1} \cdot \frac{7}{2} = \frac{14}{2} = 7$

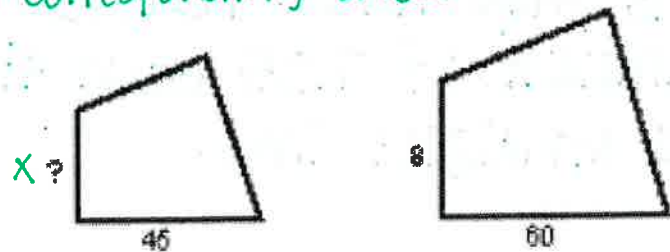4. According to the scale on a map, 1 inch on the map = 16 miles. How many inches on the map would represent 24 miles?

    $\dfrac{1 \text{ in}}{16 \text{ mi}} = \dfrac{x}{24 \text{ mi}}$

    $1 \cdot 24 = 16 \cdot x$

    $\dfrac{24}{16} = \dfrac{16x}{16}$

    $\boxed{x = 1.5 \text{ inches}}$

5. The shapes below are similar. Use proportions to solve for the variable and find the length of the missing side. *★ corresponding sides!!*

    ★corresponding sides

    $\dfrac{x}{45} = \dfrac{8}{60}$

    X ?

    45

    8

    60

    $60 \cdot x = 45 \cdot 8$

    $\dfrac{60x}{60} = \dfrac{360}{60}$

    $\boxed{x = 6}$
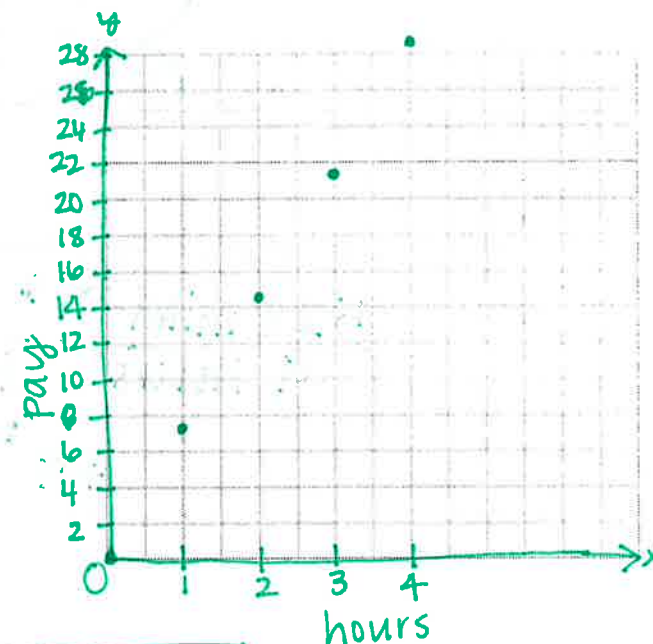
6. Jennifer babysat for 6 hours and earned $43.50. What is her hourly rate of pay? Is this a proportional relationship? Why or why not? Create a table, a graph, and a rule to justify your answer. *explain*

$$\frac{43.50}{6 \text{ hr}} = \frac{x}{1 \text{ hr}}$$

÷6 ↘ ÷6 ↗

$7.25 per hour

★ Her hourly rate of pay is $7.25 per hour.

rule

$$y = 7.25 x$$

Table

hours	0	1	2	3	4
pay	0	7.25	14.50	21.75	29

This is a proportional relationship.
In both the table and the graph, the problem starts at (0,0) which means she doesn't earn any money if she doesn't work, so there is no starting value.
   I know this is proportional because it increases by the same amount of 7.25 each time, which creates a straight line.