Name: Answers

Date : _____

Grade 9

Mid-Year Review 01

1. What is the **equation** of a line passing through points **(-8, 290)** and **(-3, 135)**?

$x_1\ y_1$ $x_2\ y_2$

$a = \frac{y_2 - y_1}{x_2 - x_1}$

$a = \frac{135 - 290}{-3 - (-8)} = \frac{-155}{5} = -31$

$y = ax + b$

$290 = -31(-8) + b$

$290 = 248 + b$

$-248 \quad -248$

$42 = b$

Equation: $y = -31x + 42$

2. What is the **equation** of a line with a rate of change of $\frac{-1}{3}$, passing through point **(-6, 17)**?

$x\ y$

$a = -0.\overline{3}$

$y = ax + b$

$17 = -0.\overline{3}(-6) + b$

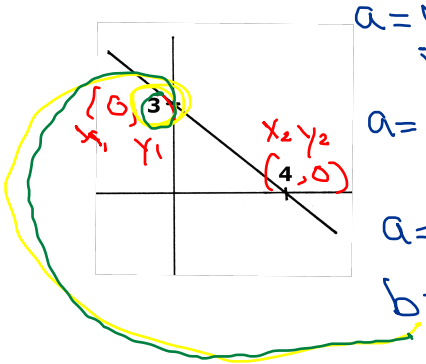
$17 = 2 + b$

$-2 \quad -2$

$15 = b$

Equation: $y = -0.\overline{3}x + 15$

3. What is the **equation** of the line represented in the graph below?



$x_1\ y_1$ $(0, 3)$

$x_2\ y_2$ $(4, 0)$

$a = \frac{y_2 - y_1}{x_2 - x_1}$

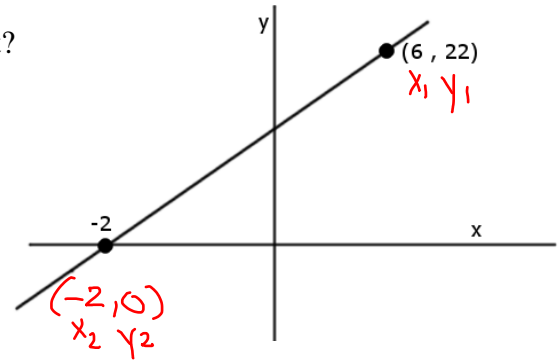
$a = \frac{0 - 3}{4 - 0} = \frac{-3}{4}$

$a = -0.75$

$b = ?$

Equation: $y = -0.75x + 3$

4. What is the **equation** of the line represented in the graph at right?



$x_1\ y_1$ $(6, 22)$

$x_2\ y_2$ $(-2, 0)$

$a = \frac{0 - 22}{-2 - 6} = \frac{-22}{-8} = 2.75$

$y = ax + b$

$0 = 2.75(-2) + b$

$0 = -5.5 + b$

$5.5 = b$

$a = 2.75$

$b = ?$

$x = -2$

$y = 0$

Equation: $y = 2.75x + 5.5$

5. Jimmy gets a job delivering pizzas at his uncle's pizza shop.
His uncle pays him 25$ to show up, and 3.50 for every pizza he delivers.

b a

a. What is the rule that determines Jimmy's pay at the end of a shift?
b. If Jimmy delivers 13 pizzas during a shift, how much money will he make that day?
c. If Jimmy makes $119.50 in a shift, how many pizza's must he have delivered?

x = # of pizzas y = $ earned

b) $y = 3.5x + 25$ where $x = 13$
$y = 3.5(13) + 25$
$y = 45.50 + 25$
$y = 70.50$ $

c) $y = 3.5x + 25$ where $y = 119.50$
$119.50 = 3.5x + 25$
$-25 \quad -25$
$\frac{94.50}{3.5} = \frac{3.5x}{3.5}$
$27 = x$

Rule: $y = 3.5x + 25$
Jimmy will make" 70.50 **$**
Jimmy will have delivered 27 **pizzas**

6. Amanda, Tiffany and Emily join an exclusive gym for a year. They each pay an initial yearly membership fee, but must also pay a small fee each time they visit the gym.

- Amanda visits the gym 92 times and must pay a total of $306
- Tiffany pays $ 402.25 after visiting the gym 147 times.

$(x_1, y_1) = (92, 306)$
$(147, 402.25)$ (x_2, y_2)

If Emily pays a total of $ 649, how many times must she have visited the gym?

x = # of gym visits y = $ cost of gym

$a = \frac{402.25 - 306}{147 - 92}$
$a = \frac{96.25}{55} = 1.75$
1.75 ↑ rate per visit!

$y = ax + b$
$306 = 1.75(92) + b$
$306 = 161 + b$
$-161 \quad -161$
$145 = b$

$y = 1.75x + 145$ where $y = 649$ $
$649 = 1.75x + 145$
$-145 \quad -145$
$\frac{504}{1.75} = \frac{1.75x}{1.75}$
$288 = x$

Emily must have visited the gym 288 **times**