

**Math 9 Ch4 Linear Relations Test**

Core Skill 1	
Core Skill 2	
Core Skill 3	
Core Skill 4	
Overall	

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

**Core Skills #1: Recognizing patterns**

arithmetic sequence  $t_n = a + (n - 1) \cdot d$

19.04

1. Determine the common difference and predict the next 2 terms.

- a. -12, -5, 2, \_\_\_\_\_, \_\_\_\_\_ Common difference) **+7**
- b. -8, 3, 14, 25, \_\_\_\_\_, \_\_\_\_\_ Common difference) **+11**

2. Predict the 20<sup>th</sup> term.

$(10, 6, 2, -2, \dots)$   $d = -4$   $n = 19$

$$t_{20} = 10 + (20 - 1) \cdot (-4) = 10 - 76$$

the 20<sup>th</sup> term **-66**

3. A number pattern starts at 2.5. Each number after that is four more than the number before.

- a) Write the first five terms of this pattern
- b) Develop an equation that can be used to determine the value of each term in the pattern. (hint: leave "n" in the equation and simplify)
- c) What is the value of the 40<sup>th</sup> term?
- d) Which term has a value of 237.5?

First 5 terms)  $2.5, 6.5, 10.5, 14.5, 18.5$

$$t_n = a + (n-1)d = 2.5 + (n-1)4 = 2.5 + 4n - 4$$

$$t_n = 4n - 1.5$$

equation)  $t_n = 4n - 1.5$

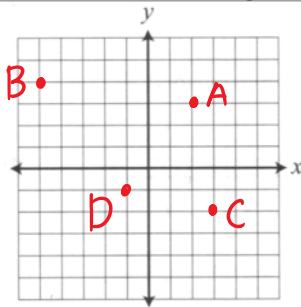
$160 - 1.5 = 158.5$  (40<sup>th</sup> term)

4.40 Term: **60**

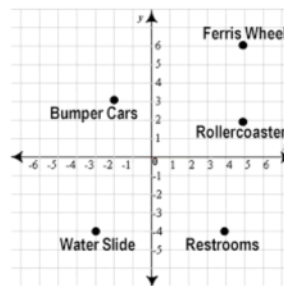
**Core Skills #2: order pair and Linear Relationship**

4. Plot the points on the grid, label the point A, B, C and D

- A (2,3)  
B (-5,4)  
C (3,-2)  
D (-1,-1)



5. Find the coordinates



- Bumper Cars) **(-2, 3)**  
Restrooms) **(4, -4)**  
Water Slide) **(-3, -4)**

6. Is the given ordered pair a solution of the equation? (ie, if you substitute the x and y values in the equation with the point. Does the equation still equal on both side?)

a)  $(-1, 5)$ ; if  $x = -1$

$$y = -3x + 2$$

$$y = -3(-1) + 2$$

$$y = 5$$

**Yes**

b)  $(-1, 1)$ ;  $y = -3x + 2$

$$y = -3(-1) + 2$$

$$y = 5$$

**No**

7. Determine the missing ordered pair values for the given equation

$$y = \frac{4}{3}x - 1$$

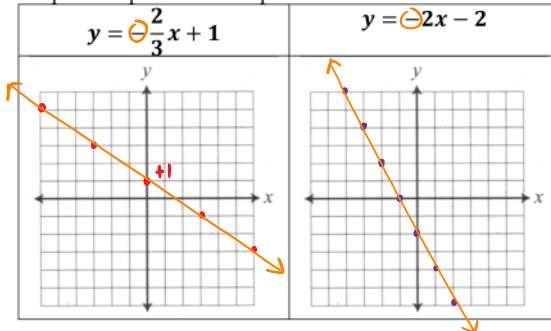
a)  $x = -6$   $y = \frac{4}{3}(-6) - 1 = -8 - 1 = -9$

b)  $y = 7$   $7 = \frac{4}{3}x - 1 \Rightarrow 8 = \frac{4}{3}x \Rightarrow x = 6$

x	0
y	-1
a	$\frac{3}{4}$
b	-6
c	6
	0
	-9
	7

**Core skill #3: Graphing Linear Equation**

8. Graph the equation in the space below



9. Graph the equation using the table provided

$4x - 2y = 8$

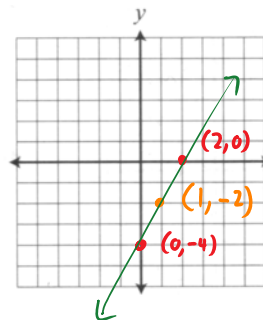
X	Y
0	-4
2	0
1	-2

$$4x - 2(-2) = 8$$

$$4x + 4 = 8$$

$$4x = 4$$

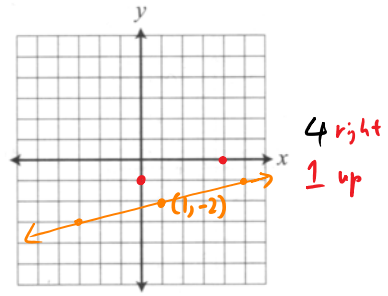
$$x = 1$$



10. Sketch a graph of a linear equation parallel to the given equation, that passes through the point indicated

X	Y
0	-1
4	0

parallel  
 $2x - 8y = 8$  point (1, -2)  
 Slope = 4 right 1 up  
 go through



**Core skill #4) Determine linear equation from the graph in the form of  $y = mx + b$**

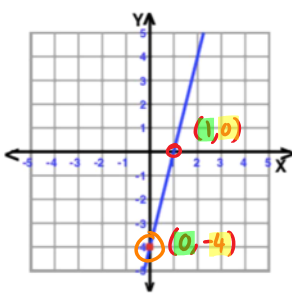
11. Calculate the slope of the line that contains the points

(1, 5) and (3, 9)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - 5}{3 - 1} = \frac{4}{2} = 2$$

Slope: 2

12. Write a linear equation for the graph.



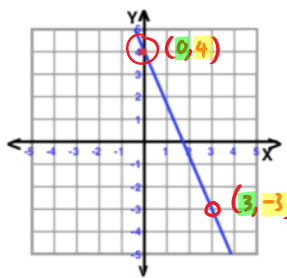
$$y = mx + b$$

$$b = -4$$

$$m = \frac{0 - (-4)}{1 - 0} = \frac{4}{1} = 4$$

Ans)  $y = 4x - 4$

13. Write a linear equation for the graph.



$$b = 4$$

$$m = \frac{4 - (-3)}{0 - 3} = \frac{7}{-3} = -\frac{7}{3}$$

Ans)  $y = -\frac{7}{3}x + 4$

14. Match the linear equations from the graphs below

$y = \frac{5}{3}x - 3$  **B**

Vert.  $x = 3$  **F**

(0, 1) (3, 0) **D**

$y = 2x - 5$  **A**

$4x - y = 4$  **H**

$-2x + 5y = 10$  **E**

horizontal  $y = -3$  **C**

$y = -\frac{2}{5}x + 3$  **G**

(0, 2) (-5, 0)

