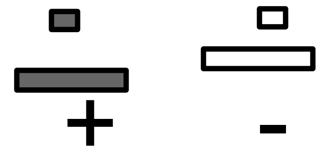
Warm Up Grade 8



Put on own paper

Model and solve

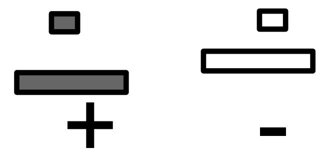
$$-x - 7 = 12$$

From Gr. 7

Solve with algebra

$$3x - 4 = -25$$

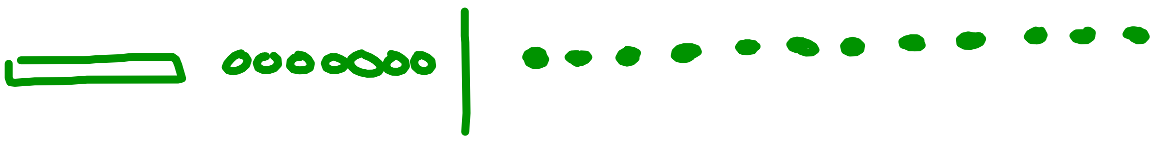
Warm Up Grade 8



On own paper Jan 28

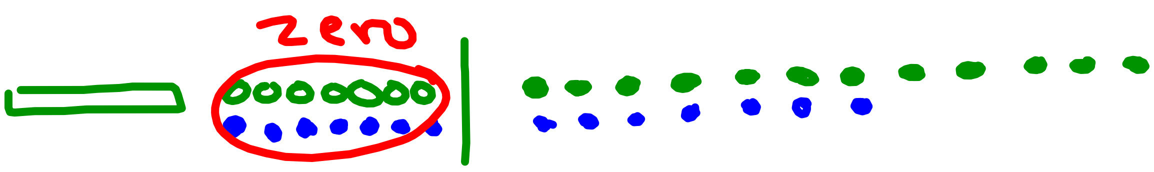
Model and solve

$-x - 7 = 12$

