Grade 6 Mathematics
Week of November 23 – November 27

**Lesson 3.1: Equations**
Lesson 3.2: Variables
Lesson 3.3: Substitution

Lesson Materials

- Lesson for Section 3.1 Equations
- Lesson for Section 3.2 Variables
- Lesson for Section 3.3 Substitution
- 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.
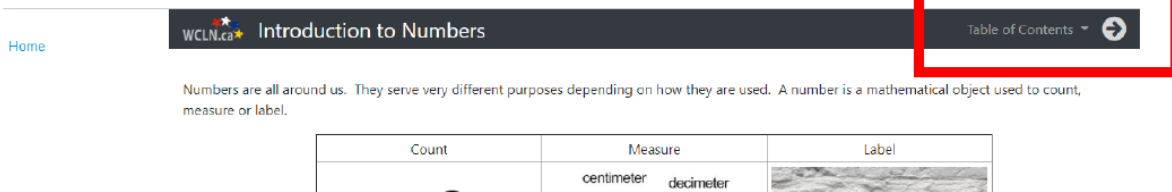
Work through the online lessons. You can work at your own pace or follow the suggested schedule below. Complete the activities in your Learning Guide as you work through the lessons. You can print the Learning Guide, or, copy out the questions on a separate piece of paper. Be sure to try the games and practice quizzes as you make your way through the online lesson book.

Suggested Lesson Schedule

Monday	Wednesday
• 3.1- What is an Equation? • Equation or Not • Balance Scale Puzzles • Practice • LG 3.1 #1-2, p. 1	• 3.3 – Evaluating • Evaluation Steps • Practice • LG 3.3 #1-2, p. 3
Tuesday	**Thursday**
• 3.2 – What is a Variable? • Variables • Terms • Creating Equations • Matching Terms • Practice • Challenge Yourself • LG 3.2 #1-2, p. 2	• Challenge Yourself • LG 3.3 #3-7, p. 4-5 **Friday** • Pro-D Day

Name:

UNIT 3 LEARNING GUIDE – EQUATIONS

INSTRUCTIONS:

Using a pencil, complete the following questions as you work through the related lessons. Show ALL of your work as is explained in the lessons. Do your best and always ask questions if there is anything that you don't understand.

3.1 EQUATIONS

1. An equation always contains an _____ sign.

2. Circle all of the equations in the examples below.

$$15 - y = 3 \qquad 1300 - 450 \qquad x \geq 75 \qquad 4\,970\,201$$

$$0 < 67 + 2 \qquad 18 \div m = 9 - n \qquad 22 + 7 + 3 = 32 \qquad d - t = s$$

3. Find the value of the unknown on each scale.

a.	10 ⬜ 〇 △3	〇 = ___
d.	16 ⬜ (12)△	△ = ___
b.	16 ⬜ △△△△	△ = ___
e.	15 ⬜ 〇△9	〇 = ___
c.	4 ⬜ △△	△ = ___
f.	4 ⬜ (1)△	△ = ___

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3.2 VARIABLES

1. Fill in the table.

	Word Sentence	Equation
Ex.	*The sum of 5 and 20 is a number.*	$5 + 20 = n$
a.		$10 + x = 30$
b.	The difference of 10 and a number is 9.	
c.		$d \times 2 = 12$
d.	The quotient of 15 and a number is 3.	
e.		$25 - h = 4$

2. Write an equation to represent each mathematical problem. You do not have to solve the problem. The variable has been placed in the equation for you.

   a. Lee had $400 in his bank account. After withdrawing some money, he had $342.

   _____ − ___ *n* ___ = _____

   b. There were 27 people on a bus. At the next stop, a certain number got on the bus and then there were 35 people on the bus.

   _____ + ___ *n* ___ = _____

   c. A grandmother divided some apples into 5 groups. Each group contained 8 apples.

   ___ *n* ___ ÷ _____ = _____

   d. Adelaide purchased several packs of chewing gum. Each pack cost 2 dollars and she paid a total of 14 dollars.

   ___ *n* ___ × _____ = _____

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3.3 SUBSTITUTION

1. Follow the steps in order to evaluate each expression.

Ex.

$x + 4$ if $x = 5$

Step 1 $(\ ) + 4$

Step 2 $(5) + 4$

Step 3 **9**

b.

$3 \times y$ if $y = 7$

Step 1 _____

Step 2 _____

Step 3

a.

$x - 2$ if $x = 9$

Step 1 _____

Step 2 _____

Step 3

c.

$r \div 6$ if $r = 24$

Step 1 _____

Step 2 _____

Step 3

2. Fill in the charts below. _Reminder: You can remove the $\times$ symbol between a number and a variable and it still means multiplication._

a.

Evaluate $p + 5$	
If $p = 3$, the sum is	**8**
If $p = 9$, the sum is	
If $p = 17$, the sum is	
If $p = 0$, the sum is	
If $p = 99$, the sum is	

b.

Evaluate $8y$	
If $y = 2$, the product is	**16**
If $y = 10$, the product is	
If $y = 8$, the product is	
If $y = 25$, the product is	
If $y = 4$, the product is	

3. Wu gets paid $15 for each time that he clears the snow from his neighbour's driveway.

    a. Write an expression for this situation. _Reminder: An **expression** does not contain an equal sign. You will need to use a variable._

        _____ × _____

    b. Solve the expression if Wu clears the driveway 6 times.

4. Ryan withdraws (takes out) $60 from his bank account.

    a. Write an expression for this situation.

        _____ − _____

    b. Solve the expression if Ryan started with $200 in the bank.

5. Some hockey players divide 120 cookies into smaller groups for a bake sale.

    a. Write an expression for this situation.

        _____ ÷ _____

    b. Solve the expression if the hockey players divide the cookies into 10 groups.

6. Choose the correct equation that relates to the word problem, then solve.

    a. Logan has 4 cm of hair cut off at the hair salon. If b is the length of hair before getting it cut and a is the length of hair after getting it cut, which equation would you use to show the length of Logan's hair after getting it cut? _Hint: Begin by rewording the problem in your own words: What are you trying to figure out? What information do you have?_

      i. $4 - a = b$
      ii. $b + 4 = a$
      iii. $b - 4 = a$

    b. Solve for a if Logan's hair was 11 cm long before getting it cut.

7. Evaluate.

Ex. $x - y$ if $x = 16,\ y = 9$

$(\ ) - (\ )$

$(16) - (9)$

7

a. $w + s + s$ if $w = 7,\ s = 4$

b. bh if $b = 15,\ h = 3$

c. $\dfrac{n}{m}$ if $n = 42,\ m = 6$