

Lesson Digits 6-7

Solving Problems with Systems

1/22/2020

①

Goal: I will be able to <u>use systems to solve problems.</u>	
Twinkl Formula, equations Vocabulary, etc. Do not write	Here's How... Notes & Examples What method is better to solve the following systems? Substitution, Addition, or Subtraction 1. $9j + 4k = 17$ $5j + 4k = 13$ Subtraction - because you have the same "k's" that can become zero from subtraction. 2. $y = 7x - 3$ $y = 6x + 5$ Substitution - because you substitute "y" into one equation to get one equation with one unknown. 3. $8w + 2w = 28$ $5w - 2w = 23$ Addition - because you have the same "w's" that are opposite and will become zero when added.

②

What if you can't solve it with one method (substitution, add, or sub)?

Example ① $2a + 5b = 53$ multiply by 4
② $8a - 3b = 5$

If you can't solve it with one method, you can multiply one or both equations.

$4(2a) + 4(5b) = 4(53)$
 $8a + 20b = 212$
 $8a - 3b = 5$ subtract

$8a - 8a + 20b - (-3b) = 212 - 5$ same number of a
 $23b = 207$ same sign
 $23b = 207$
 $23 = 23$
 $b = 9$

③

Solve for a

$2a + 5b = 53$
 $2a + 5(9) = 53$ put 9 in for a
 $2a + 45 = 53$
 $2a + 45 - 45 = 53 - 45$
 $2a = 8$
 $\frac{2a}{2} = \frac{8}{2}$
 $a = 4$

Solution (a, b)
(4, 9) 49ers !!!

④

We Try ① $2x - 3y = 0$ multiply by 3
② $3x - 2y = 5$ multiply by 2

Since mult only 1 doesn't work, multiply both equations to get the same number of x's or y's

① $3(2x) - 3(3y) = 3(0)$
 $6x - 9y = 0$
② $2(3x) - 2(2y) = 2(5)$
 $6x - 4y = 10$
 $6x - 9y = 0$ Subtract

$6x - 6x - 4y - (-9y) = 10 - 0$
 $-4y + 9y = 10$
 $5y = 10$
 $\frac{5y}{5} = \frac{10}{5}$
 $y = 2$

⑤

Example

You have 36 coins that equals \$1.
You have only nickels & pennies. How many nickels & pennies?

nickel = 5 cents
penny = 1 cent
\$1 = 100 cents

n = nickels p = pennies

① $n + p = 36$ total coins
② $5n + p = 100$ value of the coins

$n + p = 36$ subtract

$5n - n + p - p = 100 - 36$
 $4n = 64$
 $\frac{4n}{4} = \frac{64}{4}$
 $n = 16$

$n + p = 36$
 $16 + p = 36$
 $p = 20$