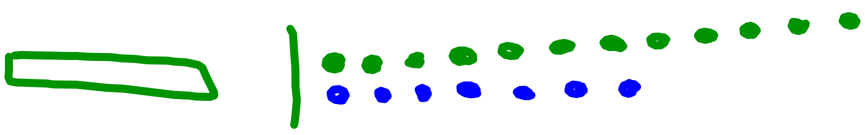


$-x - 7 = 12$

zero

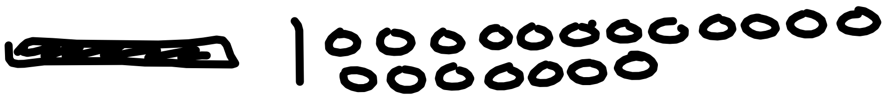


$-x - 7 + 7 = 12 + 7$



$-x = 19$

$\div -1 \qquad \div -1$



$\boxed{x = -19}$

Solve with algebra

From Gr. 7

$3x - 4 = -25$

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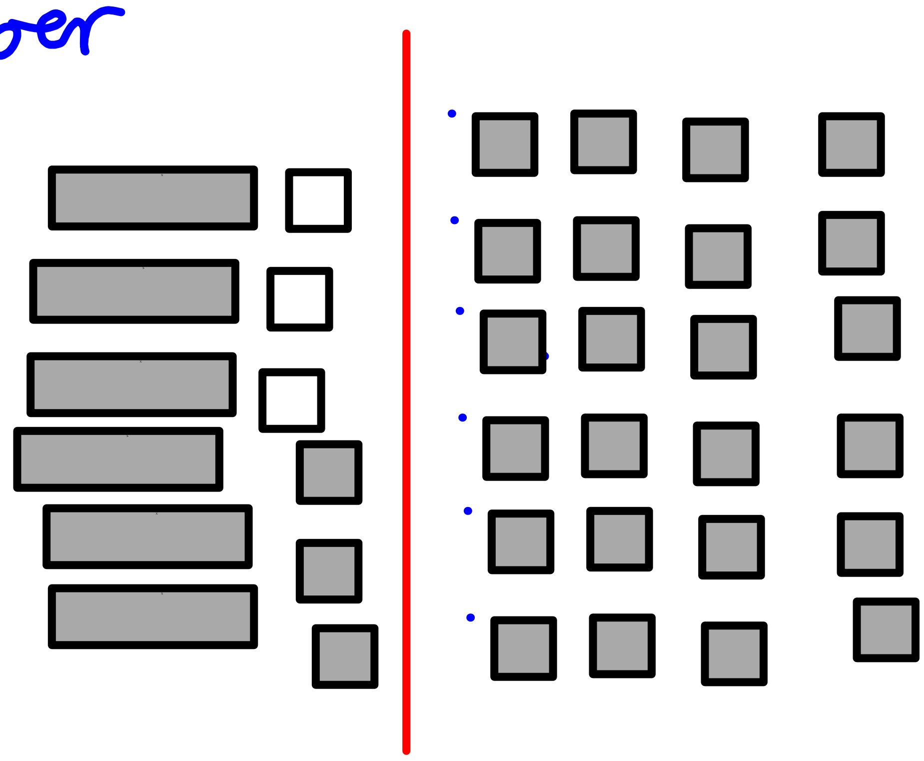
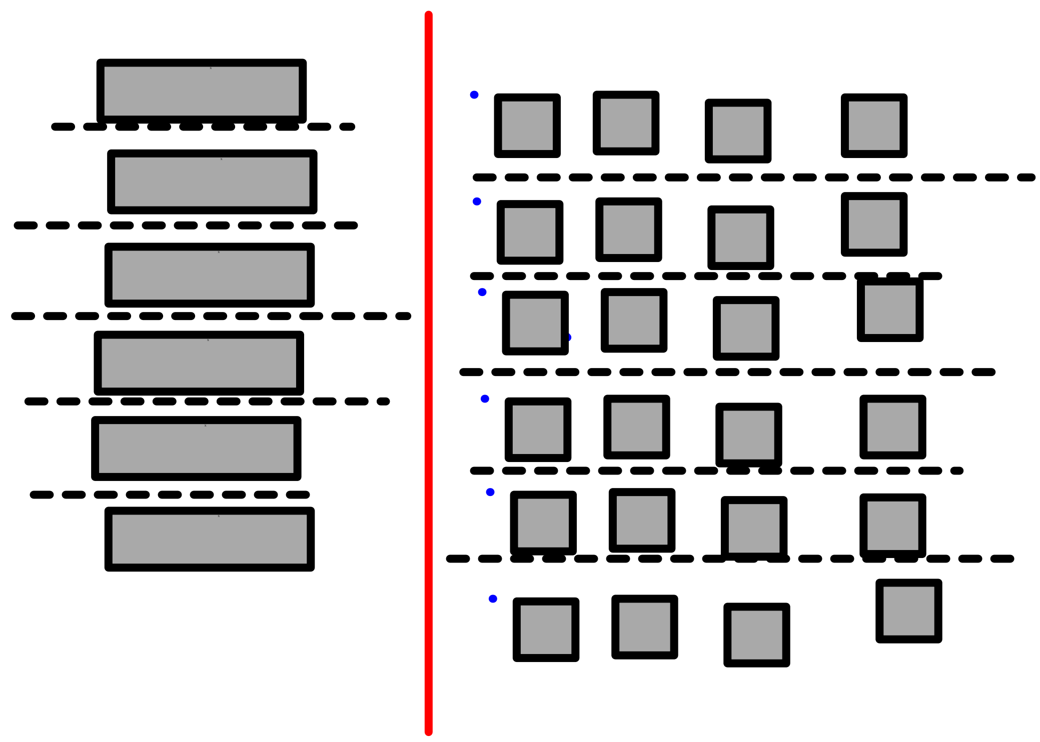
8. n = the number

