

Name: \_\_\_\_\_

**Practice Quiz – Linear Rates of Change**

Directions: Please answer the following with TRUE or FALSE

1. The rate of change in a linear relationship is constant.	TRUE	FALSE
2. The relationship $\frac{25 \text{ feet}}{10 \text{ sec}}$ is a ratio but not a rate of change.	TRUE	FALSE
3. In a table of ordered pairs, the relationship is linear IF AND ONLY IF, all the delta x's are equal to each other and all the delta y's are equal to each other.	TRUE	FALSE

Directions: Please determine if the following relationships are linear or not. Show your work by computing the deltas in the margin and the rate of change.

4. Linear or Not Linear

5. Linear or Not Linear

6. Linear or Not Linear

	X	Y			X	Y			X	Y		
$\Delta x$	5	8	$\Delta y$		$\Delta x$	10	15	$\Delta y$	$\Delta x$	12	15	$\Delta y$
+8	13	6	-2		+1	11	16	+1	8	20	19	4
+8	21	4	-2		+1	12	18	+2	2	22	20	1
+8	29	2	-2		+1	13	21	+3	10	32	25	5

Ratios  $\frac{-2}{8}$   $\frac{-2}{8}$   $\frac{-2}{8}$   
 ROC  $-.25$   $-.25$   $-.25$   
 Constant

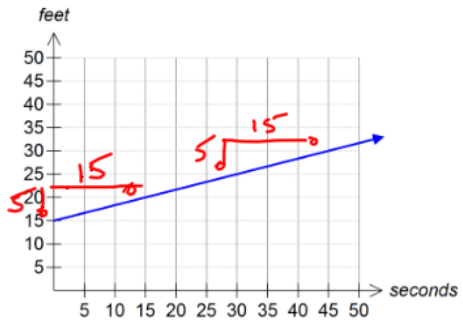
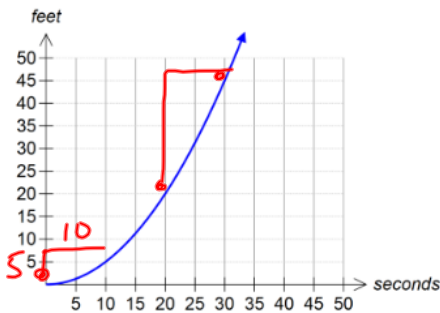
Ratios  $\frac{1}{1}$   $\frac{1}{2}$   $\frac{1}{3}$   
 ROC  $1$   $.5$   $.3$   
 NOT CONSTANT

Ratios  $\frac{4}{8}$   $\frac{1}{2}$   $\frac{5}{10}$   
 ROC  $.5$   $.5$   $.5$   
 Constant

Directions: Please determine which of the following graphs has a constant rate of change. Show two ratios from each graph to demonstrate your point.

7.

8.



Please circle

Constant Rate of Change or Variable Rate of Change  
 Ratio 1 =  $\frac{5}{10}$  f/s  
 Ratio 2 =  $\frac{25}{10}$  f/s  
 ROC 1 =  $.5$  f/s  
 ROC 2 =  $2.5$  f/s

Constant Rate of Change or Variable Rate of Change  
 Ratio 1 =  $\frac{5}{15}$  f/s  
 Ratio 2 =  $\frac{5}{15}$  f/s  
 ROC 1 =  $.3$  f/s  
 ROC 2 =  $.3$  f/s

Directions: Please determine the missing number in the following relationship so that the data set is linear.

9.

10.

	X	Y			X	Y	
$\Delta x$	12	15	$\Delta y$		$\Delta x$	12	15
-3	9	23	+8		22	18	+3
-3	6	(31)	+8		52	(27)	+9

Handwritten notes for problem 10:  
 $\frac{\Delta y}{\Delta x} = \frac{3}{10} = \frac{x}{30}$   
 $10x = 90$   
 $x = 9$

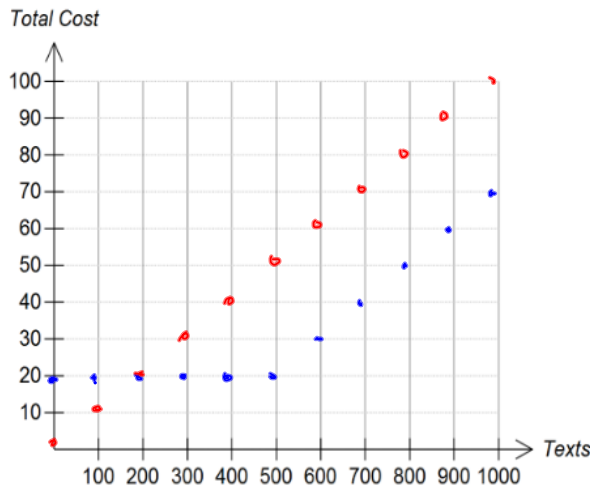
Consider the following two texting plans.

**Plan A:** You pay no money up front. You only pay for each text. The cost for a text is \$.10.

**Plan B:** You pay 19.99 to have texting in your plan and this gives you your first 500 texts without yadditional charge. However, all texts after that cost \$.10 per text.

11. Complete the following table for each plan and make a graph of the data sets you create.

# texts	Cost for A	Cost for B
0	0	19.99
100	10	19.99
200	20	19.99
300	30	19.99
400	40	19.99
500	50	19.99
600	60	29.99
700	70	39.99
800	80	49.99
900	90	59.99
1000	100	69.99



Please answer the questions using the graphs above.

12. What is the slope of each graph? What does it represent?

Plan A: .10 the whole time  
 The price per text in this scenario

Plan B: 0 for 0-500 texts  
 .10 after 500 texts  
 It is the price per text in each scenario.

13. Which plan makes better sense (gives a better savings) if you average about 100 texts per month? Justify your answer.

Plan A b/c the graph for A is under B up until 200 texts

14. Which plan makes better sense (gives a better savings) if you average about 800 texts per month? Justify your answer.

Plan B b/c it is always a saving over plan A after 200 texts.