

Name: _____

Date: _____

Final Review – 08

Systems of Equations 03

1. Which of the following statements about the system of equations below is true?

Eq. 1) $\frac{3y}{3} = \frac{9x}{3} - \frac{18}{3}$

$$y = 3x - 6$$

Eq. 2) $5y + 15x + 30 = 0$

$$\begin{aligned} & -15x - 30 \quad -15x - 30 \\ & \frac{5y}{5} = \frac{-15x}{5} - \frac{30}{5} \\ & y = -3x - 6 \end{aligned}$$

- A) The system has **one** unique solution *different slope*
B) The system has **two** unique solutions *never*
C) The system has **no** solutions *same slope*
D) The system has an **infinite** number of solutions *the same*

Answer: A

2. Which of the following statements about the system of equations below is true?

Eq. 1) $\frac{4y}{4} = \frac{-28x}{4} + \frac{76}{4}$

$$y = -7x + 19$$

Eq. 2) $-14x - 2y - 42 = 0$

$$\begin{aligned} & +14x \quad +42 \quad +14x + 42 \\ & \frac{-2y}{-2} = \frac{14x + 42}{-2} \\ & y = -7x - 21 \end{aligned}$$

- A) The system has **one** solution C) The system has **no** solutions
B) The system has **two** solutions D) The system has **infinite** solutions

3. Last night the New York Knicks played the Dallas Mavericks.
 The Knicks scored 10 more than twice as many points as the Mavericks.
 The two teams had a combined score of 199 points.
 What was the final score of last night's game?

$$x = 2y + 10$$

$$\begin{array}{r} -10 \\ x - 10 = 2y \\ \hline x - 10 = 2y \end{array}$$

$$0.5x - 5 = y$$

$$\begin{array}{r} 0.5x - 5 = -1x + 199 \\ +1x \quad \quad +1x \\ \hline 1.5x - 5 = 199 \\ +5 \quad \quad +5 \\ \hline 1.5x = 204 \\ \hline 1.5 \quad \quad 1.5 \\ \hline x = 136 \end{array}$$

$$x = 136$$

$$x + y = 199$$

$$\begin{array}{r} -x \quad \quad -x \\ \hline y = -1x + 199 \end{array}$$

$$y = 0.5(136) - 5$$

$$y = 63$$

$$136 - 63$$

4. Anakin and George are related.
~~George~~ is 2 years less than four times older than ~~Anakin~~.
 Anakin and George's ~~combined age is 73 years~~.
 How old is George?

$$4x - 2 = y$$

$$y = 4x - 2$$

$$\begin{array}{r} 4x - 2 = -1x + 73 \\ +1x \quad \quad +1x \\ \hline 5x - 2 = 73 \\ +2 \quad \quad +2 \\ \hline 5x = 75 \\ \hline 5 \quad \quad 5 \\ \hline x = 15 \end{array}$$

$$x + y = 73$$

$$\begin{array}{r} -x \quad \quad -x \\ \hline y = -x + 73 \end{array}$$

$$y = 4x - 2$$

$$y = 4(15) - 2$$

$$y = 58$$

X Y

5. Malachi sells phones and laptops at Best Buy.

The price of a laptop is \$30 more than twice the price of a phone.

Two phones and 3 laptops cost \$ 3090.

How much would it cost for 5 phones and 5 ~~laptops~~?

$$y = 2x + 30$$

$$2x + 3y = 3090$$

$$\begin{array}{r} -2x \\ 3y = -2x + 3090 \end{array}$$

$$\frac{3y}{3} = \frac{-2x + 3090}{3}$$

$$y = -0.6x + 1030$$

$$\begin{array}{r} 2x + 30 = -0.6x + 1030 \\ + 0.6x \quad + 0.6x \end{array}$$

$$\begin{array}{r} 2.6x + 30 = 1030 \\ -30 \quad -30 \\ \hline 2.6x = 1000 \\ \hline 2.6 \quad 2.6 \end{array}$$

$$x = 375$$

$$y = 2(375) + 30$$

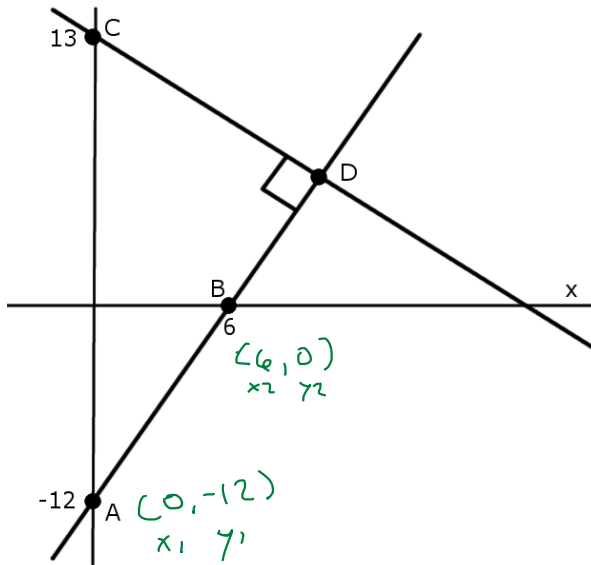
$$y = 780$$

$$(5 \times 375) + (5 \times 780)$$

$$1875 + 3900$$

$$5775$$

6. What are the coordinates of **point D**, where the **two lines meet**?
(Drawing not to scale)



Line AB

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-12)}{6 - 0} = \frac{12}{6} = 2$$

$$y = 2x - 12$$

Line CD

NRS

$$\frac{2}{1} \rightarrow \frac{-1}{2} = -0.5$$

$$y = -0.5x + 13$$

$$2x - 12 = -0.5x + 13$$

$$+0.5x$$

$$+0.5x$$

$$2.5x - 12 = 13$$

$$+12 \quad +12$$

$$2.5x = 25$$

$$\frac{2.5}{2.5} \quad \frac{25}{2.5}$$

$$x = 10$$

$$y = 2(10) - 12$$

$$y = 20 - 12$$

$$y = 8$$

/

Answer: The coordinates of point D are (10 , 8)