

Grade 7 Mathematics  
Week of December 14 – December 18

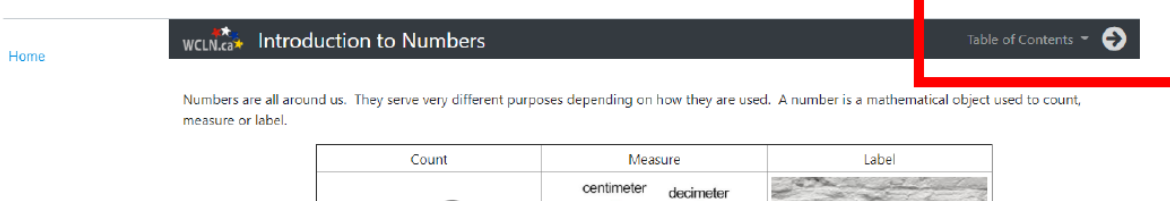
**Lesson 3.4 Equation Solving**  
**Lesson 3.5 Two-Step Solving**

**Lesson Materials**

- Lessons for Section [3.4 Equation Solving](#)
- Lessons for Section [3.5 Two-Step Solving](#)
- Equations Learning Guide (This PDF)

Use the link above to open the lessons for this section. Remember: on the lesson page, use the arrow next to the “Table of Contents” at the **top of the page** to move through the lessons. You can also click on the Table of Contents to open the menu so you can jump to a specific lesson page.

[G4T](#) > [Modules](#) > [Mathematics](#) > [1.1 Place Value](#)



Work through the online lessons. You can work at your own pace or follow the suggested schedule below. Complete the activities in your Learning Guide as you work through the lessons. You can print the Learning Guide, or, copy out the questions on a separate piece of paper. Be sure to try the games and practice quizzes as you make your way through the online lesson book.

**Suggested Lesson Schedule**

<p><b>Monday</b></p> <ul style="list-style-type: none"><li>• 3.4 – Solving Equations</li><li>• Equation or Expression?</li><li>• LG 3.4 #1-2, p. 9</li></ul> <p><b>Tuesday</b></p> <ul style="list-style-type: none"><li>• 3.4 – Making Equations</li><li>• Examples</li><li>• Solving</li><li>• LG 3.4 #3-5, p. 10-11</li></ul> <p><b>Wednesday</b></p> <ul style="list-style-type: none"><li>• 3.4 – Visualize with Tiles</li><li>• Solve with Tiles</li><li>• Visualize with Scale</li><li>• LG 3.4 #6-7, p. 12</li></ul>	<p><b>Thursday</b></p> <ul style="list-style-type: none"><li>• 3.5 – 2-Step Solving</li><li>• 1 or 2 Step?</li><li>• LG 3.5 #1-2, p. 13</li></ul> <p><b>Friday</b></p> <ul style="list-style-type: none"><li>• 3.5 – Solving Steps</li><li>• Practice</li><li>• LG 3.5 #3-4, p. 13-14</li></ul>
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3.4 EQUATION SOLVING
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1. Decide if each statement is true only of expressions (EXP), only of equations (EQU), or true of both equations and expressions (BOTH). Circle the correct answer.
- |  |     |     |      |
|--|-----|-----|------|
| a. Contains an equal sign.   | EXP | EQU | BOTH |
| b. Can contain variables such as $x$ , $n$ , and $t$ .                         | EXP | EQU | BOTH |
| c. Does not contain an equal sign.   | EXP | EQU | BOTH |
| d. Can contain integers.   | EXP | EQU | BOTH |
| e. Can use any mathematical operation, such as $+$ , $-$ , $\times$ , $\div$ . | EXP | EQU | BOTH |
| f. Can be solved.  | EXP | EQU | BOTH |
| g. Can only be evaluated if given the value of the variable.                   | EXP | EQU | BOTH |
2. Find the **opposite** mathematical operation of the operation in each equation. *Hint: You need to be able to identify the **opposite** of an operation in order to solve equations.*

Ex. 

$\frac{n}{7} = 14$
+   - <span style="border: 2px solid blue; border-radius: 50%; padding: 2px;">×</span> ÷

 $\frac{n}{7}$  is a division.  
 The opposite of  $\div$  is  $\times$ .

c. 

$w \div 12 = 8$
+   -   ×   ÷

a. 

$x + 9 = 33$
+   -   ×   ÷

d. 

$r - 41 = 9$
+   -   ×   ÷

b. 

$15m = 135$
+   -   ×   ÷

e. 

