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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 3
Lesson
4

Lesson Exemplar for Mathematics Grade 7
Quarter 3: Lesson 4 (Week 4)
SY 2024-2025

Development Team

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MATHEMATICS / QUARTER 3 / GRADE 7

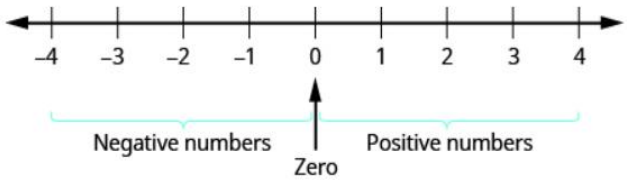
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of the set of integers, and comparing and ordering integers.
B. Performance Standards	By the end of the quarter, the learners are able to compare and order integers, including through the use of the number line. (NA)
C. Learning Competencies and Objectives	*The learners…* 1. describe the set of integers 2. use positive and negative numbers to describe directions or opposites in real-life situations. 3. locate integers on the number line. 4. compare and order integers.
D. Content	Representing Integers Locating Integers on the Number Line Comparing and Ordering Integers
E. Integration	Financial Literacy/Financial Transactions

II. LEARNING RESOURCES
Flexbooks. *Integers that Represent Different Situations.* (2023, November 30). https://flexbooks.ck12.org/cbook/ck-12-conceptos-de-matem%C3%A1ticas-de-la-escuela-secundaria-grado-6-en-espa%C3%B1ol/section/11.1/related/lesson/integers-that-represent-different-situations-msm7/ Lume. *Locating and Ordering Integers on the Number Line. (n.d).* https://courses.lumenlearning.com/mathforliberalartscorequisite/chapter/locating-and-ordering-integers-on-the-number-line/ The Math Worksheet. (n.d). *The Math Worksheet.* https://themathworksheetsite.com/numline.html

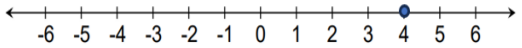
III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** Guide the students to recall that the set of integers is composed of the set of counting or natural numbers, their opposites (negative numbers), and zero. This can be done by asking them the questions below. **Guide Questions:** 1. What do you call the set of numbers used for counting? 2. What is the difference between whole numbers and counting numbers? 3. What is the opposite of positive numbers? 4. What do you call the set of numbers composed of counting or natural numbers, their opposites (negative) numbers, and zero? **2. Feedback (Optional)** After the short review, let the students do a Think-Pair-Share Activity using the guide question: What do you think is the significance of integers in real life? Cite specific real-life situations where integers are used.	Begin Day 1 by recalling the set of integers.
B. Establishing Lesson Purpose	**1. Lesson Purpose** On this part, it is very important for students to recognize the significance of knowing and understanding the set of integers. The activity below will provide an opportunity for the students to see the relevance of integers to real-life situations. **Activity 2: Raise Me** Directions: Raise the red flag if the statement represents a negative number or the blue flag if it represents a positive number. 1. Profit of 300 pesos 2. 100 meters below sea level 3. Decrease of 5% 4. Gain of 8 kilos 5. A deposit of 5,000 pesos From the activity, let the students identify the terms associated with negative and positive numbers. Expected Answers:	The materials for Activity 2 can be assigned to the students. Let them bring 2 flags, one with red and the other with blue. **Expected Answers:** 1. Blue 2. Red 3. Red 4. Blue 5. Blue

	• Terms associated with negative numbers: From item numbers 2 and 3, the terms are *below* and *decrease*. • Terms associated with positive numbers: From item numbers 1, 4, and 5, the terms are *profit*, *gain*, and *deposit*. **2. Unlocking Content Area Vocabulary** **Integers** are numbers that include the natural numbers, their opposites (the negative integers), and zero. An integer is **greater than** another integer if the first integer is to the right of the second integer on the number line. An integer is **less than** another integer if the first integer is to the left of the second integer on the number line.	
C. Developing and Deepening Understanding	**SUB-TOPIC 1: Representing Integers** **1. Explicitation** Let the students read the passage below, then let them identify situations that demonstrate negative or positive numbers. Richard, a young professional, started saving money from his salary to reach his goal of having his own house and lot worth 1 million pesos. He consistently deposits 5,000 pesos every month in his bank account. Also, as part of his mid-year and year-end bonuses, an amount of 100,000 pesos was invested in one of the top insurance companies. After four years, he started the construction of his own house and lot. He partially withdraws an amount of 200,000 pesos from his savings account in the bank. While from his investment, he entirely withdraws a total amount of 350,000, which includes the initial capital and the interest earned. However, this amount is still not enough to start the construction. So, he borrows, in the form of a loan, from a bank an amount of 300,000 pesos. **Guide the students to deduce the following:** 1. A deposit of 5,000 pesos and an investment of 100,000 pesos both represent positive numbers. 2. Withdrawals of 200,000 and 350,000 and a loan of 300,000 all represent negative numbers.	From the passage, the teacher can guide the students to identify the financial transactions made by the character. Also, it is an opportunity to discuss the importance of savings and investment and financial literacy.

