

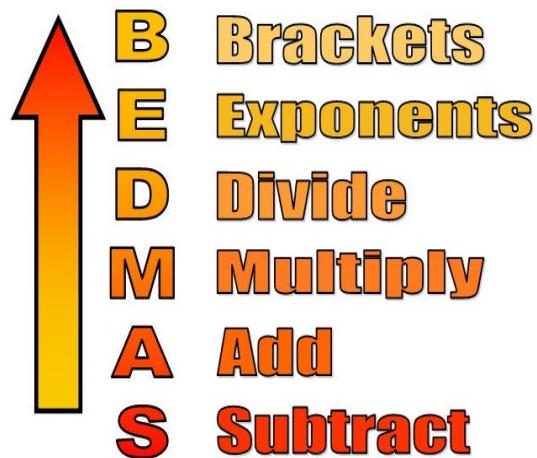
6.1 SOLVING TWO STEP EQUATIONS

Name: _____

Block _____

A) SOLVING TWO STEP EQUATIONS:

Example #2: Solve each equation. Check your solution by substituting into the original equation and seeing if the left side equals the right side of the equation.



Solution	Check
a. $5x + 8 = -47$	$5x + 8 = -47$
b. $-2x - 3 = -38$	$-2x - 3 = -38$
c. $5 + 4x = 11$	$5 + 4x = 11$
d. $9 - 3x = -18$	$9 - 3x = -18$

B) TRANSLATING ENGLISH TO MATHEMATICS

Complete the table below by filling in the English words that imply each operation.

<u>Addition</u>	<u>Subtraction</u>
<u>Multiplication</u>	<u>Division</u>

Understanding the English to math translation will help to set up equations when given word problems.

Examples:

- A. 4 more than 3 times a number is 16. What is the number?
- B. 3 less than 4 times a number is 20. What is the number?
- C. Find 3 consecutive integers such that sum of two times the smallest and three times the largest is 76. What are the numbers?



Write an equation and solve the equation.

84. A number is multiplied by negative two and then decreased by five and the result is twenty-nine. Find the number.
85. The sum of three times a number and three is negative twenty-seven. Find the number.
86. Three times the opposite of a positive number increased by five is negative twenty-five. Find the number.

- | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <p>1. A husband is two years older than his wife, and their son is half the age of his mother. If the sum of all three of their ages is 97, how old is the son?</p> | <p>2. A board 70 cm in length is cut into two pieces. Once piece is 8 cm shorter than three times the length of the other piece. Find the length of the two pieces.</p> | <p>3. The sum of three consecutive even integers is 43. Find the three integers.</p> |
| <p>9. Translate each verbal sentence into an equation.</p> <p>a) The sum of a number and three is twelve.</p> <p>b) If twice a number is decreased by five, the result is fifteen.</p> <p>c) The product of a number and five is twice the number plus eight.</p> <p>d) The quotient of a number and three added to twice the number is ten.</p> <p>e) The quotient of a number and five is seven.</p> <p>f) The sum of a number and three times the number is twelve.</p> | | |

C) SOLVING TWO STEP EQUATIONS WITH FRACTIONS:

Method 1:

STEP ① Add or subtract the fraction to get the term containing the variable isolated.

STEP ② Then multiply or divide to solve for x.

	Solution	Check
a.	$\frac{1}{2} + \frac{x}{3} = 4$	$\frac{1}{2} + \frac{x}{3} = 4$

**Solution**

a.

$$\frac{2}{3}x - \frac{1}{6} = \frac{3}{4}x$$

Check

$$\frac{2}{3}x - \frac{1}{6} = \frac{3}{4}x$$

Method 2: You may prefer to work with integers than to perform operations with fractions.
Change from fractions to integers by **multiplying by a common multiple of the denominators** in the equation.

Solution

a.

$$\frac{1}{2} + \frac{x}{3} = 4$$

Check

$$\frac{1}{2} + \frac{x}{3} = 4$$

**Solution**

a.

$$\frac{2}{3}x - \frac{1}{6} = \frac{3}{4}x$$

Check

$$\frac{2}{3}x - \frac{1}{6} = \frac{3}{4}x$$

Use the **method of your choice** from above to solve the following equations:

a) $\frac{x}{6} + \frac{1}{3} = \frac{1}{2}$

b) $\frac{x}{6} - \frac{1}{3} = \frac{1}{2}$

c) $\frac{x}{8} + \frac{1}{6} = \frac{7}{24}$

d) $\frac{x}{8} - \frac{1}{6} = -\frac{7}{24}$

e) $\frac{x}{4} + \frac{1}{3} = \frac{7}{12}$

f) $\frac{x}{6} + \frac{x}{8} = 7$

D) SOLVING TWO STEP EQUATIONS WITH DECIMALS:

STEP ① Multiply both sides of the equation by the LCD (lowest common denominator) to eliminate any decimals.

STEP ② Then multiply or divide to solve for x.

	Solution	Check
a.	$0.04x = 0.8$	$0.04x = 0.8$



	Solution	Check
b.	$3.2y - 9.6 = 16$	$3.2y - 9.6 = 16$

b) $0.4x = 0.08$

f) $2.1y - 2.8 = 5.6$

g) $0.4y + 17 = -3y$

c) $0.1x + 0.01x = 0.11$

d) $0.2x + 0.22x = 0.84$

h) $1.2y = -0.05y - 3.75$

E) PERCENT:

“Percent” means _____ . Therefore, when we are converting percents to decimals we _____ .

Warm Up: Change each percent to a decimal

a) 51%

b) 5%

c) 6.7%

d) 0.1%

Example: Solve and check.

a) 25% of a number is 8. What is the number?

b) 7% of a number is 56.7. What is the number?



Required

1, 2aceg, 3, 4,
5, 8, 10, 11, 13, 14,

Extra Practice

2bd fh, 6, 7, q,
12, 16, 19bc

Extension

17, 18

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15, 19d