$6n - 3 = 21$

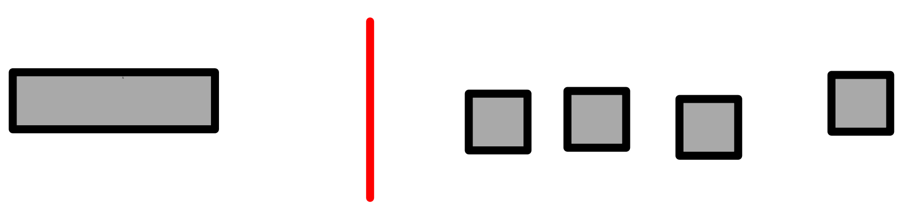


$6n - 3 + 3 = 21 + 3$

$6n = 24$



$n = 4$



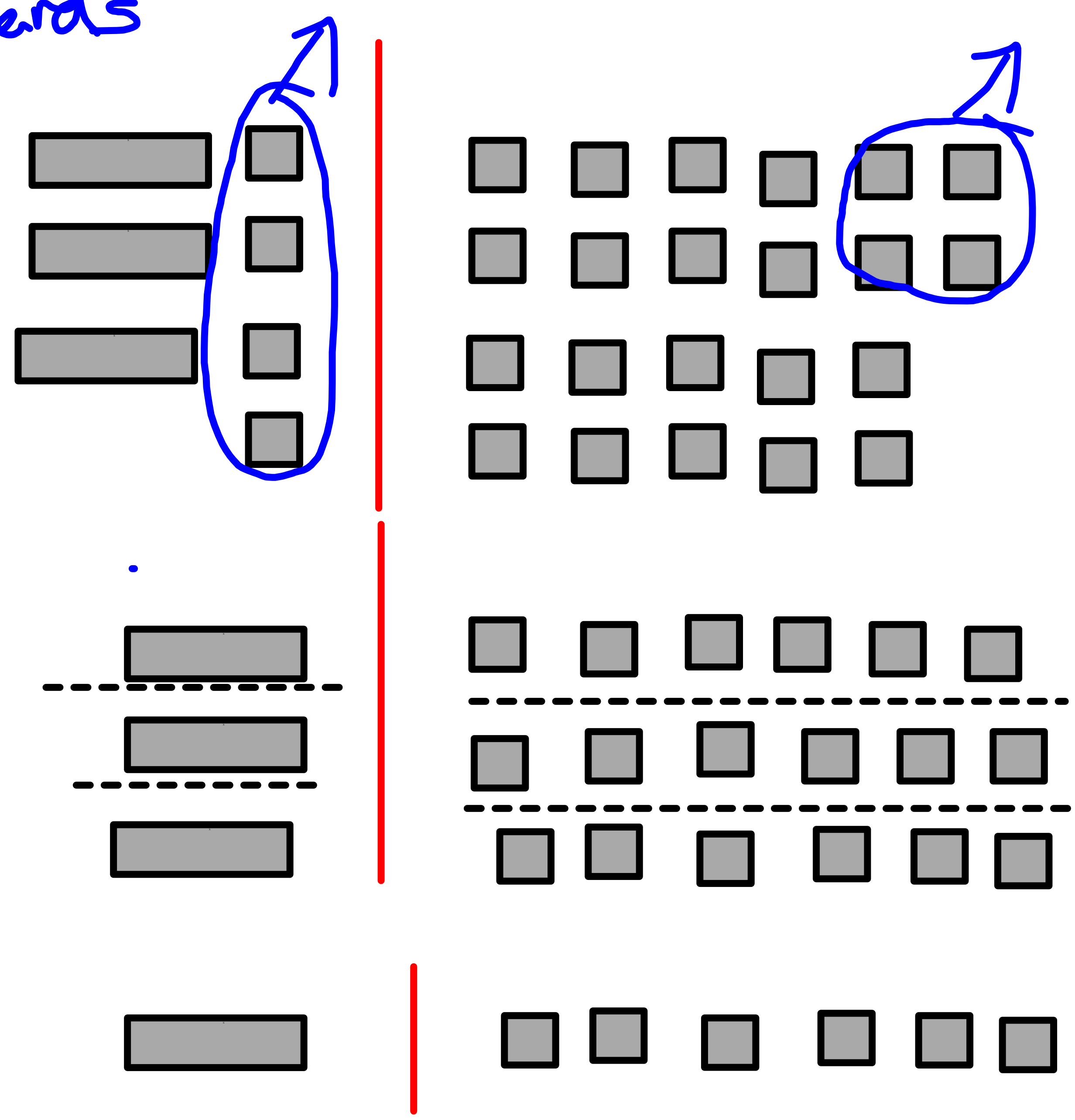
LS	RS
$6n - 3$	21
$6 \times 4 - 3$	
$24 - 3$	
21	

The number is 21.

9. n = number of cards

$3n+4=22$

$3n+4-4=22-4$



$3n = 18$

$\frac{3n}{3} = \frac{18}{3}$

$n = 6$

LS	RS
$3n+4$	22
$3\times6+4$	
$18+4$	
22	

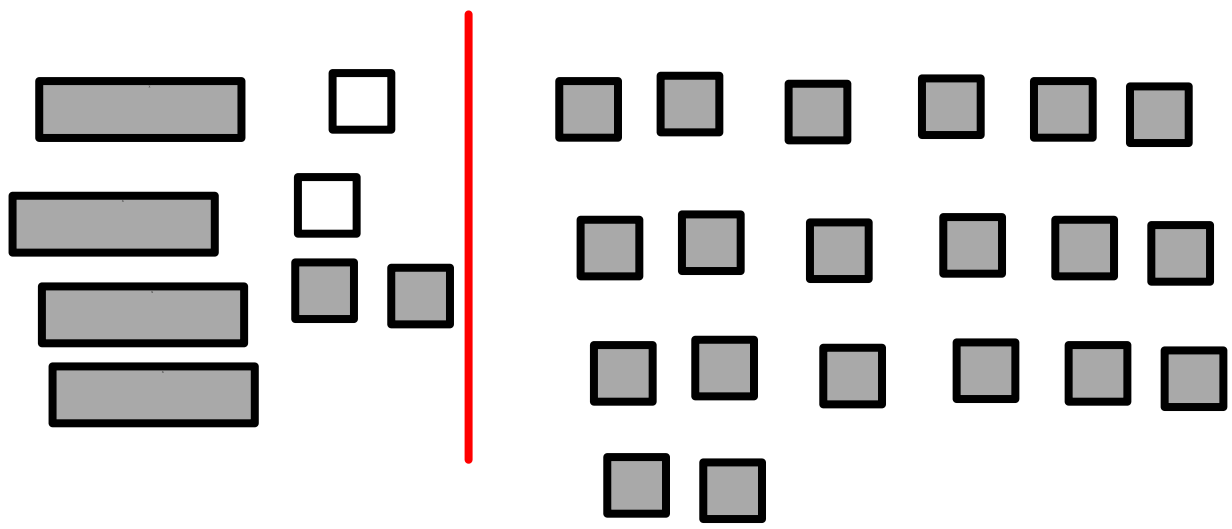
She had 6 cards in her hand

10 a) No he isn't correct, he has +2 instead of -2

(or he modeled $4x+2=18$, not $4x-2=18$)