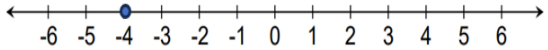
	2. Worked Example The following examples can be given to the class for students to fully realize that integers help represent many real-world situations. Example 1: Mr. Arnel invested 50,000 pesos in the stock market. In the first few months, he gained 20,000 pesos, but due to some uncertainties, the market went down, and he incurred a loss of 10,000 pesos. Use the integers to represent the amount of money gained and lost by Mr. Arnel. • The word "gain" means the integer is positive. So, the gain of 20,000 pesos can be represented as +20,000 or 20,000. • The word "loss" means the integer is negative. So, the loss of 10,000 pesos can be represented as -10,000. Example 2: Mang Juan is a fisherman. He is sitting 3 feet above the surface of the sea on a boat. The hook on his fishing pole is floating 7 feet below the sea's surface. Use integers to represent the position of Mang Juan and his hook. • The surface of the sea can be represented by the integer 0. Mang Juan is sitting above the surface. The word "above" means the integer is positive. So, the position of Mang Juan can be represented as +3 or 3. • The hook is floating below the surface. The word "below" means the integer will be negative. The position of the hook can be represented as -6. **3. Lesson Activity** **Activity 3: Translate Me** Write the following as an integer. 1. 25 feet below the surface 2. An altitude of 12,000 feet 3. A loss of 10 kilos 4. 15 degrees below zero 5. An increase of 2,000 pesos 6. A profit of 250 pesos 7. A descent of 20 meters 8. A rise of 8 feet 9. Gain of 8 kilos 10. A deposit of 5,000 pesos	After discussing the two illustrative examples above, let the students answer Activity 3. Activity 3 can be given as a formative assessment for day 1. The teacher can give an assignment by asking the students to list down other terminologies that can be associated with the negative or positive numbers. **Expected Answers:** 1. -25 2. +12,000 3. -10 4. -15 5. +2,000 6. 250 7. -20 8. +8 9. +8 10. +5,000

	DAY 2 **SUB-TOPIC 2: Locating Integers on Number Line** **1. Explicitation** Based on the discussion in the previous sub-topic, guide the students to recall that integers are numbers that include the natural numbers, their opposites (the negative numbers), and zero. The discussion on integers on the number line can be presented by asking the students to draw a number line and indicate where the positive, zero, and negative numbers are located as shown on the sample number line below.  Emphasize to the students that positive numbers are to the right of zero. We could write a plus sign, +, before a positive number, such as +4 or +5, but it is usually written only as 4 or 5, where the plus sign is omitted. Negative numbers are to the left of zero. Ask the students, *how about zero? Is zero a positive or negative number?* Zero is neither positive nor negative. *What does the arrowhead in the number line indicate?* The arrowheads indicate that the number line extends infinitely in each direction. It also implies that there is no greatest positive number and no smallest negative number. **2. Worked Example** Present the following illustrative examples of how to plot points on the number line. Example: Plot the following numbers on the number line: a. 4 b. -4 **Answer:** Draw a number line. Mark 0 at the center and label several units to the left and right of zero.	Before proceeding with the lesson, discuss the activity given on Day 1. In the discussion of the assignment, emphasize the idea that negative and positive represent opposites (e.g. going up and going down, increasing and decreasing, left and right, and profit and loss) The teacher can give an additional two or three examples if necessary.

a. To plot 4, start at 0 and count four units to the right since the number is positive. Then, place a point as shown below.



b. To plot -4, start at 0, count four units to the left since the number is negative. Then, place a point as shown below.



3. Lesson Activity

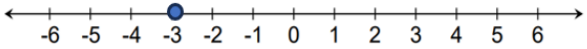
Activity 4. Where Am I Located?

Plot the following integers on the number line.

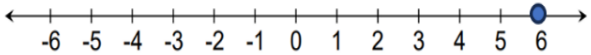
1. –3
2. 6
3. 0
4. –5

Expected Answers:

1.



2.



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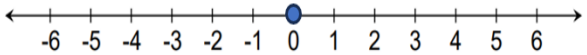
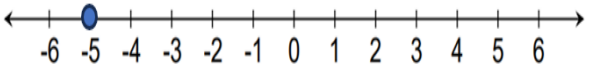


4.



