Alg.1A. Solving Unit Lesson Sample

Inquiry, Annotation & Summary.

CLO: **Students can solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers, and solve and check them fluently. This includes reasoning and explaining identifying the sequence of the operations used in each approach and their inverses.**

Process: 1. Read the Equation, and Identify given operations.

2. Apply inverse ("opposite") operation towards the variable to **isolate** it.

3. **KYSS**: Keep Your Steps Straight [....keep track of " = " ....]

4. Check your answer to see if it is a **Solution**.

Inverse operations: ____ ↔ ____ ____ ↔ ____

Model:

2x + 5 = 13

Question in words: "2 times what plus 5 is 13?"

Solve:

2x + 5 = 13

-5 -5

2x = 8

2 2

x = 4

Check:

Check if 3 is the answer? Is x = 3 ?

2(3) + 5 ? = 13

6 + 5 ? = 13

11 ≠ 13

*3 is not a solution

Check x = 4 here:

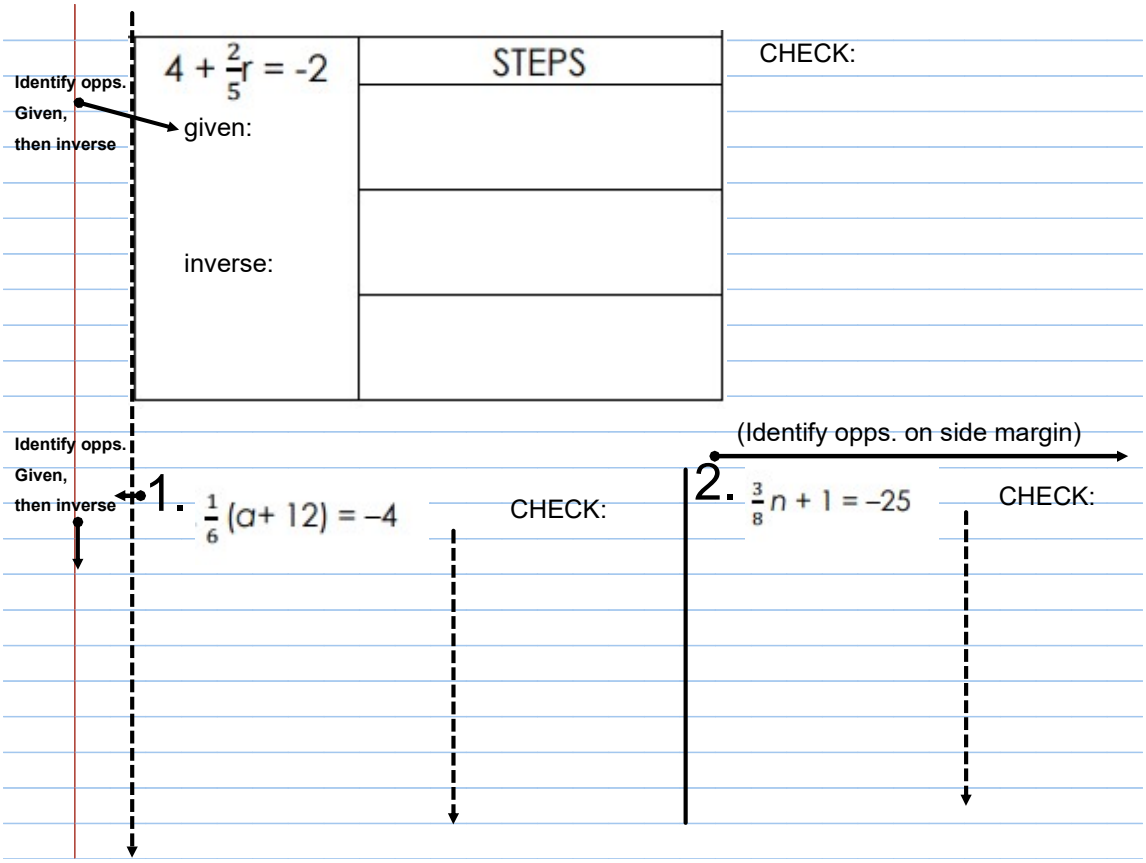
Given operations: × **"Times, plus"** + Inverses to solve: ÷ **"Divide, subtract"** −

More Practice:

What operations are given? / What are the inverse operations?	Read problem in words as a Question, then list the given operations here, then provide their inverses below. use words.		
	4x – 3 = 9		
	-x + 5 = 1		
Can I distribute first...?	**3(x + 2) = 15**		
	2 (2x -1) = 10		

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample



Aliyah had some candy to give to her four children. She first took ten pieces for herself and then evenly divided the rest among her children. Each child received two pieces. With how many pieces did she start?

i. ANNOTATE KEY WORDS, THEN WRITE THE EQUATION:

ii. Solve:

iii. CHECK:

Summary: What is solving? What does it mean? .....

What does isolate mean? How do you isolate a variable?

How do you check solutions?

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Number Talk -(-)

RE: *Friday and re-test.

6- 4	6x- 4x	$6x^2$- $4x^2$	$6x^2$- 4x
6 - 2	6x - 2x	$6x^2$- $2x^2$	6x - $2x^2$
6 - 0	6x - (-2x)	$6x^2$- (-$2x^2$)	$6x^2$- (-2x)
6 - (-2)	6x - (-4x)	$6x^2$- (-$4x^2$)	$6x^2$- (-4x)
6 - (-4)	6x - (-6x)	$6x^2$- (-$6x^2$)	6x - (-$6x^2$)
6 - (-6)	6x - (-8x)	$6x^2$- (-$8x^2$)	6x - (-$8x^2$)
6 - (-8)			

Aliyah had some candy to give to her four children. She first took ten pieces for herself and then evenly divided the rest among her children. Each child received two pieces. With how many pieces did she start?

i. ANNOTATE KEY WORDS, THEN WRITE THE EQUATION:

ii. Solve:

iii. CHECK:

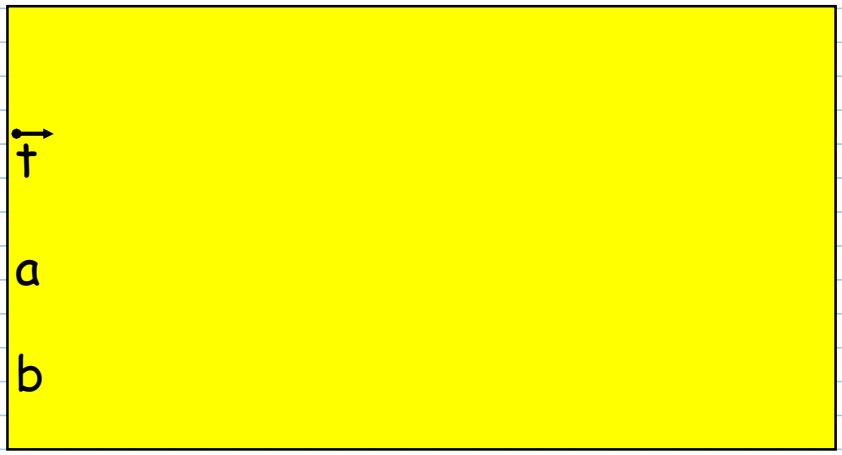
Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Number Talk -(-)

RE: *Friday and re-test.

6- 3
6 - 2
6 - 1
6 - 0
6 - (-1)
6 - (- 2)
6 - (- 3)
6 - (- 4)



INDEPENDENT PRACTICE. SOLVE AND CHECK. USE SEPARATE PAPER.

1. $5r+2=17$
2. $25=-2w-3$
4. $-3f+19=4$
5. $-22=-x-12$
7. $\frac{v}{3}-8=1$
8. $\frac{2}{3}h-\frac{1}{4}=\frac{1}{3}$
10. $12.5=2g-3.5$
11. $6.3=2x-4.5$
13. $\frac{7}{9}=2n+\frac{1}{9}$
14. $-9y-4.2=13.8$
16. $0.6x+1.5=4$

PLIX (Play Learn Interact eXplore)

INDEPENDENT PRACTICE. SOLVE AND CHECK. USE SEPARATE PAPER.

1. $5r+2=17$
2. $25=-2w-3$
4. $-3f+19=4$
5. $-22=-x-12$
7. $\frac{v}{3}-8=1$
8. $\frac{2}{3}h-\frac{1}{4}=\frac{1}{3}$
10. $12.5=2g-3.5$
11. $6.3=2x-4.5$
13. $\frac{7}{9}=2n+\frac{1}{9}$
14. $-9y-4.2=13.8$
16. $0.6x+1.5=4$

PLIX (Play Learn Interact eXplore)

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.
Model Example 1: Division and Subtraction given 17. $\frac{v}{8} - 10 = 54$ INVERSE: Mult., Add. "A number divided by 8 then minus 10 is 54."	$\frac{v}{8} - 10 = 54$ $+10 \quad +10$ $\frac{v}{8} = 64$ $8 \cdot \frac{v}{8} = 64 \cdot 8$ $v = 512$	$\frac{512}{8} - 10 = 54$ $64 - 10 = 54$ $54 = 54$ ✓
1. $5r + 2 = 17$		

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.
Model Example 2: Division, Mult. and Subtraction 18. $\frac{2}{5}h - \frac{1}{7} = \frac{1}{2}$ INVERSE: Mult.,Divide, Add. "A number times 2 and divided by 5, then minus one-seventh is One half."	$\frac{2}{5}h - \frac{1}{7} = \frac{1}{2}$ $\frac{2}{5}h - 0.14 = 0.5$ $\frac{2}{5}h - 0.14 = 0.5$ $+0.14 \quad +0.14$ $\frac{2}{5}h = 0.64$ $\frac{5}{2} \cdot \frac{2}{5}h = 0.64 \cdot \frac{5}{2}$ h = 1.6	$\frac{2}{5}h - 0.14 = 0.5$ $\frac{2}{5}(1.6) - 0.14 = 0.5$ $\frac{3.2}{5} - 0.14 = 0.5$ 0.64 - 0.14 = 0.5 0.5 = 0.5 ✓

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Number Talk -(-)

8- 2	-8 - 2	-6x - (4x)	$-6x^2 - 3x^2$
8 - 1	-8 - 1	5x - (- x)	$5x^2 - 4x^2$
8 - 0	-8 - 0	-8x - (2x)	$-7x^2 - (-2x^2)$
8 - (-1)	- 8 - (-1)	9x - (-4x)	$8x^2 - (-4x^2)$
8 - (-2)	-8 - (-2)	-17x - (-4x)	$-8x^2 - (6x^2)$
8 - (- 3)	-8 - (- 3)	16x - (8x)	$-8x^2 - 8x^2$
8 - (- 4)	-8 - (- 4)	-12x - (-8x)	$-40x^2 - (-40x^2)$
9 - (- 5)	-10 - (- 5)		

t

a

b

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.

INDEPENDENT PRACTICE. SOLVE AND CHECK. USE

1. $5r+2=17$
2. $25=-2w-3$
4. $-3f+19=4$
5. $-22=-x-12$
7. $\frac{v}{3}-8=1$
8. $\frac{2}{3}h-\frac{1}{4}=\frac{1}{3}$
10. $12.5=2g-3.5$
11. $6.3=2x-4.5$
13. $\frac{7}{9}=2n+\frac{1}{9}$
14. $-9y-4.2=13.8$
16. $0.6x+1.5=4$

[After 20 mins. will check on Re-Take opportunity Problems, ... to see who is ready :]

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

RE-Take Quiz Practice. All problems must be completed for retake of last Quiz.

12.) $(19x^2+12x+12)+(7x^2+10x+13)$

13.) $(4x^2-6x+7)+(-19x^2-15x-18)$

14.) $(20x^2+15x+13)+(-19x^2+17x+5)$

15.) $(9x^6-4x^5)+(10x^5-15x^4+14)$

18.) $(6x+14)-(9x+5)$

20.) $(19x^2+9x+16)-(5x^2+12x+7)$

21.) $(17x^2+7x-14)-(-6x^2-5x-18)$

22.) $(-18x^2+4x-16)-(15x^2+4x-1)$

Model: (remember, it all starts with reading and comprehension)

Number Talk -(- + -)

8- 2	6x- 3x	$6x^2 + (4x^2)$	$6x^2- 4x + 3x$
8 - 1	5x - 4x	$5x^2 + x^2$	$4x^2 + (- 2x) - (-3x^2)$
8 - 0	7x - (-2x)	$5x^2 - (-x^2)$	$3x - (-2x^2) + (-4x^2)$
8 - (-1)	8x - (-4x)	$x^2 - (-4x^2)$	$7x^2 - (-4x) - (- 7x^2)$
8 - (-2)	16x - (-6x)	$7x^2 - (-4x^2)$	$16x^2 - (-6x) + (-x^2)$
8 - (- 3)	60x - (-8x)	$16x^2 - (8x^2)$	$12x^2 - (-8x) - 6x^2$
8 - (- 4)	40x - (-40x)	$12x^2 - (-8x^2)$	$32x^2 + (-8x) - (-4x^2)$
9 - (- 5)			

t

a

b

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Number Talk - + ( ) /

"How would you solve...?"

