

Name: _____ Date: _____ Hour: _____

Unit 3A Day 9: Rate of Change Word Problems

Focus Question: How do I find rate of change from a word problem?

A. As you answer each question below, make sure you indicate what rate you need. Then answer the question.

1. Dasha and Lacey went shopping. Dasha bought 4 dresses and spent \$25 dollars. Lacey bought 6 dresses and spent \$38 dollars. Who found the better deals? Explain.

Rate needed: $\frac{\$}{\text{dress}}$

Dasha had a better deal because her dresses were \$.08 cheaper

$\frac{\$25}{4 \text{ dresses}}$	$\frac{\$38}{6 \text{ dresses}}$
\$6.25	\$6.33

2. Matthew is charged \$50 to rent a motorbike and an additional \$0.15 per mile that he drives the motorbike. How is his total cost changing?

Rate needed: His total cost is increasing by \$0.15 per mile

3. JoAnn's lunch account has \$25 in it. Each day she has to pay \$3 for lunch. How is her lunch balance changing?

Rate needed: it's decreasing by \$3/day

Those three problems were pretty easy because the rate was either given to you, or required very little work. The following problems require a little more thought. (Remember, that you can always turn problems into two points.)

4. Taylor ate too much over the holidays and ^{IV}currently weighs 90 kg. She went on a diet and ^{DV}24 weeks later weighs 78 kg. How is Taylor's weight changing?

Rate needed: $\frac{\text{kg}}{\text{week}}$

Taylor lost a kg every 2 weeks

$\frac{78 - 90}{24 - 0}$	$\frac{(0, 90) - (24, 78)}{24 \text{ weeks}}$
$\frac{-12}{24} = -\frac{1}{2}$	$\frac{-12 \text{ kg}}{24 \text{ weeks}} = -\frac{1}{2}$

5. Juan currently can bench 65 pounds. He is working on his strength and conditioning. After 5 weeks he can bench 75 pounds. How is the weight he can bench changing?

Rate needed: $\frac{\text{lbs}}{\text{weeks}}$ _____

$$\frac{75 - 65}{5 - 0} = \frac{10 \text{ lbs}}{5 \text{ weeks}}$$

$$\begin{matrix} (0, 65) \\ (5, 75) \\ \hline 2 \text{ lbs} \\ 1 \text{ wk} \end{matrix}$$

Juan increased his bench weight at rate of 2 lbs/week

6. A scuba diver is 30 feet below the surface of the water 10 seconds into his dive. He is 100 feet below the surface after 40 seconds? How is the scuba diver's depth changing?

Rate needed: $\frac{\text{ft}}{\text{sec}}$ _____

$$\frac{100 - 30}{40 - 10} = \frac{70}{30} = \frac{7}{3}$$

$$\begin{matrix} (10, 30) \\ (40, 100) \end{matrix}$$

A scuba diver is diving at a rate of 7ft every 3 seconds

7. A taxi driver charges passengers that go 3 miles \$25. The next customers go 18 miles and get charged \$70. At what rate does the taxi driver charge customers?

Rate needed: _____

$$\frac{\$70 - \$25}{18 \text{ miles} - 3 \text{ miles}} = \frac{\$45}{15 \text{ miles}} = \frac{\$3}{1 \text{ mile}}$$

He is charging at a rate of \$3 mile

8. George's mom bought him a whole lot pencils to start the school year. After 9 weeks of school, George had 200 pencils left. After 18 weeks of school, George was down to 137 pencils. At what rate is George's number of pencils changing?

Rate needed: _____

$$200 - 137 = 63$$

He lost 63 pencils in 9 weeks