Name_____ Date_____

Unit 3 **Lesson 7**

DO NOW: Solve the systems of equations graphically.

$12y - 4x = 12$

$-3y + 4x = 6$

$12y - 4x = 12$

$+4x \quad +4x$

$\frac{12y}{12} = \frac{4x}{12} + \frac{12}{12}$

$y = \frac{1x}{3} + 1$

$m = \frac{1}{3}\uparrow\rightarrow$

$b = 1$

$-3y + 4x = 6$

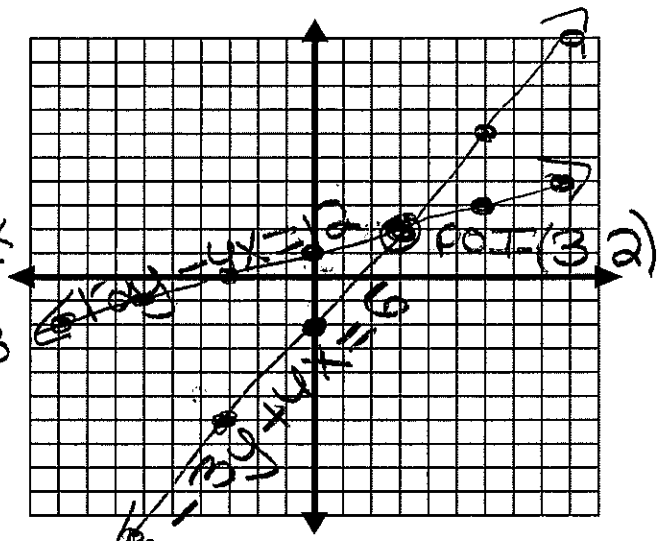
$-4x \quad -4x$

$\frac{-3y}{-3} = \frac{-4x}{-3} + \frac{6}{-3}$

$y = \frac{4}{3}x - 2$

$m = \frac{4}{3}\uparrow\rightarrow$

$b = -2$



Solution (3, 2)

Aim: Solving systems of equations algebraically using the addition/elimination method.

1. Solve the systems of equations algebraically.

$+ \quad 12y - 4x = 12$

$\quad -3y + 4x = 6$

$\frac{9y}{9} = \frac{18}{9}$

$y = 2$

$12y - 4x = 12$

$12(2) - 4x = 12$

$24 - 4x = 12$

$-24 \quad -24$

$\frac{-4x}{-4} = \frac{-12}{-4}$

$x = 3$

Solution (3, 2)

2. What is the solution of the system of equations below?

$$+\ \begin{array}{l} x+2y=7 \\ -x+3y=18 \end{array}$$

$$\frac{5y}{5}=\frac{25}{5}$$

$$\boxed{y=5}$$

$$x+2y=7$$

$$x+2(5)=7$$

$$x+10=7$$

$$-10\quad -10$$

$$\boxed{x=-3}$$

$$\boxed{\text{Solution}(-3,5)}$$

3. Solve the systems of equations algebraically.

$$4x+3y=27$$

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

$$-4x+2y=-2$$

$$+\ 4x+3y=27$$

$$\frac{5y}{5}=\frac{25}{5}$$

$$\boxed{y=5}$$

$$4x+3y=27$$

$$4x+3(5)=27$$

$$4x+15=27$$

$$-15\quad -15$$

$$\frac{4x}{4}=\frac{12}{4}$$

$$\boxed{x=3}$$

$$\boxed{\text{Solution}(3,5)}$$

4. What is the solution of the system of equations below?

$5(-3y+4x=17)$

$-3(-5y+3x=21)$

$-15x+20x=85$

$15x-9x=-63$

$\frac{11x}{11}=\frac{22}{11}$

$x=2$

$-3y+4x=17$

$-3y+4(2)=17$

$-3y+8=17$

$-8\quad -8$

$\frac{-3y}{-3}=\frac{9}{-3}$

$y=-3$

Solution $(2,-3)$

PRACTICE PROBLEMS

5. What is the solution of the system of equations below?

$2x+3y=7$

$-2(x+y=3)$

$2x+3y=7$

$-2x-2y=-6$

$y=1$

$x+y=3$

$x+1=3$

$-1\quad -1$

$x=2$

Solution $(2,1)$

1) (1, 2)
2) (2, 1)
3) (4, −1)
4) (4, 1)

6. What is the value of the y-coordinate of the solution to the system of equations $2x + y = 8$ and $x - 3y = -3$?

1) -2
2) 2
3) 3
4) -3

Solve for y
Get rid of x

$2x + y = 8$
$-2(x - 3y = -3)$

$2x + y = 8$
$-2x + 6y = 6$

$7y = 14$

$\frac{7y}{7} = \frac{14}{7}$

$y = 2$

7. What is the value of A in the following system of equations?

Solve for A
Get rid of W

$5(2A + 3W = 12)$
$3(6A - 5W = 8)$

1) 1
2) 2
3) 3
4) 9

$10A + 15W = 60$
$18A - 15W = 24$

$28A = 84$

$\frac{28A}{28} = \frac{84}{28}$

$A = 3$