Substitution Day 2

Agenda

Warm-Up

HW Check

Activity - system loop

HW (1 page) -

Optional for +20 points on HW (if completed correctly with work shown)

Warm-Up Wednesday

1. Ms. Kitts works at a music store. Last week she sold 6 more than 3 times the number of CDs that she sold this week. Ms. Kitts sold a total of 108 CDs over the 2 weeks. Which system of equations can be used to find x, the number of CDs she sold last week, and y, the number of CDs she sold this week?

A $x + y = 108$, $y = 3x + 6$

B $x + y = 108$, $y = 3x - 6$

C $x + y = 108$, $x = 6 + 3y$

D $x + y = 108$, $x = 3y - 6$

$x+y=108$ $x=6+3y$

2. Begin cutting out your system loop cards. There is a line in the middle of every card - do not cut it.

Answers:

1. (4,8)
2. (2,-1)
3. (5,3)
4. m = 2.29, t = -.19
5. 9
6. No Solution
7. -5
8. Tyler is 19 and his sister is 13.
9. C
10. A large popcorn costs $5.
11. C

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Practice – Solving Systems by Substitution **pp 390-396**

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Find the solution for each system of linear equations.

1. $y = 2x$
   $x + y = 12$

   $x + (2x) = 12$
   $3x = 12$
   $x = 4$
   $y = 2(4)$
   $y = 8$
   $(4, 8)$

2. $y = 2x - 5$
   $4x + y = 7$

   $4x + (2x - 5) = 7$
   $6x - 5 = 7$
   $+5 \quad +5$
   $6x = 12$
   $x = 2$
   $y = 2(2) - 5$
   $y = -1$
   $(2, -1)$

3. $x - y = 2$
   $4x - 3y = 11$

   $x - y = 2$
   $+y \quad +y$
   $x = 2 + y$
   $4(2+y) - 3y = 11$
   $8 + 4y - 3y = 11$
   $y = 3$
   $x - 3 = 2$
   $x = 5$
   $(5, 3)$

4. $m + t = 2.10$
   $2m - 3t = 5.15$

   $m + t = 2.10$
   $-t \quad -t$
   $m = 2.10 - t$
   $2(2.10 - t) - 3t = 5.15$
   $4.20 - 2t - 3t = 5.15$
   $-5t = .95$
   $t = -.19$
   $m + -.19 = 2.10$
   $m = 2.29$

5. The equations of two lines are $2x - 3y = 12$ and $x = 4y + 1$. What is the value of x in the solution for this system of equations?

   $2x - 3y = 12$
   $x = 4y + 1$
   $2(4y + 1) - 3y = 12$
   $8y + 2 - 3y = 12$
   $5y = 10$
   $y = 2$
   $x = 4(2) + 1$
   $x = 9$

Find the solution for each system of linear equations.

6. $4y + x = 5$
   $x + 4y = 10$

   $4y + x = 5$
   $-4y \quad -4y$
   $x = 5 - 4y$
   $(5 - 4y) + 4y = 10$
   $5 + 0y = 10$
   $5 \neq 10$
   NO SOLUTION

7. If $\begin{matrix} -2x + 3y = 14 \\ x + 2y = 7 \end{matrix}$, then $x - y = ?$

   $x + 2y = 7$
   $-2y \quad -2y$
   $x = 7 - 2y$
   $-2(7 - 2y) + 3y = 14$
   $-14 + 4y + 3y = 14$
   $-14 \quad +14$
   $7y = 28$
   $y = 4$
   $x = 7 - 2(4)$
   $x = 7 - 8$
   $x = -1$
   $x - y = -1 - 4$
   -5

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Find the solution for each system of linear equations.

8. Tyler is six years older than his sister, and the sum of their ages is 32. How old is Tyler? How old is his sister?

Let Statements

Let T be Tyler's age.
Let x be sister's age

$T = 6 + x$

$T + x = 32$

$6 + x + x = 32$

$6 + 2x = 32$

$2x = 26$

$x = 13$

$T = 6 + 13$

$T = 19$

Answer (complete sentence):
sister is 13
Tyler is 19.

