

Unit 2 – Part B Review

Activity 9: Rate of Change

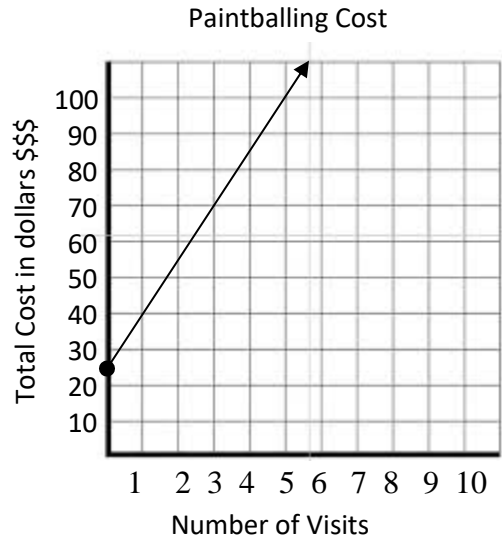
Activity 10: Linear Models, Variation

Activity 11: Arithmetic Sequences

Activity 12: Forms of Linear Functions

Activity 13: Equations from Data, Regressions

1. John’s favorite hobby is paintballing. John pays an entry fee and an additional cost for paintballs. This graph represents the charges where  $x$  is the number of times he goes paintballing and  $y$  is the total cost. How much is the entry fee?



2. State the slope of the line that passes through the following points  
 a.  $(-1, 0)$  and  $(3, -8)$     b.  $(3, 8)$  and  $(3, 4)$     c.  $(-2, 1)$  and  $(4, 1)$     d.  $(6, -5)$  and  $(-2, 1)$

3. Which tables represent functions that are **not** linear? Select all that apply. If they are state the slope of the linear function.

Table 1

x	y
-1	.5
0	1
1	2
2	4

Table 2

x	y
-1	0
0	1
1	2
2	9

Table 3

x	y
-1	2
0	3
1	4
2	5

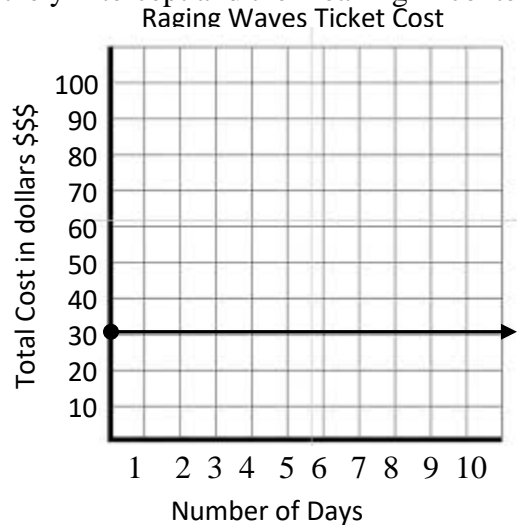
Table 4

x	y
0	0
4	2
9	3
16	4

Table 5

x	y
-2	1
-1	-2
0	-3
2	1

4. The graph shows the price of entering Raging Waves Water Park for the current season as a function of the number of days since the tickets went on sale. What is the slope of the line and describe its meaning in this context. Also state the y-intercept and the meaning in context.



5. Kerry works a part time job. His income vary directly with the number of hours he works. One day Kerry made \$72 for working 6 hours. Another day he earned \$48 for working only 4 hours. Which is an equation relating Kerry's income  $y$ , to the number of hours he worked  $x$ .

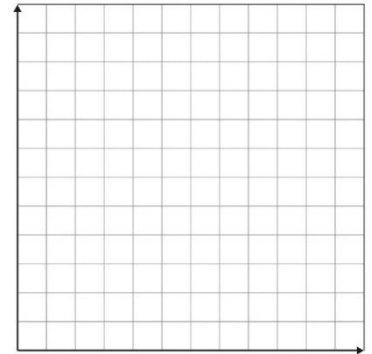
a.  $y = 10x$

c.  $y = 9x$

b.  $y = 12x$

d.  $y = 2x$

6. Paul's health club has an enrollment fee of \$50 and costs \$25 per month. Write an equation to model the situation, then graph the function. Then state the slope and what it means in context.



7. a. Which function model the sequence {7, 11, 15, 19, 23, 27}?

a.  $f(a) = 4a$

b.  $f(a) = 3a$

c.  $f(a) = 4a + 3$

d.  $f(a) = 3a + 4$

- b. State the arithmetic sequence in recursive form.

8. a. What are the first five terms in the arithmetic sequence with the recursive formula below?

$$a_1 = 2.5 \qquad a_n = a_{n-1} + 6$$

b. Place the recursive form in simplified explicit form in function **AND** subscript notation.

