Name: Answers

Date: _____

Grade 9 Math

Mid-Year Review 03

1. What is the rule for the linear equation that passes through points A and B ?

x_1 y_1

A (-8, 222)

B (14, -966)

x_2 y_2

$a = \frac{-966-222}{14-(-8)} = \frac{-1188}{22} = -54$

$y = ax + b$

$222 = -54(-8) + b$

$222 = 432 + b$

$-432 \quad -432$

$-210 = b$

Rule: $y = -54x - 210$

2. What is the rule for the linear equation ***parallel*** to **4y = -26x + 44**, but passing through point **C (5, -26)**

$\frac{4y}{4} = \frac{-26x}{4} + \frac{44}{4}$

$y = -6.5x + 11$

$a = -6.5$

Same a!

passing through (5, -26)

$y = ax + b$

$-26 = -6.5(5) + b$

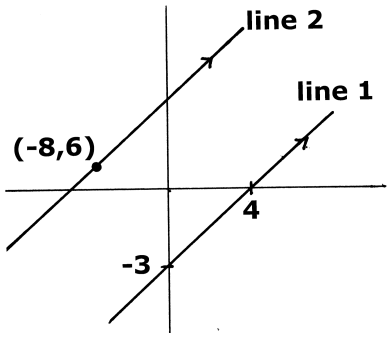
$-26 = -32.5 + b$

$+32.5 \quad +32.5$

$58.5 = b$

Rule: $y = -6.5x + 58.5$

3. Line 1 and Line 2 are **parallel**. **What is the equation that defines line 2**?



Same a

Get slope of line 1 (same)

(0, -3)

(4, 0)

$a = \frac{0-(-3)}{4-0} = \frac{3}{4} = 0.75$

Line 2 passing through (-8, 6)

$y = ax + b$

$6 = 0.75(-8) + b$

$6 = -6 + b$

$+6 \quad +6$

$12 = b$

Line 2: $y = 0.75x + 12$

N.R.S.

4. What is the rule for the linear equation ***perpendicular*** to **2y = 1.5x – 20,** passing through **(42, -25)?**

$\frac{2y}{2} = \frac{1.5x}{2} - \frac{20}{2}$

$y = 0.75x - 10$

$m_{\perp} a = \frac{-1}{(0.75)} = -1.\overline{3}$

passing through $(\overset{x}{42}, \overset{y}{-25})$

$y = ax + b$

$-25 = -1.\overline{3}(42) + b$

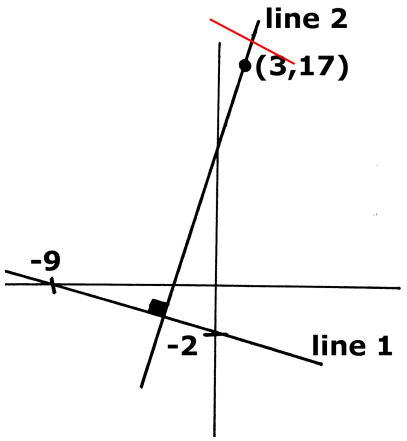
$-25 = -56 + b$

$+56 \quad +56$

$31 = b$ NRS

Rule: $y = -1.\overline{3}x + 31$

5. Line 1 and line 2 are **perpendicular**. **What is the equation that defines line 2**?



Get Slope of line 1

$(\overset{x_1}{-9}, \overset{y_1}{0})$

$(\overset{x_2}{0}, \overset{y_2}{-2})$

$a = \frac{-2-0}{0-(-9)} = \frac{-2}{9} = -0.\overline{2}$

$m_{\perp} a = 4.5$

$y = ax + b$ (line 2)

$17 = 4.5(3) + b$

$17 = 13.5 + b$

$-13.5 \quad -13.5$

$3.5 = b$

Line 2: $y = 4.5x + 3.5$

Isolate y!

6. What are the x- and y- intercepts for the following equation: **2y – 29x + 87 = 0**?

$2y - 29x + 87 = 0$

$+29x - 87 \quad +29x - 87$

$\frac{2y}{2} = \frac{29x - 87}{2}$

$y = 14.5x - 43.5$

x int: $(x, 0)$, y int: $(0, y)$ (b)

x int (make $y = 0$)

$0 = 14.5x - 43.5$

$+43.5 \quad +43.5$

$\frac{43.5}{14.5} = \frac{14.5x}{14.5}$

$3 = x$

X intercept : (3 , 0)

(b) **Y intercept :** (0 , -43.5)

Isolate y!

7. What are the x- and y- intercepts for the following equation: **240 + 30x – 4y = 0**?

$240 + 30x - 4y = 0$

$-240 - 30x \quad -240 - 30x$

$\frac{-4y}{-4} = \frac{-30x}{-4} - \frac{240}{-4}$

$y = 7.5x + 60$

↑ b is y int.

Get x int by making $y = 0$!

$0 = 7.5x + 60$

$-60 \quad -60$

$\frac{-60}{7.5} = \frac{7.5x}{7.5}$

$8 = x$

X intercept : (8 , 0)

Y intercept : (0 , 60)