$\frac{z}{6} = 11$
+   -   ×   ÷

3. A student worked at solving the following equations. Determine whether they reached the correct answer or not by checking their work. *Reminder: To check the solution to an equation, plug the solution back into the problem and evaluate.*

**Ex.**  $d - 16 = 51$

Student answer:  $d = 68$

$( ) - 16 = 51$

$(68) - 16 = 51$

$52 \neq 51$

*The answer is incorrect.*

a.  $x - 23 = 38$

Student answer:  $x = 61$

c.  $m + 15 = 57$

Student answer:  $m = 42$

d.  $5t = 46$

Student answer:  $t = 9$

b.  $q + 20 = 93$

Student answer:  $q = 63$

e.  $4v = 52$

Student answer:  $v = 14$

4. Solve each equation by isolating the variable. Follow the steps. *Reminder: Even though you may be able to solve these equations in your head, practice writing down the steps as they will be needed when the level of difficulty increases.*

	<b>Ex.</b> $8e = 56$	<b>a.</b> $f - 13 = 51$	<b>b.</b> $w + 6 = 67$
<u>Step 1:</u> Determine the operation needed to isolate the variable. (The <b>opposite</b> operation).	$\div$		
<u>Step 2:</u> Use this operation on <b>both sides</b> of the equation.	$\frac{8e}{8} = \frac{56}{8}$		
<u>Step 3:</u> Evaluate	$e = 7$		
<u>Step 4:</u> Check your answer by putting it back into the question.	$8(7) = 56$ $56 = 56$		

	c. $h \div 5 = 12$	d. $6p = 36$	e. $\frac{x}{10} = 4$
<u>Step 1</u> : Determine the operation needed to isolate the variable. (The <b>opposite</b> operation).			
<u>Step 2</u> : Use this operation on <b>both sides</b> of the equation.			
<u>Step 3</u> : Evaluate			
<u>Step 4</u> : Check your answer by putting it back into the question.			

5. Solve each equation. Follow the same steps as you did in #3.

Ex.  $u + 15 = 47$

$$\begin{array}{r} -15 \\ -15 \\ \hline \end{array}$$

$$u = 32$$

$$(32) + 15 = 47$$

**Correct**

a.  $\frac{c}{12} = 8$

e.  $t + 62 = 84$

f.  $\frac{w}{2} = 34$

b.  $6a = 18$

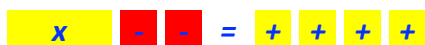
g.  $j - 41 = 26$

c.  $p - 23 = 34$

d.  $3g = 45$

6. Represent each equation using tiles. You do not need to solve the equation.

**Ex.**  $x - 2 = 4$



a.  $x - 6 = 3$

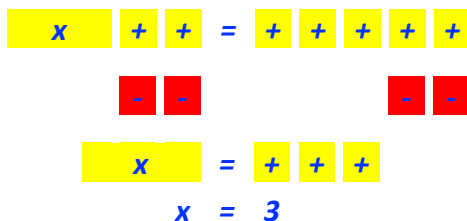
c.  $x + 5 = 11$

b.  $x + 1 = 8$

d.  $x - 4 = 1$

7. Represent and solve the equation using tiles. *Reminder: Keep the equation balanced by always adjusting the equation the same way on both sides.*

**Ex.**  $x + 2 = 5$



a.  $x - 3 = 7$

b.  $x + 5 = 9$

## 3.5 TWO-STEP SOLVING

1. Identify each equation as *1 step* or *2 steps*. You do not need to solve the equation.  
*Reminder: You are counting how many operations you need to perform on each equation in order to isolate the variable.*

**Ex.**  $15n + 1 = 46$

**Two steps**

a.  $32 - y = 9$

b.  $\frac{x}{5} + 16 = 21$

c.  $75 = 12w + 3$

d.  $f + 16 = 21$

e.  $19 = 24 - \frac{u}{8}$

2. Match each number sentence with its corresponding expression.

a. 3 times a number increased by 6

b. A number divided by 6 plus 3

c. A number divided by 3 increased by 6

d. 3 minus six times a number

e. 3 subtracted by a number divided by 6

f. 6 times a number less 3

i.  $3 - \frac{n}{6}$

ii.  $3n + 6$

iii.  $3 - 6n$

iv.  $6n - 3$

v.  $\frac{n}{3} + 6$

vi.  $\frac{n}{6} + 3$

3. In general, when solving 2-step equations, it is easiest to deal with any \_\_\_\_\_ and \_\_\_\_\_ first. Then, you can deal with any \_\_\_\_\_ and \_\_\_\_\_.

4. Isolate the variable to solve each 2-step equation. *Reminder: Remove any addition or subtraction first, then remove the multiplication or division.*

**Ex.**  $3a + 2 = 11$

$$\begin{array}{r} -2 \quad -2 \\ \hline 3a = 9 \\ \hline 3 = 3 \\ \hline a = 3 \end{array}$$

Check:  $3(2) + 2 = 11$   
 $11 = 11$

a.  $6y + 3 = 27$

Check:

b.  $10r - 13 = 57$

Check:

c.  $\frac{s}{5} + 4 = 8$

Check:

d.  $\frac{n}{2} - 4 = 11$

Check:

e.  $4t - 61 = 39$

Check:

f.  $\frac{x}{8} + 12 = 17$

Check:

g.  $11p + 42 = 119$

Check: