Solving Single Step Equations

Objective: Solve one step equations.

Agenda

Announcements

Intro to Algebra Tiles

Notes

Homework: Practice

CALCULATORS TODAY.

Have your homework out and ready to check.

Please make sure you have YOUR calculator form.

Find your seat!

On the Wednesday box, write down the names and favorite restaurants of everyone at your table.

At the top of YOUR calculator form, put your grade AND ID number.

Near the bottom of the page, put "Korotkow" in the TEACHER blank.

Homework Check

Practice Answers:

1. $5ab$
2. $-5h^2$
3. simplified
4. $2a+b+c$
5. $2x+5$
6. $6x+6y$
7. $-10d+40$
8. $-9a-4$
9. $12r+10$
10. $7x+3$
11. $5c+3d-4$
12. 0
13. $4w+24$ 36
14. $8.5v$ -17
15. $3b-12$ 3
16. $12x-2$ 22
17. $16r$
18. $8x+9=80$
19. $7x+28=77$
20. $4x-4=180$
21. $3x-12=90$

Algebra I - Unit 1: Topic 1 – Simplifying Expressions and Equations

Practice - Simplifying Expressions and Equations pp 46-51

Name _____ Date_____ Period _____

Simplify each expression. If it cannot be simplified, write "simplified".

1. $4ab + ab$
2. $-3h^2 - 2h^2$
3. $16m^3 - 10m^2$
4. $a + b + a + c$
5. $\frac{1}{5}(10x + 25)$
6. $6(x + y)$
7. $-5(2d - 8)$
8. $-(9a + 4)$
9. $5(r + 2) + 7r$
10. $6x + \frac{1}{7}(7x + 21)$
11. $5(c + 4) + 3(d - 8)$
12. $7r - 2(r + 2.5r)$

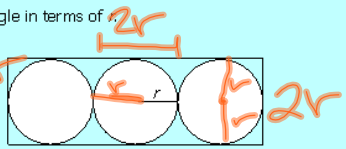
Simplify first, then evaluate if $w = 3$, $v = -2$ and $b = 5$. Circle BOTH answers.

13. $8w - 4(w - 6)$
14. $4.5v + 2(3v - v)$
15. $-3(b + 4) + 6b$

16. The dimensions of a rectangle are $(5x - 5)$ and $(x + 4)$. Write an expression to represent the perimeter of the rectangle in simplest form.

Now, find the Perimeter if $x = 2$. _____

17. Find the perimeter, in simplest form, of the rectangle in terms of r.

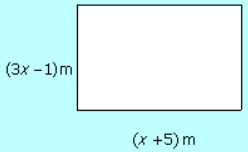


2r + 2r + 6r + 6r

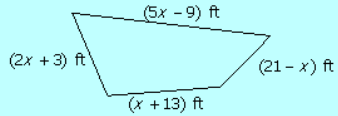
16r

Algebra I - Unit 1: Topic 1 – Simplifying Expressions and Equations

18. Write an equation, in simplest form, of the rectangle below whose perimeter is 80 meters.



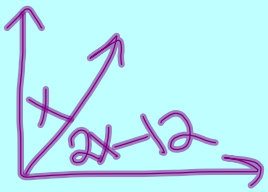
19. Write an equation, in simplest form, for the perimeter of the quadrilateral below if the perimeter is 77 feet.



20. Write an equation, in simplest terms, to find the measures of the two supplementary angles. The measure of the smaller angle is $(2x - 4)^\circ$, and the measure of the larger angle is $(2x)^\circ$.

21. Write an equation, in simplest terms, to find the measure of two complementary angles. The measure of larger angle is 12 less than twice the measure of the smaller angle .

90°



$x + 2x - 12 = 90$

$3x - 12 = 90$

Solving Single Step Equations ~~using Addition & Subtraction~~

p. 9

Algebra Tile Legend

= *x* or the variable

= 1 unit or a constant

= -*x* or the opposite

= -1 unit or a constant

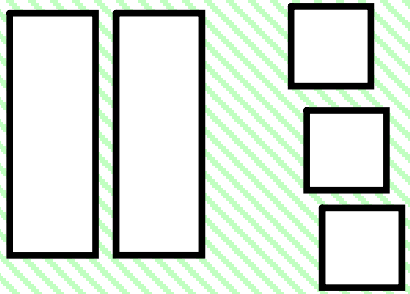
1. What do you get when you combine □ (1) and ■ (-1)? zero

2. What do you get when you combine ▯ (x) and ▮ (-x)? zero

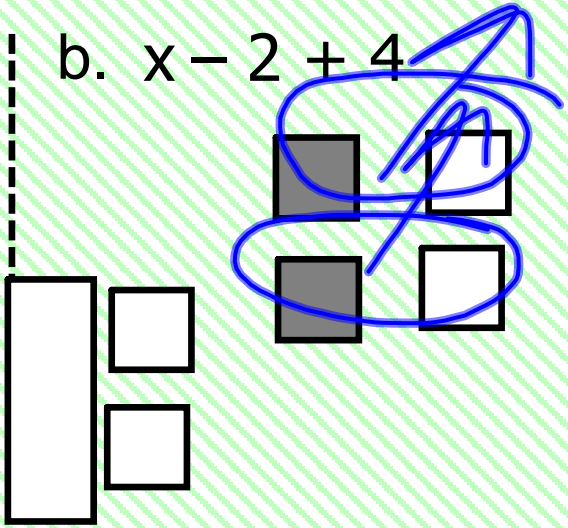
Zero Pair: when you have the same quantity but different signs, they cancel each other out

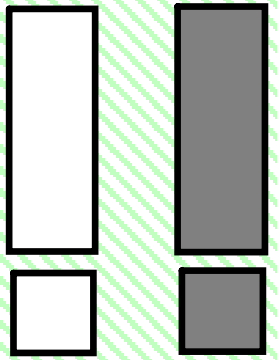
Model the following expressions using algebra tiles.

a. $2x + 3$



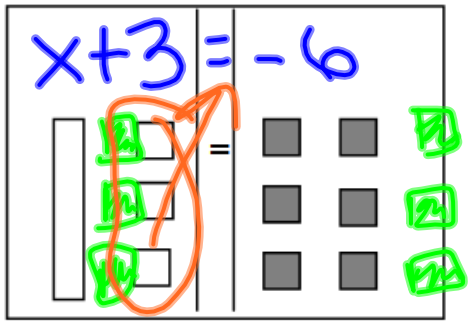
b. $x - 2 + 4$

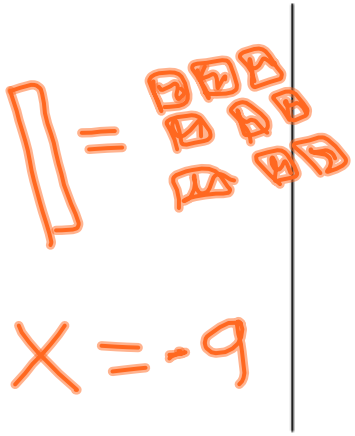




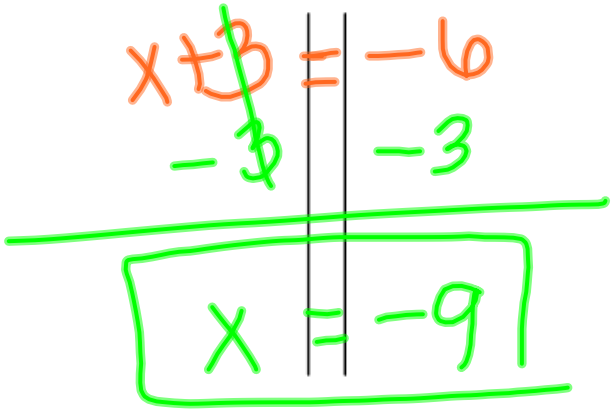
3. Solve the given equation using both the algebra tiles and the algebraic method. Draw the steps used with the tiles while writing the algebraic step.

Models





Algebraic



Inverse Operations

Operations that undo each other

Addition ↔ subtraction

Multiplication ↔ Division

ALGEBRA COMMANDMENT

Thou shall do unto one side of the equation what thou doest to the other!!

Solve the following equations algebraically:

1) Draw a line
2) identify operation
3) use inverse op.