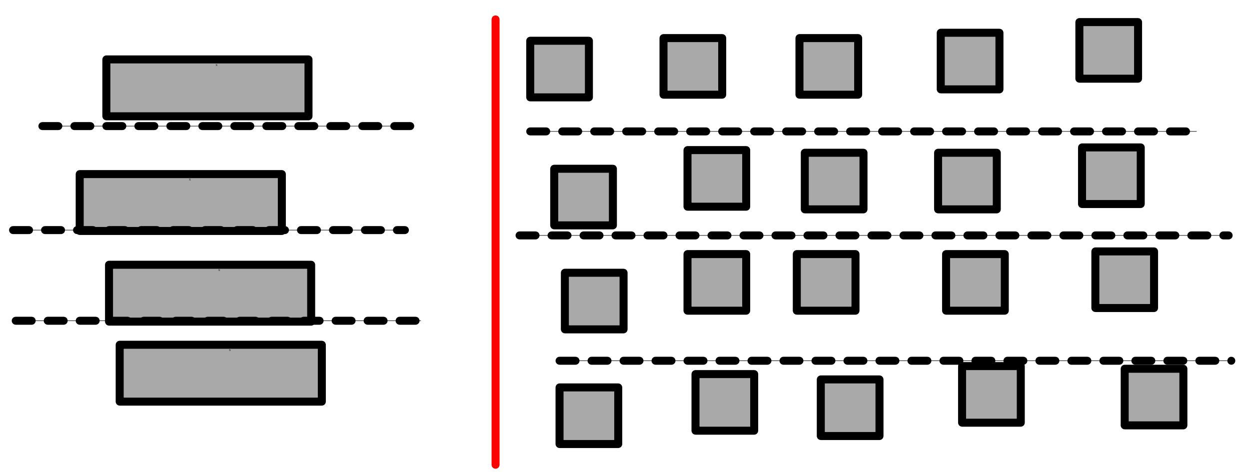
$4x-2=18$

$4x-2+2=18+2$

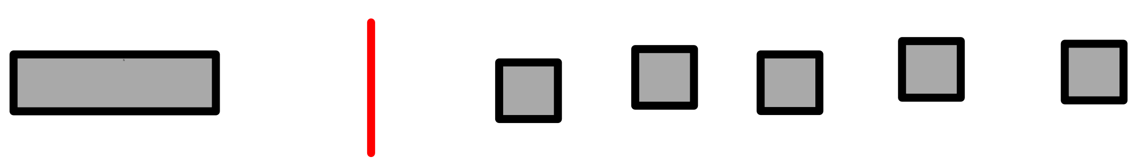


$4x=20$

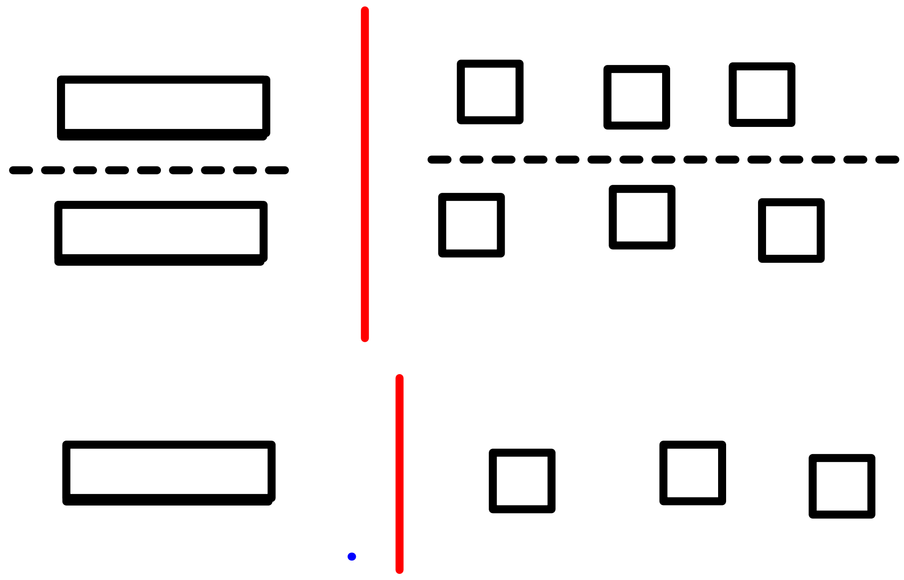
$\frac{4x}{4}=\frac{20}{4}$



$x=5$



11 a) $-2x = -6$

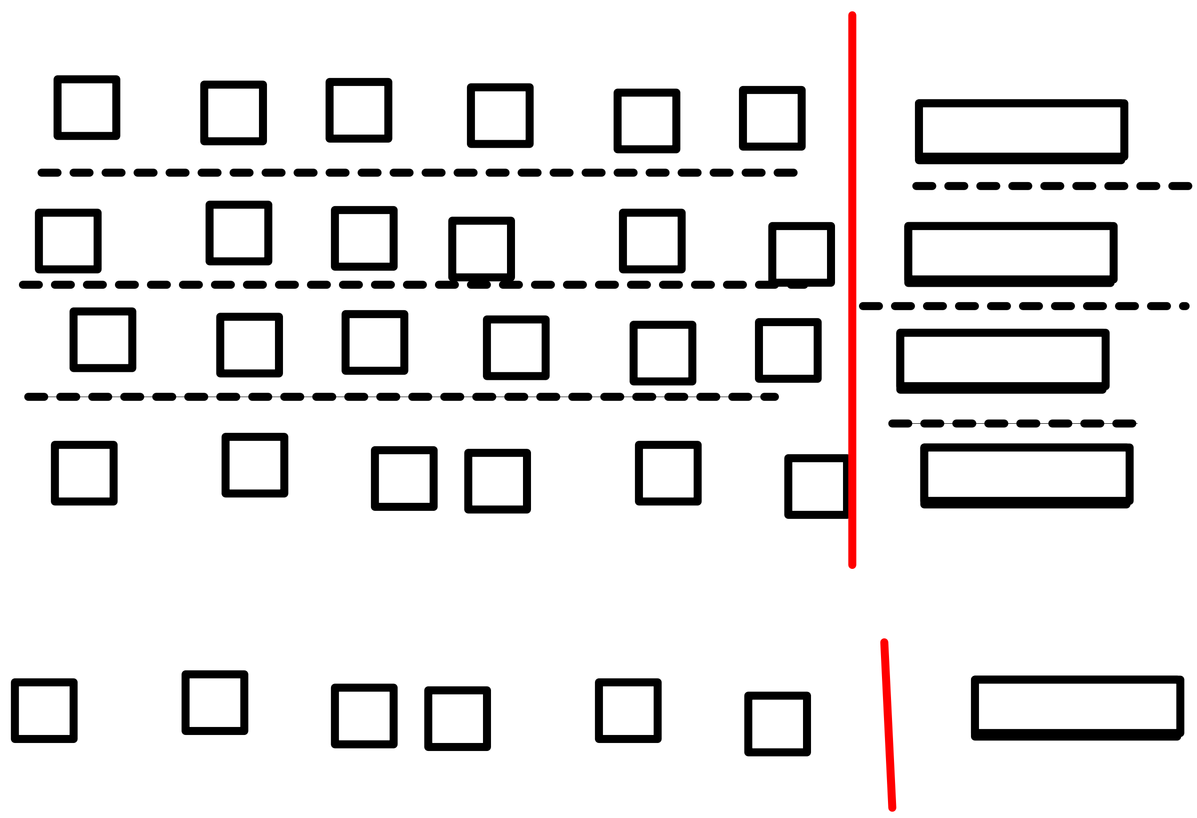


