Warm Up   12/5/17

1. What value of **y** satisfies the following system of equations?   y = $-3x - 3$ *Use elimination or graphing methods

   $-2x + y = 2$

   $(-1, 0)$

$-2x + (-3x - 3) = 2$ $\boxed{0}$

$-5x - 3 = 2$ $y = -3(-1) - 3$
$\underline{+3 \quad +3}$ $y = 3 - 3$
$\dfrac{-5x = 5}{-5 \quad -5}$ $y = 0$

$x = -1$

2. Solve: $2x - 3y = 12$ $(-1, -4)$ $(9, 2)$
              $x = 4y + 1$

$2(4y+1) - 3y = 12$ $x = 4(2) + 1$
$8y + 2 - 3y = 12$ $x = 8 + 1$
$5y + 2 = 12$ $x = 9$
$\underline{-2 \quad -2}$
$5y = 10$ $(9, 2)$
$y = 2$

3. Write the equation of the line perpendicular to $y = -2x + 5$ that passes through $(-4, 6)$

$m = \dfrac{1}{2}$ $(-4, 6)$

$y - 6 = \dfrac{1}{2}(x + 4)$

$y - 6 = \dfrac{1}{2}x + 2$
$\underline{+6 \qquad\qquad +6}$

$y = \dfrac{1}{2}x + 8$

SYSTEMS APPLICATION

Systems Word Problems

DEFINE VARIABLES!	→	SET UP EQUATIONS & SOLVE!	→	IDENTIFY THE ANSWER!

1. The sum of two numbers is 30 and their difference is 12. Find the two numbers.

$$X = 1^{st} \#$$
$$y = 2^{nd} \#$$

$$+ \quad \begin{aligned} X + y &= 30 \\ X - y &= 12 \end{aligned}$$

$$\frac{2X}{2} = \frac{42}{2}$$

$$X = 21$$

21

$$\begin{aligned} 21 + y &= 30 \\ -21 \quad &-21 \\ \hline y &= 9 \end{aligned}$$

$$\boxed{\begin{aligned} 21 \\ 9 \end{aligned}}$$

6. The sum of two numbers is 25. One number is twice the second number plus seven. What are the two numbers?

Mult.

$X = 1^{st} \#$

$y = 2^{nd} \#$

$X + y = 25$

$X = 2y + 7$

$(2y + 7) + y = 25$

$3y + 7 = 25$

$ -7 \quad -7$

$3y = 18$

$\dfrac{3y}{3} = \dfrac{18}{3}$

$y = 6$

(6, 19)

$X + 6 = 25$

$ -6 \quad -6$

$X = 19$

7. The cost of 3 boxes of envelopes and 4 boxes of notebook paper is $13.25. Two boxes of envelopes and 6 boxes of notebook paper cost $17. Find the cost of each.

$x = \$$ for envelopes

$y = \$$ for n. paper

$-2(3x + 4y = 13.25)$

$3(2x + 6y = 17.00)$

$\$2.45$ for n. paper

$+ \quad -6x - 8y = -26.50$

$6x + 18y = 51.00$

$\dfrac{10y}{10} = \dfrac{24.50}{10}$

$\$1.15$ for envelope

$3x + 4(2.45) = 13.25$

$3x + 9.80 = 13.25$

$\dfrac{-9.80 \quad -9.80}{}$

$\dfrac{3x}{3} = \dfrac{3.45}{3}$

$y = \$2.45$

$x = \$1.15$

9. Gabby and Sydney bought some pens and pencils. Gabby bought 4 pens and 5 pencils for $6.71. Sydney bought 5 pens and 3 pencils for $7.12. Find the cost of each.

$x + y$

$a \underline{\quad} + a \underline{\quad}$

$x + y$

$x = \$ \text{ per pen}$

$\$0.39 \text{ per pencil}$

$-3(4x + 5y = 6.71)$

$y = \$ \text{ per pencil}$ $5(5x + 3y = 7.12)$

$\$1.19 \text{ per pen}$ $+$ $-12x - 15y = -20.13$

$25x + 15y = 35.60$

$4(1.19) + 5y = 6.71$ $\dfrac{13x}{13} = \dfrac{15.47}{13}$

$4.76 + 5y = 6.71$

$5y = 1.95$ $x = \$1.19$

$y = \$0.39$

10. At a sale on winter clothing, Cody bought two pairs of gloves and four hats for $43.00. Tori bought two pairs of gloves and two hats for $30.00. Find the cost of each.

12. The Town Recreation Department ordered a total of 100 baseballs and bats for the summer baseball camp. Baseballs cost $4.50 each and bats cost $20 each. The total purchase was $822. How many of each item was ordered?

$X =$ baseballs

$y =$ bats

$X + y = 100$

$4.50X + 20y = 822$

14. One night a theater sold 548 movie tickets. An adult's ticket costs $6.50 and a child's ticket cost $3.50. In all, $2881 was taken in. How many of each kind of ticket were sold?

$X = \text{adult tickets}$ $\quad -6.50(X + y = 548)$

$y = \text{child tickets}$ $\quad 6.50X + 3.50y = 2881$

227 child tickets

$+$ $\quad -6.50X - 6.50y = -3562$

$\quad\quad 6.50X + 3.50y = 2881$

321 adult tickets

$X + 227 = 548$

$X = 321$

$-3y = -681$

$\dfrac{-3}{-3} \quad \dfrac{}{-3}$

$y = 227$

1. A group of adults and teens attend a football game. The total number of people in the group was 15. Teen tickets cost $32 and adult tickets cost $54 and it cost the whole group $612 to attend the game. How many teens and adults went to the game?