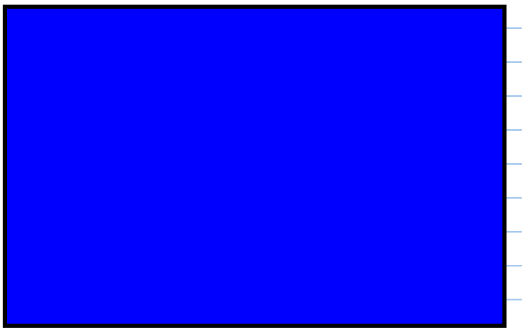
(a) $2x - 1 = 9$

(b) $\frac{y}{3} + 4 = 12$

(c) $2(x + 1) - 7 = 5$

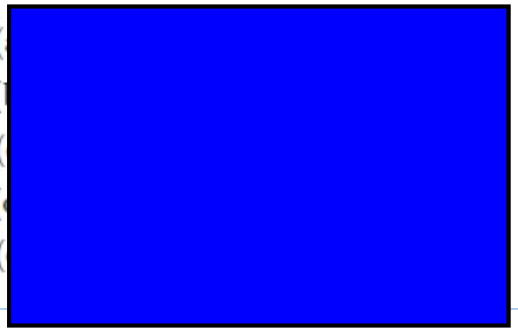
(d) $4(y + 3) - 2y = 7$

(e) $5(y + 2) - 4(y - 1) = 6$



Number Talk - + ( ) /

"Reading the Equation. Identifying Operations"



(f) $5(2 - x) - 3(4 - 2x) = 20$

(g) $2m + 4 - 3m = 8(m - 1)$

(h) $3m + 12 = 2(m - 3) + 4$

(i) $\frac{x+1}{4} = 5$

(j) $\frac{x}{5} + \frac{x}{3} = 10$

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.

(a) $2x - 1 = 9$

(b) $\frac{y}{3} + 4 = 12$

(c) $2(x + 1) - 7 = 5$

(d) $4(y + 3) - 2y = 7$

(e) $5(y + 2) - 4(y - 1) = 6$

Part 2

(f) $5(2 - x) - 3(4 - 2x) = 20$

(g) $2m + 4 - 3m = 8(m - 1)$

(h) $3m + 12 = 2(m - 3) + 4$

(i) $\frac{x+1}{4} = 5$

(j) $\frac{x}{5} + \frac{x}{3} = 10$

Will take turns

Identify operations, Inverses. "Sentence"	Solve (isolate variable).	Check your answer.

Students Will take turns on assigned prob.

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

If you finished last set of Solving Problems, let's do more...

(a) $2x - 1 = 9$
(b) $\frac{y}{3} + 4 = 12$
(c) $2(x + 1) - 7 = 5$
(d) $4(y + 3) - 2y = 7$
(e) $5(y + 2) - 4(y - 1) = 6$
(f) $5(2 - x) - 3(4 - 2x) = 20$
(g) $2m + 4 - 3m = 8(m - 1)$
(h) $3m + 12 = 2(m - 3) + 4$
(i) $\frac{x+1}{4} = 5$
(j) $\frac{x}{5} + \frac{x}{3} = 10$

If you finished last set of Solving Problems, let's do more...

(a) $2x - 1 = 9$
(b) $\frac{y}{3} + 4 = 12$
(c) $2(x + 1) - 7 = 5$
(d) $4(y + 3) - 2y = 7$
(e) $5(y + 2) - 4(y - 1) = 6$
(f) $5(2 - x) - 3(4 - 2x) = 20$
(g) $2m + 4 - 3m = 8(m - 1)$
(h) $3m + 12 = 2(m - 3) + 4$
(i) $\frac{x+1}{4} = 5$
(j) $\frac{x}{5} + \frac{x}{3} = 10$

Solving Equations by Graphing

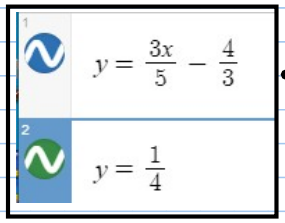
CLO: Students will extend the concept of solving equations with the use of technology, DESMOS Graph, to analyze how an equation of the form "ax+b =c" represents two lines crossing, and the point of intersection is the solution for the X value to be checked.

