## 3.3 - Solving Systems of Equations by Elimination

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## Preview of the Lesson:

1. 
2. 
3. 

II. WHAT IS A SYSTEM OF EQUATIONS?
III. WHAT IS THE SOLUTION TO A SYSTEM OF EQUATIONS?
IV. ADDING/SUBTRACTING EQUATIONS
a. $\quad \begin{aligned} & 2 x+3 y=12 \\ & 2 x+4 y=16\end{aligned}$
b. $\quad-7 x+2 y=15$
$6 x+4 y=24$

Eliminating Variables...looking for opposites!
c. $\quad 5 x+2 y=10$
$-5 x+4 y=30$
d. $\quad 7 x-4 y=-28$
$3 x+4 y=12$

## MULTIPLYING AN EQUATION BY A CONSTANT TO ELIMINATE A VARIABLE

e. $\quad 6 x+3 y=24$
$2 x+3 y=-12$
g. $\quad-5 x+4 y=20$ $15 x+9 y=-45$
f. $x+2 y=3$
$x-8 y=-16$
h. $\quad 6 x-4 y=-24$
$9 x-2 y=18$

1. Add/subtract by terms.
2. Remember to include $\qquad$ sides of the equation when multiplying.
V. STEPS FOR SOLVING SYSTEMS OF EQUATIONS ALGEBRAICALLY BY ELIMINATION:
VI. GUIDED EXAMPLES:
You try
3. $3 x+2 y=15$
$-3 x+5 y=6$
4. $\begin{aligned} &-2 x-6 y=-6 \\ & 2 x+y=9\end{aligned}$
$2 x+y=9$

Check your answers:

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3. $-6 x-6 y=-6$
$-4 x-6 y=-6$

$$
\sum_{2} \quad \begin{aligned}
& -4 x+6 y=-16 \\
& -4 x+3 y=-16
\end{aligned}
$$

5. $15 x+4 y=-22$
$-5 x+8 y=26$
\& $8 \begin{array}{ll}6 x-y=-5 \\ 8 & 8 x+3 y=-5\end{array}$
6. $-3 x-3 y=-30$
$-2 x+7 y=-2$
\& $\begin{array}{ll}8 & -3 x+8 y=28 \\ -4 x+6 y=28\end{array}$

VII - Special Cases:
9. $-12 x-6 y=-18$
$6 x+3 y=0$


Additional Notes

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Processing/Summary Time!
Take a moment to review your notes, write a summary of what you learned in the video.

Write your questions in the column to the left ©
$\qquad$

## Practice Exercises

Date $\qquad$ Period $\qquad$
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## Solve each system by elimination.

1) $4 x-6 y=-12$
$-4 x-2 y=28$
2) $-5 x-7 y=-12$
$7 x-7 y=0$
3) $\begin{aligned} & -6 x-2 y=-4 \\ & -12 x-5 y=-13\end{aligned}$
4) $3 x+6 y=6$
$10 x+10 y=-20$
5) $5 x+15 y=20$
$-27 y=9 x$
6) $-6 x+8 y=2$
$6 x-5 y=-8$
7) $7 x-8 y=-8$
$7 x-5 y=16$
8) $-4 x+4 y=8$
$9 x-8 y=-13$
9) $10 x+5 y=25$
$-7 x-3 y=-18$
10) $-10 x-4 y=4$
$-5 x-2 y=2$

## Solving Systems of Equations by Elimination

1. Kris spent $\$ 131$ on shirts. Blue shirts cost $\$ 28$ and red cost $\$ 15$. If he bought a total of 7 then how many of each kind did he buy?
2. Albert is a server at an all-you-can eat sushi restaurant. At one table, the customers ordered 4 child buffets and 1 adult buffet, which cost a total of $\$ 86$. At another table, the customers ordered 4 child buffets and 3 adult buffets, paying a total of $\mathbf{\$ 1 3 0}$. How much does the buffet cost for each child and adult?
