NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

+ Answers in parts A/B are found by adding & subtracting 2 original equations w/o solving for x and y first

1. Try to answer the following without solving for x and y first.
   If $3x + 2y = 6$ and $x + y = 4$, then

   A. $2x + y = ?$

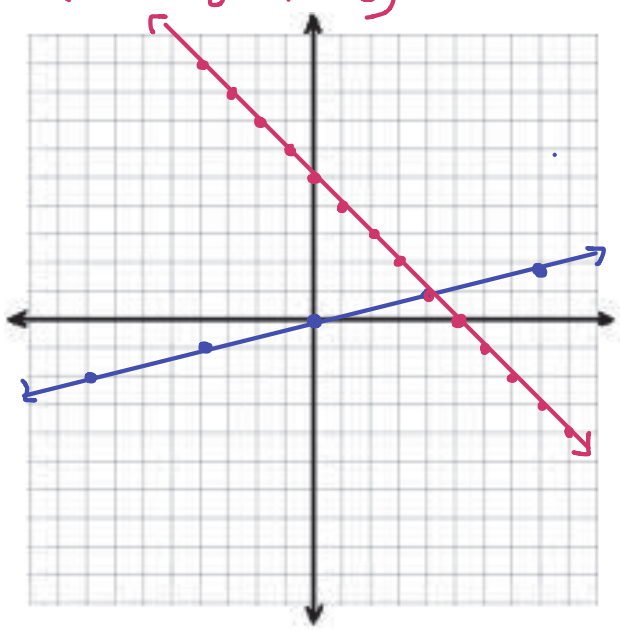
   $2x+y=2$
   (subtract equations)

   B. $4x + 3y = ?$

   $4x+3y=10$
   (add equations)

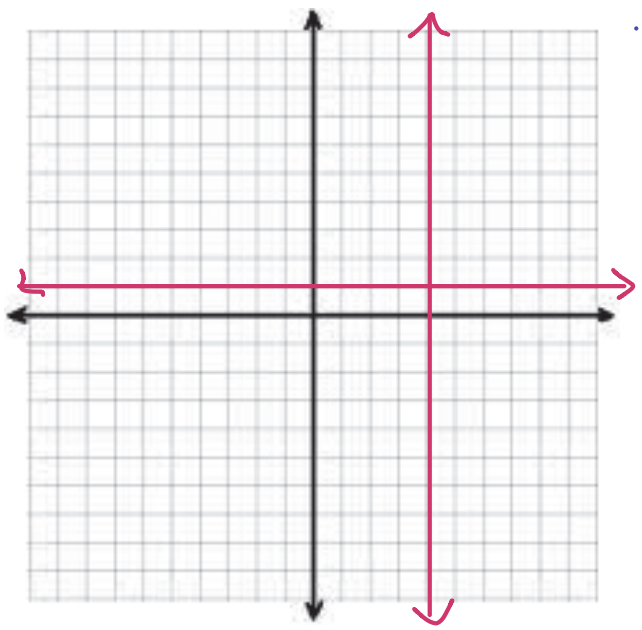
2. Solve the system of equations $\begin{cases} y = \frac{1}{4}x \\ y = -x + 5 \end{cases}$ by graphing.

   (4,1)



3. Create a new system of equations that has the same solution as Problem 2. Show either algebraically or graphically that the systems have the same solution.

   possible answer
   $x=4$
   $y=1$



4. Without solving the systems, explain why the following systems must have the same solution.

System (i): $4x - 5y = 13$, $3x + 6y = 11$

System (ii): $8x - 10y = 26$, $x - 11y = 2$

* 1st equation in System(ii) was obtained by multiplying the 1st equation in System(i) by 2
* 2nd equation in System(ii) was obtained by subtracting both equations in System(i)

$2(4x-5y=13) = 8x-10y = 26$

$4x-5y=13$
$-(3x+6y=11)$
$x-11y=2$

Solve each system of equations by writing a new system that eliminates one of the variables.

5. $2x + y = 25$
$4x + 3y = 9$

$-2(2x+y=25) \longrightarrow$
$4x+3y=9 \longrightarrow$

$-4x-2y=-50$
$+4x+3y=9$
$y=-41$

$2x+y=25$
$2x-41=25$
$2x=66$
$x=\frac{66}{2}$
$x=33$

$x=33$
$y=-41$

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6. $3x + 2y = 4$
$4x + 7y = 1$

$-4(3x+2y)=4 \longrightarrow$
$3(4x+7y)=1 \longrightarrow$

$-12x-8y=-16$
$12x+21y=3$
$13y=-13$
$y=-1$

$3x+2y=4$
$3x+2(-1)=4$
$3x-2=4$
$3x=6$
$x=2$

$x=2$
$y=-1$