$$\frac{-2x}{2} = \frac{-6}{2}$$

$$-x = -3$$

$$x = 3$$

c) $-24 = -4x$



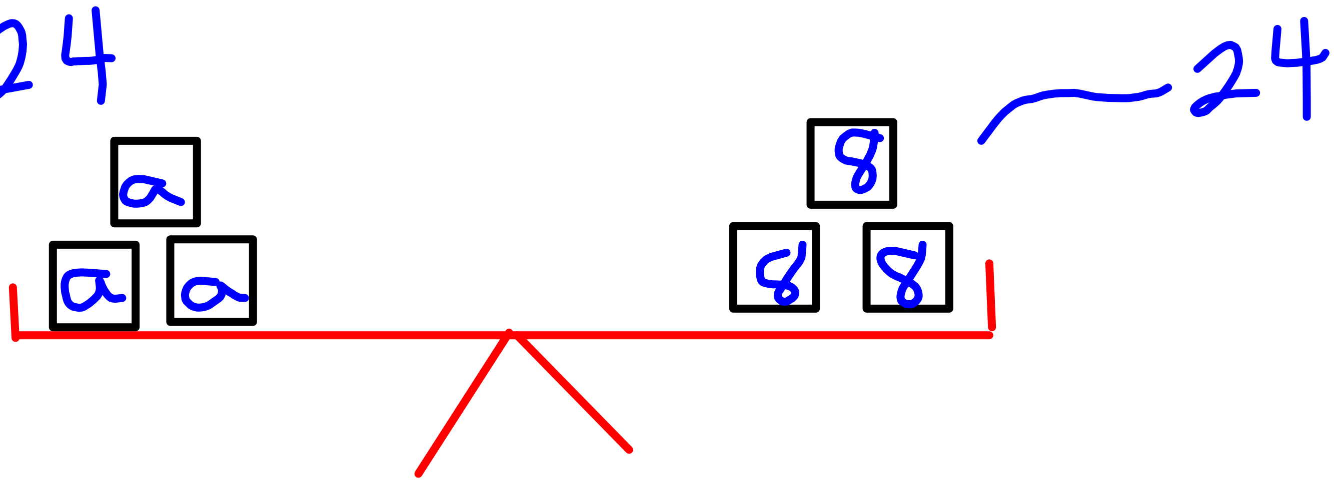
$$\frac{-24}{4} = \frac{-4x}{4}$$

$$-6 = -x$$

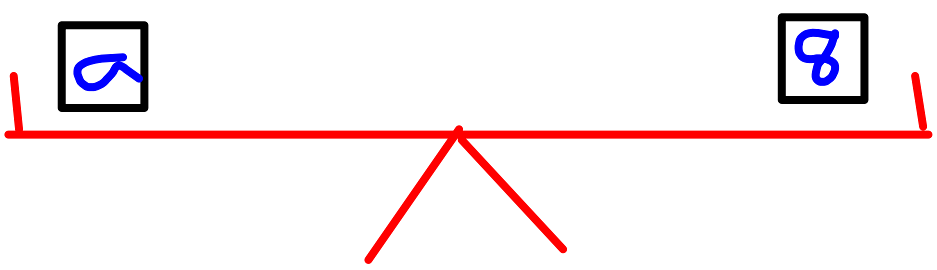
$$6 = x$$

12. a) On the third diagram, she has 4 a instead of 3a

$3a = 24$



