Warmup 12/ (The square root of Christmas) ***NEED 2 WHITEBOARDS, MARKERS, ERASERS PER TABLE***

1. Graph therequation: $\mathbf{- 2 x}+\mathbf{4 y}=\mathbf{2 4}$

2. Solve the system:


## ALEKS Progress Grade

+7\%-100 SOME NOTES:
+6\% - 93
$+5 \%-85$
$+4 \%-75$
$+3 \%-70$
$+2 \%-60$
$+1 \%-50$
$+0 \%-0$

- Some of you are currently on a knowledge check. You should finish this so that we can get an accurate read on where you are now.
- This grade does not count the last 30 minutes you are going to do. People on average gain about $1 \%$ progress in 30 minutes.


## Correct front side of worksheet

- Write the correct answer in pen if you got it wrong.
- Part of tonight's homework: CORRECTIONS


## Today's Objective

- Master yesterday's topic - Elimination
- Solve STORY PROBLEMS using elimination

What do you do when you CAN'T Eliminate right away???

- You need opposite coefficients, such as:
${ }^{-}-5 x$ and $5 x$
${ }^{\circ} 3 y$ and $-3 y$
${ }^{0}-\mathbf{x}$ and $x$
- Etc...

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}5 x-2 y=1 \\ 4 x+4 y=12\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}2(5 x-2 y=1) \\ 4 x+4 y=12\end{array} \rightarrow \begin{array}{c}10 x-4 y=2 \\ 4 x+4 y=12\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}3 x+11 y=-35 \\ -x+3 y=5\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}3 x+11 y=-35 \\ 3(-x+3 y=5)\end{array} \rightarrow \begin{array}{c}3 x+11 y=-35 \\ -3 x+9 y=15\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}-4 x+2 y=18 \\ 12 x-2 y=-34\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}3 x+y=2 \\ 3 x-2 y=32\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\left\{\begin{array}{l}2(3 x+y=2) \\ 3 x-2 y=32\end{array} \rightarrow^{6 x+2 y=4} \begin{array}{c}6 x+2 y=32 \\ 3 x-2 y=\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}3 x+y=2 \\ -1(3 x-2 y=32)\end{array} \rightarrow \begin{array}{c}3 x+y=2 \\ -3 x+2 y=-32\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{l}x+4 y=20 \\ x-6 y=15\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}x+4 y=20 \\ -1(x-6 y=15)\end{array} \rightarrow\left\{\begin{array}{c}x+4 y=20 \\ -x+6 y=-15\end{array}\right.\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}2 x+4 y=8 \\ -3 x-3 y=-9\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}3(2 x+4 y=8) \\ 2(-3 x-3 y=-9)\end{array} \rightarrow \begin{array}{c}6 x+12 y=24 \\ -6 x-6 y=-18\end{array}\right.$

What do you do when you CAN'T Eliminate right away???

- How could you make it so that you have opposite coefficients?
$\cdot\left\{\begin{array}{c}5 x+2 y=8 \\ 4 x-5 y=13\end{array}\right.$


## Try these...

No Multiplying
$\left\{\begin{aligned} x+y & =8 \\ -x+5 y & =-20\end{aligned}\right.$
$(10,-2)$

Multiplying One
$\left\{\begin{array}{c}3 x+y=3 \\ -4 x-4 y=12\end{array}\right.$
(3, -6)

Multiplying Both
$\left\{\begin{array}{c}-5 x+3 y=7 \\ 4 x-4 y=-12\end{array}\right.$
$(1,4)$

## Story Problem!

- The sum of Nate \& Anne's ages is 63 . The difference of their ages is 5 . Nate is older.
a) Write a system of equations that represents this situation.
b) Solve the system and say what the solution represents.

$$
\begin{aligned}
& \left\{\begin{array}{l}
N+A=63 \\
N-A=5
\end{array}\right. \\
& \quad N=34, A=29
\end{aligned}
$$

Nate is 34 years old, Anne is 29 years old

## Story problem

- Henry gets paid for doing chores. Last week, he did 2 loads of laundry and 3 loads of dishes, and his parents paid him $\$ 12$. The week before, he did 7 loads of laundry and 6 loads of dishes, and his parents paid him $\$ 33$. How much does Henry earn for doing each type of chore?

$$
\begin{aligned}
& -\mathbf{2}(2 L+3 D=12) \\
& 7 L+6 D=33 \\
& \longrightarrow\left\{\begin{aligned}
-4 L-6 D & =-24 \\
7 L+6 D & =33 \\
3 L & =9
\end{aligned}\right. \\
& 2(3)+3 D=12 \\
& 6+3 D=12 \\
& 3 D=6 \\
& D=2 \\
& L=3 \\
& \text { Doing the laundry is } \$ 3 \text {, } \\
& \text { doing the dishes is } \$ 2 \text {. }
\end{aligned}
$$

## Story problem

- There are 14 total people at the Easter gathering - adults and children. Each child found 4 Easter eggs and each adult found 3 Easter eggs. All together, 48 eggs were found. How many adults and children were at the gathering?

$$
\left\{\begin{array} { r l } 
{ A + C = 1 4 } \\
{ 3 A + 4 C = 4 8 }
\end{array} \longrightarrow \left\{\begin{array}{rl}
-3 A-3 C & =-42 \\
3 A+4 C & =48 \\
C & =6 \\
A & =8
\end{array}\right.\right.
$$

There were 6 children and 8 adults.

## HOMEWORK

- Correct front side of worksheet
- Do back side of worksheet