3. $x - 10 = 4$

+10 +10

$x = 14$

4. $-7 = 8 + d$

−8 −8

$-15 = d$

5. $\frac{x}{7} = 2$

$x = 14$

6. $4x = -15$

$\frac{4}{4}$ $\frac{4}{4}$

$x = \frac{-15}{4}$

7. $\frac{5}{9}x = -10$

multiplying by reciprocal

$\frac{9}{5}$

$x = \frac{-90}{5}$

flipped fraction

$x = -18$

8. $-\frac{x}{8} = 3$

$-1x = 3$

-1

$x = -3$

Solve the following equations algebraically:

3. $x - 10 = 4$ 4. $-7 = 8 + d$ 5. $\frac{x}{7}$ =

6. $4x = -15$ 7. $\frac{5}{9}x = -10$ 8. $-\frac{x}{8}$

9. The quotient of a number and -5 is 4. What is the number?

$-5 \cdot \frac{x}{-5} = 4 \cdot -5$

$x = -20$

10. The sum of a number and 67 is -34. Find the number.

$x + 67 = -34$

$-67 \quad -67$

$x = -101$

11. Two-thirds of a number is sixteen. What is the number?

$\frac{3}{2} \cdot \frac{2}{3} \cdot x = 16 \cdot \frac{3}{2}$

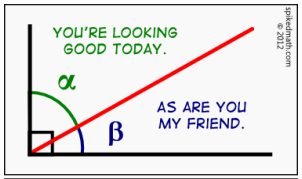
$x = \frac{48}{2}$

$x = 24$

12. Ten less than a number is equal to twelve.

13. This year Richardson High School had 578 sophomores enrolled. This is 89 less than the number enrolled last year. Write and solve an equation to find the number of sophomores enrolled at Richardson High School last year.

14. Two angles are complementary. One angle measures 42° and the other angle is $x°$. Solve for x.



15. A set of 8 dessert dishes cost $20. What was the cost of each dish?

16. Julie went shopping at Target and pays 8% sales tax on her total bill. If she paid $6.06 in sales tax, what was her bill before tax?

.08 commission

$.08b = 6.06$

$\frac{.08b}{.08} = \frac{6.06}{.08}$

$b = \$75.75$

Algebra I - Unit 1: Topic 2 – Solving Single Step Equations using Multiplication & Division

Practice - Solving Single Step Equations **pp 76-87**

Name: _____ Date: _____ Per _____

Solve the following equations.

1. $-12 + b = -12$
2. $\frac{k}{6} = 8$
3. $k - (-13) = 21$
4. $13 + n = -38$
5. $-\frac{2}{3}z = 8$
6. $-4.1 = m + (-0.5)$
7. $-3x = 52$
8. $-28 = -4r$
9. $14 = \frac{7}{8}n$
10. For the equation $\frac{x}{3} = 15$ a student found the value of x to be 5.
    a. Explain the error.
    b. What is the correct answer?

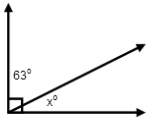
Define a variable, write an equation, solve and check each answer.

11. Thirteen subtracted from a number is -5. Find the number.
12. The difference of a number and -23 is 35. Find the number.
13. Five times a number is 45.
14. 12 is the product of a number and -3.
15. The quotient of a number and 3 is negative 8.
16. Four-thirds of a number is 4.82.

Algebra I - Unit 1: Topic 2 – Solving Single Step Equations using Addition & Subtraction

For Problem 17 & 18, write and solve an equation for x, then check each problem.

17.



18. $\angle A$ and $\angle B$ are supplementary. $\angle A$ has a measure of 125° and $\angle B$ has a measure of x°. Find x.

19. Which situation is best represented by $x - 32 = 8$?

A Daniel has 32 baseball cards. Joseph has 8 less baseball cards than Daniel. How many baseball cards does Joseph have?

B Logan withdrew $32 from her bank account. After her withdrawal, her balance was $8. How much was originally in her account?

C Room A contains 32 desks. Room B has 8 fewer desks. How many desks are in room B?

D Janelle bought a bag of 32 glue sticks for a project. She used 8 glue sticks. How many glue sticks does she have left?

20. In 1995, the long-distance company Sprint introduced Sprint Sense, a plan in which long-distance calls placed on weekends cost only $0.10 per minute.

a. How long could you talk for $2.30?

b. What would be the cost of an 18-minute call?

21. A boat salesperson earns a 2.5% commission on the sale of each boat. If he earned $462.50 in commission on the sale of a boat, how much did the boat sell for?