9. What mistake was made in solving the following system of equations?

$-3x + y = -4$
$3y = 15x + 6$ $\longrightarrow$ $y = 3x - 4$ solved for y ✓

Step 1: $3(3x - 4) = 15x + 6$
Step 2: $9x - 12 = 15x + 6$
Step 3: $6 = 24x$
Step 4: $\frac{1}{4} = x$

$9x - 12 = 15x + 6$
$-9x \quad -9x$

A Did not solve for y correctly
B Did not distribute correctly in Step 1
C Should have subtracted $9x$ from $15x$ in Step 2
D No mistake was made

10. At the Cinema Snakshak, one customer bought 3 large popcorn buckets and 2 small drinks for a total of $21.00. Another customer bought one large popcorn bucket and 4 small drinks for a total of $17.00. Find the cost of a large popcorn.

Let Statements

Let popcorn cost be p.
Let drink cost be d.

$3p + 2d = 21$

$p + 4d = 17$

$-4d \quad -4d$

$p = 17 - 4d$

$3(17 - 4d) + 2d = 21$

$51 - 12d + 2d = 21$

$-10d = -30$

$d = 3$

$p + 12 = 17$

$p = 5$

Answer:
(in a complete sentence)
A large popcorn costs $5.

11. Given the equations $y = 3x + 8$ and $3x = 2y + 7$, what would you substitute for y in the equation $3x = 2y + 7$?

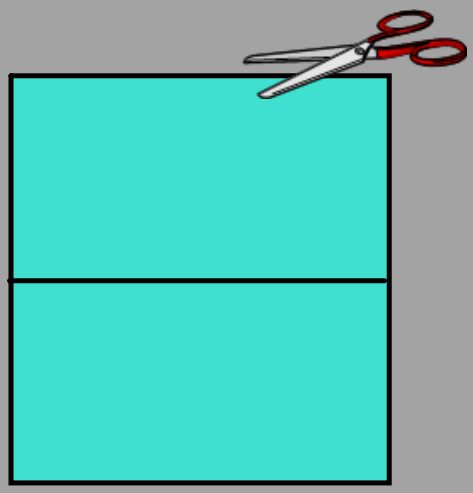
A $8 - 3x$
B $\frac{8}{3}x$
C $8 + 3x$
D $8 \cdot 3x$

$y - 3x = 8$
$+3x \quad +3x$

$y = 8 + 3x$

If you are reading this, draw a cat by your name for +10 points on this assignment. ☺

Each rectangle has a line that splits the top and the bottom of the card.



Activity Solving Systems by Substitution Day 2

1. Cut apart the System Loop Cards.
2. Choose a card to start with.
3. Solve the system on the back of the card or on scratch paper and find the answer on the top portion of another card.
4. Glue the bottom of the card that contains the system of equations to the top of the card with the solution.
5. Continue this process for the remaining problems.
6. When complete, the taped cards should form a loop.

This is not an optional activity. A completed loop ~~with work shown~~ is due at the end of the period.

6

Need ~~4~~ problems solved - any more is +5 for each problem

Optional for +20 points on HW (if completed correctly with work shown)

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Practice – Solving Systems by Substitution Day 2 **pp 390-396**

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"What Disney movie is about a stupid boyfriend?"

Solve the systems of equation using the substitution method. The answer to each problem will match a letter that will allow you to figure out the joke.

1. $2x+3y=10$, $y=-x+2$
2. $x=4y-7$, $3x=2y-1$
3. $6x-y=-4$, $2x+2y=15$
4. $5y-6=x$, $y=-x$
5. $x-2y=1$, $y=x+2$
6. $x-y=3$, $6x+4y=13$
7. $6x-2y=7$, $y-3x=-6$
8. $x-7y=19$, $5x=-2y-16$

U. (1, 2)

O. (-5, 0)

B. $(\frac{1}{2},7)$

W. (0, 0)

D. (-2, -3)

A. (-1, 1)

Y. (-1, 4)

E. (-4, 6)

M. (-5, -3)

I. (7, 3)

U. No Solution

N. (-4, 5)

S. (-3, 2)

V. All real number on the line: $y=-\frac{1}{2}x+3$

B. $(\frac{5}{2},-\frac{1}{2})$

F. (-3, 13)

_____	_____	_____	_____	_____	_____	_____	_____
8	2	5	6	3	1	4	7

Adapted from Nasco's Algebra 1 Joke Worksheets