$a = 8$



LS	RS
$3a + 5$	29
$3 \times 8 + 5$	
$24 + 5$	
29	

13a) $-2x+3=13$

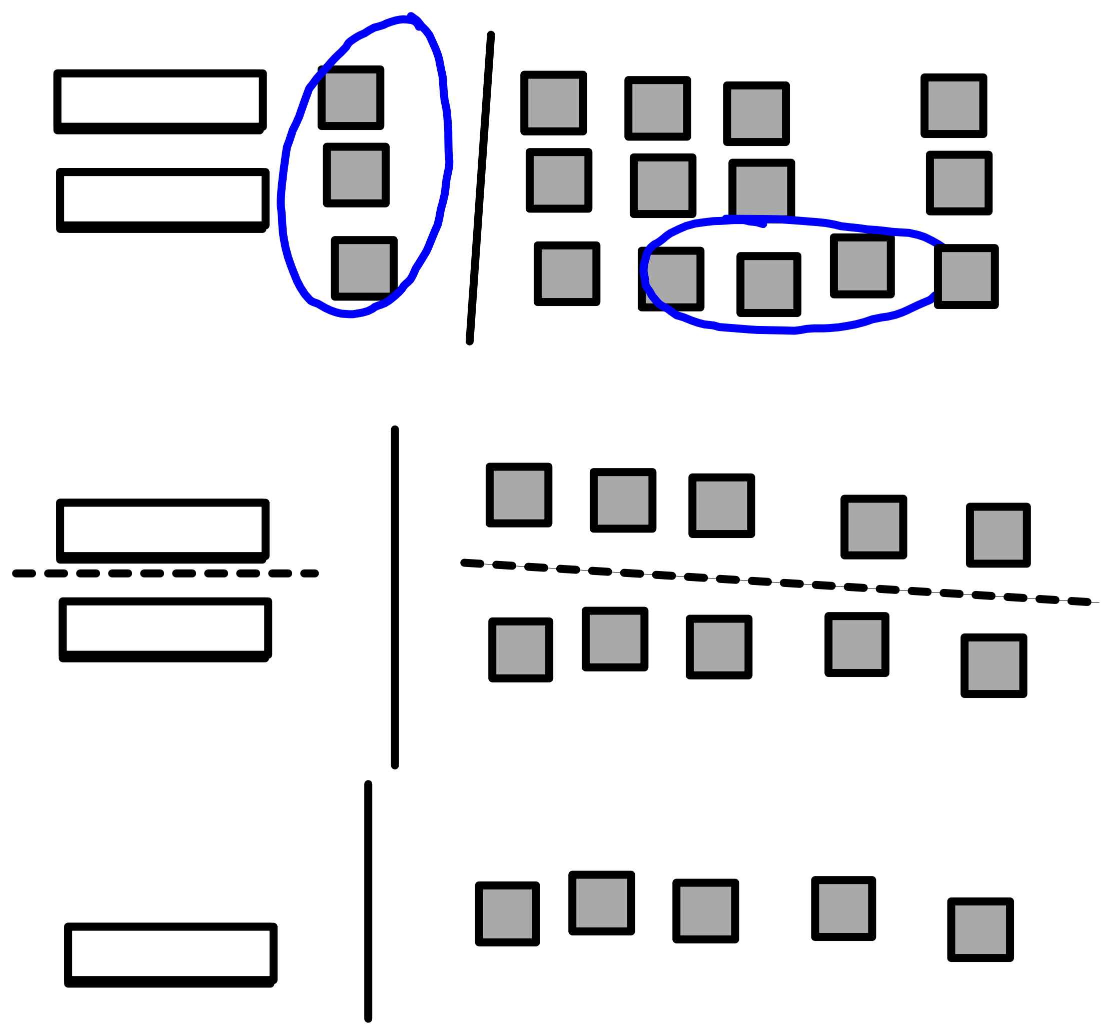
$-2x+3-3=13-3$

$-2x=10$

$\frac{-2x}{2}=\frac{10}{2}$

$-x=5$

$x=-5$



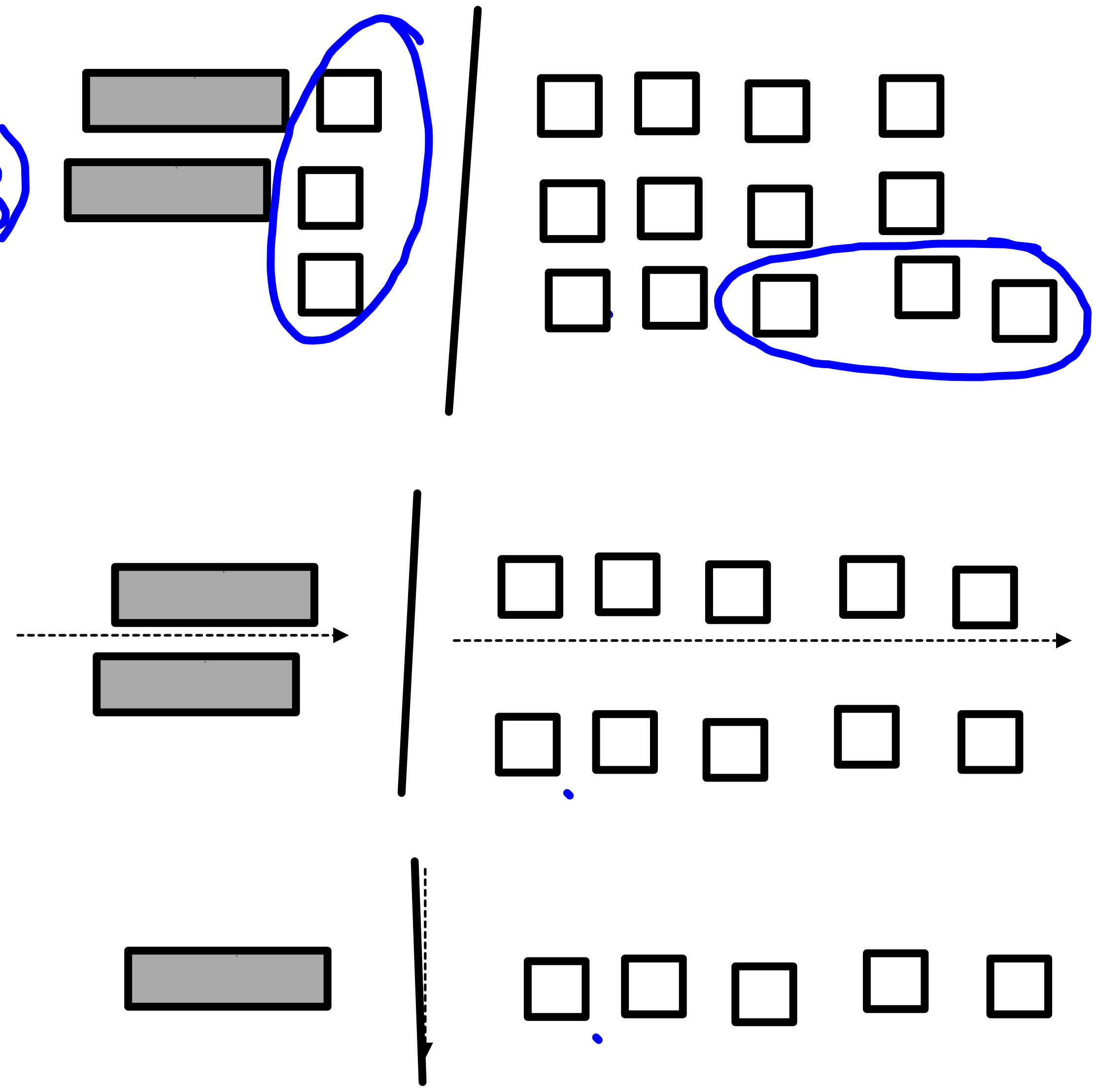
c) $2x-3=-13$

$2x-3-(-3)=-13-(-3)$

