

SB Lessons 9, 10 & 11 TEST Review

Name _____
Date _____ Period _____
Assignment # _____

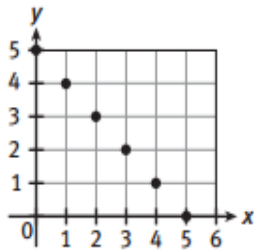
**Show ALL work, tables and graphs on separate paper. Use graph paper for ALL graphs.**

Determine whether each rate of change is constant. If it is, find the rate of change and explain what it represents.

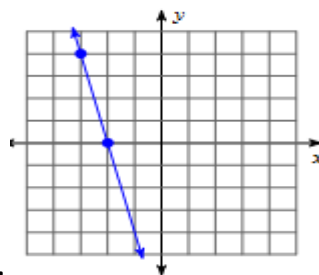
1) The table shows the relationship between the wait time in minutes and the number of people in line.

People in Line	
Number	Wait Time (min.)
3	15
6	30
9	45
12	60

Find the slope of each line



2.



3.

Find the slope of the line that passes through each pair of points.

4.  $(-10, 6), (-1, 7)$

5.  $(-4, 5), (-4, -8)$

Determine whether each equation represents a direct variation, indirect variation, or neither. If it does represent a direct or indirect variation, find the constant of variation.

6.  $y - 12x = 0$

7.  $12x = -36y$

8.  $y = \frac{6}{x}$

9.  $y = \frac{x}{3}$

Suppose y varies directly with x. Write a direct variation equations that relates x and y. Then, find the value of y when x = 6.

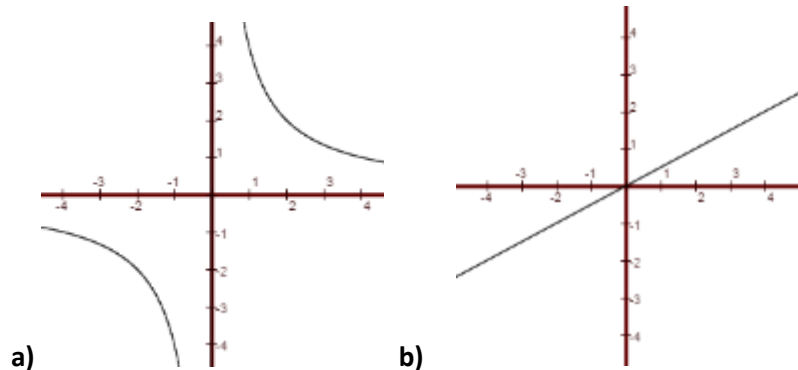
10.  $y = 14$  when  $x = 2$ .

11.  $y = 2$  when  $x = 3$ .

12. For the data in the table, tell whether  $y$  varies directly with  $x$ . If it does, write an equation for the direct variation.

$x$	$y$
3	-4.5
-5	17.5
11	-38.5

13. Determine whether the following graphs represent a direct variation. If yes, write an equation for the direct variation.



14. The value of  $y$  varies indirectly with the value of  $x$ , and the constant of variation is 8. What is the value of  $x$  when  $y = 16$ ?

15. The amount of gas left in the gas tank of a car varies indirectly to the number of miles driven. There are 7 gallons of gas left after 64 miles. How much gas is left after the car is driven 128 miles?

16. The value of  $y$  varies indirectly with the value of  $x$ , and  $y=8$  when  $x=30$ . What is the value of  $y$  when  $x=40$ ?

Write a function for the given scenario.

17) A kennel charges \$19 per day to board dogs. Upon arrival, each dog must have a flea bath that costs \$14. Write a function for the total cost  $T(n)$  of  $n$  days of boarding plus a bath. What would be the total cost for a 3 day stay?

What is the inverse of each function?

18)  $f(x) = 3x + 8$

19)  $f(x) = \frac{1}{4}x - 1$

20) Amanda is starting her own hair bow business. The ribbon and other supplies will cost her \$80. She plans to charge \$5 per bow.

- Write and graph a function  $b(x)$  for the profit Amanda will earn for selling  $x$  bows.
- What is the  $y$ -intercept of the function? Describe what the  $y$ -intercept means in terms of profit.
- How many bows must she sell to break even?
- If Amanda wants to make a profit of \$500, how many bows must she sell?

- 21 **Critique the reasoning of others.** Carlotta says the sequence below is an arithmetic sequence because you multiply each term by 2 to get the next term. Is Carlotta correct? Explain.

2, 4, 8, 16, 20, ...

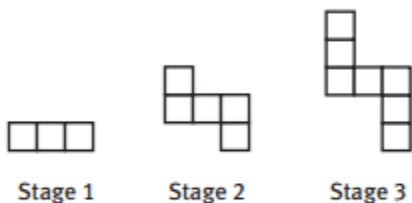
- 22 Identify the common difference in each arithmetic sequence.

a. 21, 15, 9, 3, -3, ...

b.  $-2, -\frac{3}{2}, -1, -\frac{1}{2}, 0, \dots$

c. -19, -9, 1, 11, 21, ...

- 23 **Model with mathematics.** Antonio is arranging tiles according to the pattern below.

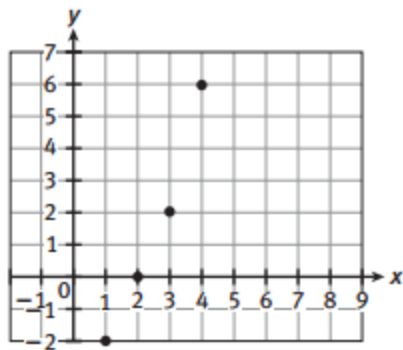


Write the explicit formula for the arithmetic sequence that models Antonio's pattern. Explain what the values of  $a_n$  and  $d$  represent in the context of the situation.

- 24 Write an arithmetic sequence for which  $a_4 = 11$  and  $a_9 = 36$ . Write the explicit formula for the sequence, and graph it. Explain how you found your answer.

- 25 Write a function to describe the arithmetic sequence  $-3, 2, 7, 12, 19, \dots$

- 26 For the arithmetic sequence graphed below, find  $f(2)$  and  $f(11)$ .



- 27 An arithmetic sequence is described by the recursive formula  $\begin{cases} a_1 = 2 \\ a_n = a_{n-1} + 7 \end{cases}$ . If  $a_{n-1} = 1$ , what is the value of  $a_n$ ?

- A.** 2                      **B.** 3  
**C.** 7                        **D.** 8

- 28 Find the recursive formula for each arithmetic sequence. Include the recursive formula in function notation.

**a.**  $\frac{1}{2}, \frac{5}{4}, 2, \frac{11}{4}, \dots$

**b.**  $a_n = 2n - 5$