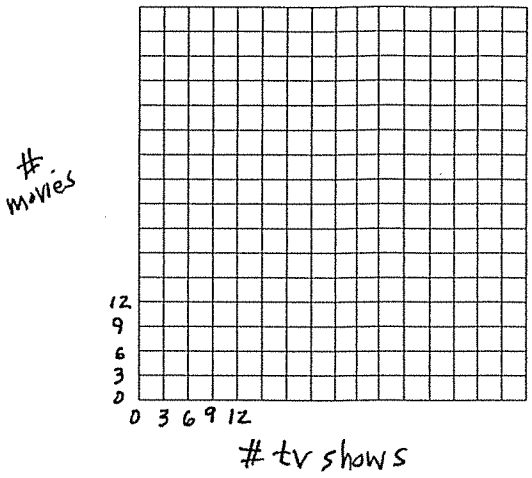
Homework # 18
Algebra P3

Name:_____

Systems of Equations, Day 3

1. An internet company sells downloads of TV shows (t) and movies (m). Cole has a total of 24 new downloads, but he forgot how many of each he bought.

a. Give three solutions for Cole's downloads. Then write an equation and define your variables.



b. Graph the solutions (they must fit on the graph!) and draw in the line.

The tv shows sell for $2 each, and movies sell for $4 each. Cole remembers that he spent $56 total on all of his downloads.

c. One solution is 14 tv shows and 7 movies. Show that this is a solution and then give two more solutions for the money Cole spent. Then write an equation that describes the money situation.

d. Graph the solutions on the graph above and draw in the line.

e. Find the solution to the system of equations you have graphed. Explain what the solution says.

2. There is a different method, called substitution, that uses only algebra to solve systems of equations (no graphing!).

Our two equations above were: $\begin{cases} t+m=24 \\ 2t+4m=66 \end{cases}$

a. Show that if you solve the first equation for t, you get $t=-m+24$

$\boxed{t=-m+24}$

Substituting that into $2t+4m=66$, gives $2(-m+24)+4m=66$.

b. Solve the equation $2(-m+24)+4m=66$ for m. That tells us the m value of our solution.

c. Now substitute the value of m you found above into $t=-m+24$ to find the t value of our solution.

J. Write down the solution to the system of equations for Cole's downloads. Does it agree with what you found on the first page?

3. Solve these systems by substitution:
(Hint: Solve for a letter in the first equation, then substitute into the second equation.

$\begin{cases} x+y=9 \\ 4x+2y=22 \end{cases}$

$\begin{cases} a+2b=4 \\ -3a+2b=-20 \end{cases}$