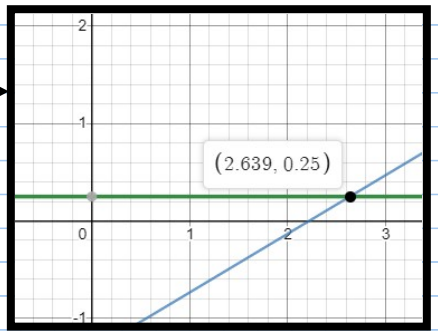
Model: $\frac{3}{5}x - \frac{4}{3} = \frac{1}{4}$

We can represent each half of an equation as a linear function for y:

$y = \frac{3}{5}x - \frac{4}{3}$ and $y = \frac{1}{4}$

If we type each into desmos as Two Separate Equations, we can analyze the graph and look for the Solution for x.





*Be careful typing in any fractions.

x is about 2.6

Adriant Sanchez

Alg.1A. Solving Unit Lesson Sample

will check the value of x, being 2.6: $\frac{3}{5}x - \frac{4}{3} = \frac{1}{4}$

$\frac{3}{5}(2.6) - \frac{4}{3} = \frac{1}{4}$

"3 times 2.6, then divided by 5. Then minus 4divided by3."

$1.56 - \frac{4}{3} = \frac{1}{4}$

$1.56 - 1.3 = \frac{1}{4}$

✓ **0.26 = 1 / 4 , is very close to being equal.**

You will type these Eq.s "as is" on Desmos.

(a) $2x - 1 = 9$

(b) $\frac{y}{3} + 4 = 12$

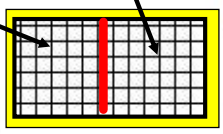
(c) $2(x + 1) - 7 = 5$

(d) $4(y + 3) - 2y = 7$

(e) $5(y + 2) - 4(y - 1) = 6$

Graph on graph paper.

+ Check Answers.



(f) $5(2 - x) - 3(4 - 2x) = 20$

(g) $2m + 4 - 3m = 8(m - 1)$

(h) $3m + 12 = 2(m - 3) + 4$

(i) $\frac{x+1}{4} = 5$

(j) $\frac{x}{5} + \frac{x}{3} = 10$

Work will go on a Booklet that we will construct.

Do your assigned problem and 4 others. We will include Table of Contents when done. Lose or forget your booklet work, means start over again.

We'll use colors and rulers.

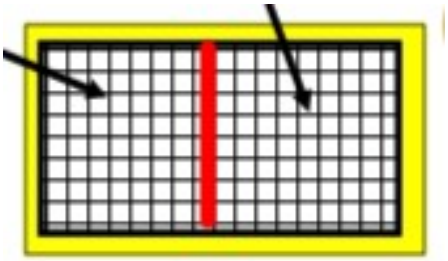
Booklet will include 5 graphs, and 5 checks.

ANd one summary at the End.

Equations,

Graph

Check answer work



Adriant Sanchez

Booklet Project = 50 pts. Total

8 pts. per graph and check.

5 pts. for Table of Content and Summary.

5 pts. for presentation of Booklet.

Title is: Solving & Checking Linear Equations by Graphing. and the CLO: Will be included in the Cover under the title.

Your name also goes on Cover.

Number Talk -(-)

6- (-4)	6x- 4x	$8x^2$- $4x^2$	$6x^2$- 4x
6 - 12	6x - 2x	$7x^2$- $2x^2$	6x - $2x^2$
8 -(-4)	6x - (-2x)	$5x^2$- ($-2x^2$)	$6x^2$- (-2x)
8 - 12	6x - (-4x)	$4x^2$- ($-4x^2$)	$6x^2$- (-4x)
12 - (-4)	6x - (-6x)	$3x^2$- ($-6x^2$)	6x - ($-6x^2$)
12 - 6	6x - (-8x)	$2x^2$- ($-8x^2$)	6x - ($-8x^2$)
10 - 12			
10 - (-12)