9. If  $a_4 = 12$  and  $a_9 = 27$ :

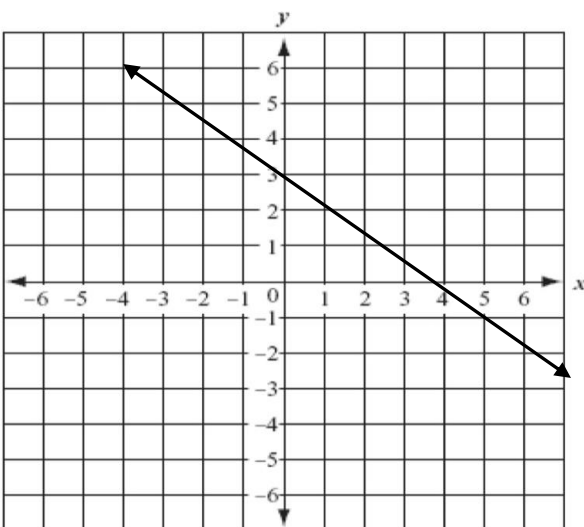
a. Write the explicit formula that models the arithmetic sequence.

b. Write the recursive formula that models the arithmetic sequence.

10. Write an equation, in slope-intercept form, that represents the relationship shown in this table.

x	y
-2	0
0	-1
2	-2
4	-3

11. Write the equation that represents the line shown on the graph in slope intercept, point slope **AND** standard form.



a. Slope-Intercept:

b. Point-Slope:

c. Standard:

12. John plans to save \$50 from every pay check. After 6 pay checks,  $x$ , he has \$300 ( $y$ ) in his savings account. Which equation, in standard form, represents this situation?

a.  $y - 300 = 50(x - 6)$

c.  $50x + 300y = 6$

b.  $y - 6 = 50(x - 300)$

d.  $50x - y = 0$

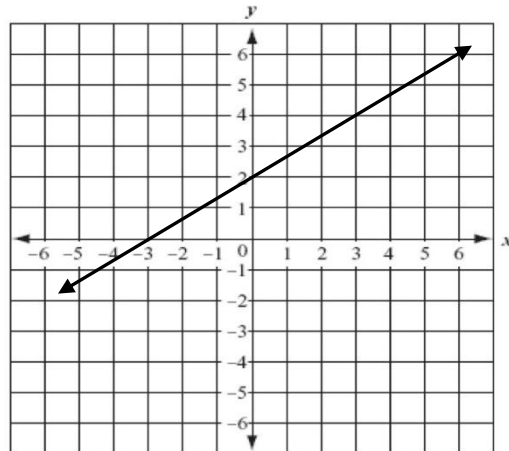
13. a. Write an equation, in slope intercept form, that is perpendicular to the line described by  $y - 2 = 2x + 8$  and that contains the point  $(-1, 12)$ .

b. Write an equation, in slope intercept form, that is parallel to the line  $y - 2 = 2x + 8$  and contains point  $(-1, 12)$ .

c. What is the relationship between the lines in part a and part b.

14. Write an equation of a line, in slope intercept form, that is parallel to the line containing the points  $(0, -7)$  and  $(5, 12)$ .

15. Write an equation of a line, in slope intercept form that is perpendicular to the line graphed below.



16. Use a calculator to perform a linear regression for these data points. Complete the equation of the line of best fit. Round values to the nearest hundredth.

$(3, 45), (3, 50), (1, 65), (6, 38), (6, 40), (6, 45), (2, 58)$

17. The temperature of a freshly brewed cup of coffee after it is poured is modeled by the table below. Use a calculator to perform an exponential regression for these data points. Complete the equation of the line of best fit. Round values to the nearest hundredth.

Time (min)	0	5	8	11	15	18	22	25	30	34	38	42	45	50
Temperature (F)	180	169	158	149	142	135	125	124	116	113	109	106	102	101

What would you expect the temperature to be after 55 minutes?

*Use the following situation for questions #16 and #17.*

Brittney spends \$18.50 for fresh fruit at the grocery store. She buys apples for \$2.50 per pound and bananas that cost \$1.50 per pound.

18. Write an equation in standard form, that represents the number of pounds of apples,  $x$ , and the number of pounds of bananas, that Brittney buys. Show or explain your reasoning you used to determine your answer.

19. Select a point that would lie on the graph of the equation you wrote for question 17. Tell what this point represents in the context of the problem.

Use the graph at the right for questions 18 & 19.

The graph shows the profit made by selling a product based on its price.

20. Identify the point that is the maximum and tell what it represents in the context of the problem.

21. Based on the graph, give the reasonable domain and range and explain what it means in the context of the problem.