$2x=-10$

$\frac{2x}{2}=\frac{-10}{2}$

$x=-5$



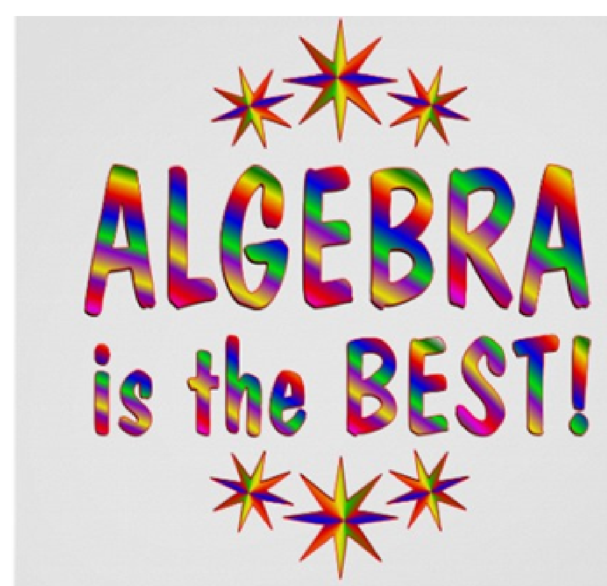
Solving Equations using Algebra

To solve an equation, we need to isolate the variable on one side of the equation.

To do this, we get rid of the numbers on that side of the equation.

