

Name: Key
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Math 8

Lesson 6.2 – Solving Equations Using Algebra

Notes:

Last section we learned that we can solve equations by using models. In this section we'll also solve equations only this time using algebra.

There are two types of equations you will see in this chapter.



- **One Step Equations** (Which you covered in Grade 7)

- One step equations require only one step. You will either need to add, subtract, multiply or divide depending on the situation you are given. You will always do the opposite operation as the one that is given.
ex. $x + 3 = 5$
 $\therefore -$
- Remember that 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.
- Lastly, check your solution. *stress importance!

Examples:

1. $x + 4 = 7$
 $-4 \quad -4$
 $x = 3$

check: $(3) + 4 = 7$
 $7 = 7$
LS = RS ✓

2. $-3 + x = -13$
 $+3 \quad +3$
 $x = -10$

check: $-3 + (-10) = -13$
 $-13 = -13$
LS = RS ✓

3. $-2x = -48$
 $-2 \quad -2$
 $x = 24$

check: $-2(24) = -48$
 $-48 = -48$
LS = RS ✓

4. $-3x = -3$
 $-3 \quad -3$
 $x = 1$

check: $-3(1) = -3$
 $-3 = -3$
LS = RS ✓



- Two Step Equations (NEW)

- Two step equations require only two steps.
- To solve a two step equations we use a similar method as we did with one step equations
- Firstly, we use reverse BEDMAS. That means in order to isolate our variable we will get rid of the number that is on the same side of the equation as our variable using addition or subtraction.
- Secondly, we then will get rid of the number that is either being multiplied or divided by our variable by using the opposite ~~opposite~~ operation.
- Lastly, check your solution

Examples:

$$1. \quad 2y + 8 = -16$$

$$\begin{array}{r} -8 \quad -8 \\ \hline 2y = -24 \\ \hline y = -12 \end{array}$$

check: $2(-12) + 8 = -16$
 $-16 = -16 \checkmark$

$$2. \quad -1 = 14 - 5x$$

$$\begin{array}{r} -14 \quad -14 \\ \hline -15 = -5x \\ \hline 3 = x \end{array}$$

check: $-1 = 14 - 5(3)$
 $-1 = -1 \checkmark$

$$3. \quad 11 - 3y = 20$$

$$\begin{array}{r} -11 \quad -11 \\ \hline -3y = 9 \\ \hline y = -3 \end{array}$$

check: $11 - 3(-3) = 20$
 $20 = 20 \checkmark$

$$4. \quad -2y + (-2) = 11$$

$$\begin{array}{r} -2y + 2 = 11 + 2 \\ \hline -2y = 13 \\ \hline y = -\frac{13}{2} \end{array}$$

$$y = -\frac{13}{2}$$

or
 $y = -6.5$

TOUGH ONE!!!!

$$5. \quad \frac{3y}{8} = 6(8)$$

$$\begin{array}{r} 3y = 48 \\ \hline y = 16 \end{array}$$

check: $3(16) = 48$
 $48 = 48 \checkmark$



check: $-2(-6.5) + (-2) = 11$
 $13 - 2 = 11$
 $11 = 11$

Assignment:

Pg. 330-332
#s 1-14