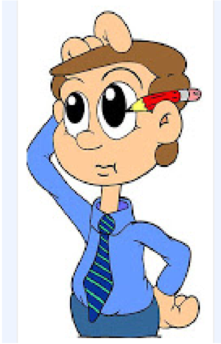
When we solve an equation using algebra, we must also preserve the equality.

Whatever we do to one side of the equation, we must do to the other side, too.



Whatever we do to one side of the equation, we must do to the other side, too.

Solve using algebra tiles then solve by using algebra



a) $2y - 1 = 7$

model

algebra

with algebra whatever you want to get rid of you do the opposite operation to it

b) $2 + 3a = -4$

Getting a Fraction or a Decimal as an Answer is OK

Use algebra to solve the equation. Then verify the solution.

$16t - 69 = -13$

Key words
Multiply → For each, for every, per, /, product, times, Each
↳ # infront of letter

Brad charges $4 for each bag of garbage,
and $7 cleaning gutters. On Friday, Brad cleaned 1 gutter and took out the garbage. He earned $19. How many bags of garbage did he take out?

a) Write and equation to represent this problem?
b) Solve the equation using algebra.
c) Verify the solution.

Class/Homework

6b) $12 = -3x$

pg. 330-331

7a) $-3x + 15 = 30$

7b) $7 = 1 + 2n$

5abef , #6bc, #7ab, #8ab, #9ab, #10ab

Use algebra only

You can model if you want

Check

5. Model each equation. Then solve it using concrete materials.
Use algebra to record each step you take. Verify each solution.

a) $2x - 1 = 7$
b) $11 = 4a - 1$
c) $5 + 2m = 9$
d) $1 = 10 - 3x$
e) $13 - 2x = 5$
f) $3x - 6 = 12$

6. Use algebra to solve each equation.
Verify the solution.

a) $4x = -16$
b) $12 = -3x$
c) $-21 = 7x$
d) $6x = -30$

7. Check each student's work.
Rewrite a correct and complete algebraic solution where necessary.

a) Student A:

$$\begin{aligned} -3x + 15 &= 30 \\ -3x + 15 - 15 &= 30 + 15 - 15 \\ -3x &= 30 \\ \frac{-3x}{-3} &= \frac{30}{-3} \\ x &= -10 \end{aligned}$$

b) Student B:

$$\begin{aligned} 7 &= 1 + 2n \\ 7 - 1 &= 1 - 1 + 2n \\ 8 &= 2n \\ \frac{8}{2} &= \frac{2n}{2} \\ 4 &= n \\ n &= 4 \end{aligned}$$

c) Student C:

$$\begin{aligned} 3 + 2t &= 4 \\ 3 + 2t - 3 &= 4 - 3 \\ 2t &= 1 \\ t &= 2 \end{aligned}$$

d) Student D:

$$\begin{aligned} -5 &= -8 + 5f \\ -5 + 8 &= -8 + 8 + 5f \\ 3 &= 5f \\ \frac{3}{5} &= \frac{5f}{5} \\ \frac{3}{5} &= f \\ f &= \frac{3}{5} \end{aligned}$$

Apply

8. Solve each equation.
Verify the solution.

a) $2x + 5 = -7$ **b)** $-3x + 11 = 2$
c) $-9 = 5 + 7x$ **d)** $18 = -4x + 2$

9. Navid now has \$72 in her savings account. Each week she will save \$24. After how many weeks will Navid have a total savings of \$288?

a) Write an equation you can use to solve the problem.
b) Solve the equation.
When will Navid have \$288 in her savings account?
c) Verify the solution.

10. **Assessment Focus**

The Grade 8 students had an end-of-the-year dance.
The disc jockey charged \$85 for setting up the equipment, plus \$2 for each student who attended the dance.
The disc jockey was paid \$197.
How many students attended the dance?

a) Write an equation you can use to solve the problem.

b) Solve the equation.

c) Check your answer and explain how you know it is correct.

11. Solve each equation.
Verify your solution.

a) $-8x + 11 = 59$ **b)** $11c + 21 = -34$

c) $23 = -5b + 3$ **d)** $-45 = 6a - 15$

e) $52 = 25 - 9f$ **f)** $-13 + 4d = 31$

12. Solve each equation.
Verify your solution.

a) $3n + 7 = 8$ **b)** $6x + 6 = 15$

c) $-23 = 5p - 27$ **d)** $5p + 6 = 7$

e) $8e - 9 = -3$ **f)** $-17 + 10g = -9$

13. The high temperature today is 7°C higher than twice the high temperature yesterday.
The high temperature today is –3°C. What was the high temperature yesterday?

a) Write an equation you can use to solve the problem.

b) Solve the equation.
Verify the solution.

14. **Take It Further**

Use this information.
Boat rental: \$300
Fishing rod rental: \$20

a) Write a problem that can be solved using an equation.

b) Write the equation, then solve the problem.

c) How could you have solved the problem without writing an equation? Explain.

15. **Take It Further**

Use this information:
Water is pumped out of a flooded basement at a rate of 15 L/min.

a) Write a problem that can be solved using an equation.

b) Write, then solve, the equation.