After providing enough illustrative examples of plotting integers on the number line, let the students do Activity 4.

Activity 4 can be given to the students as a formative assessment for day 2.

If necessary, the teacher can give an additional three to four items as an assignment.

DAY 3

SUB-TOPIC 3: Comparing and Ordering Integers

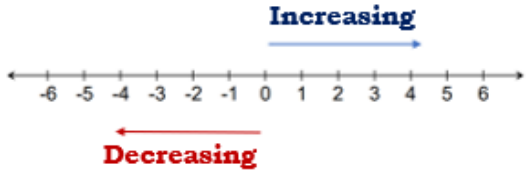
1. Explicitation

Ask students the following questions:

1. Which is greater, –4 or –3?
2. Which is lesser, –5 or 2?
3. How did you determine which number is greater or lesser than the other?

Before presenting sub-topic 3, a simple recall of the previous lesson can be made by discussing some items in the activity related to plotting integers on the number line.

To compare and order positive and negative numbers, we can use the number line.



From the number line, guide the students to see that numbers going from left to right increase in value while going from right to left numbers decrease in value.

What are the symbols used in comparing integers?

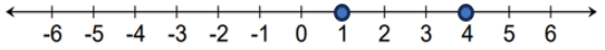
Similar to positive numbers, we use the inequality symbols to compare integers. Remember that we use the inequality symbol "<" for less than and the symbol ">" for greater than. For example,

- $a < b$ (read as "a is less than b") means that a is to the left of b.
- $a > b$ (read as "a is greater than b") means that a is to the right of b.

2. Worked Example

Illustrative Example 1.

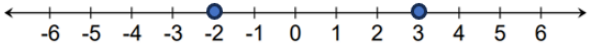
Consider the location of number 1 and number 4 on the number line as shown below.



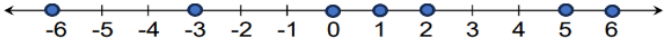
The number 4 is to the right of 1, so 4 is greater than 1; in symbol, $4 > 1$. Similarly, 1 is to the left of 4, so 1 is less than 4; in symbol, $1 < 4$.

Illustrative Example 2.

Consider the location of numbers –2 and 3 on the number line as shown below.



The number –2 is to the left of 3, so –2 is less than 3; in symbol, $-2 < 3$. Similarly, 3 is to the right of –2, so 3 is greater than –2; in symbol, $3 > -2$.

	Illustrative Example 3. Compare the following using < or >. a. -4 ☐ 0 ; The answer is < (less than) since –4 is at the left of 0. b. -1 ☐ -5 ; The answer is > (greater than) since –1 is at the right of –5. c. 6 ☐ -6 ; The answer is > (greater than) since 6 is at the right of –6. Illustrative Example 4. Arrange the following integers in increasing and decreasing orders. $-3,\quad 2,\quad -6,\quad 0,\quad 5,\quad 1,\quad 6$ To arrange the given integers, locate all the numbers on the number line as shown below.  So, the integers are arranged in increasing order as $-6, -3, 0, 1, 2, 5, 6$, and in decreasing order as $6, 5, 2, 1, 0, -3, -6$. **3. Lesson Activity** **Activity 5:** Perform the following. A. Compare the following using < or >. 1. 6 ☐ -5 2. 0 ☐ -2 3. -7 ☐ -3 4. -2 ☐ 0 5. 5 ☐ -5 B. Arrange the following integers in increasing and decreasing orders. 1. $-7, 1, 6, -2, 3, 0, -4$ 2. $2, -2, -7, 5, 6, 0, -1$	The teacher can give another two or three examples if necessary. After discussing the illustrative examples, let students do Activity 5. Activity 5 can be given to the students as a formative assessment for Day 3. If necessary, the teacher can give an additional three to four items as an assignment. **Expected Answers:** A. 1. >2. >3. <4. <5. > B. 1. Increasing: $-7, -4, -2, 0, 1, 3, 6$ Decreasing: $6, 3, 1, 0, -2, -4, -7$ 2. Increasing: $-7, -2, -1, 0, 2, 5, 6$ Decreasing: $6, 5, 2, 0, -1, -2, -7$
D. Making Generalizations	**1. Learners' Takeaways** Guide the students to answer the following questions to summarize the lesson. 1. What integers are located at the left of zero? 2. What integers are located at the right of zero? 3. Is zero a positive or negative number? 4. How do we compare integers?	

	2. Reflection on Learning 1. How are the set of integers used in real-life situations? Give specific examples. 2. Are there any questions you would like to ask related to our lesson? What are those? 3. Are there any challenges or misconceptions you encountered while studying the set of integers? What are those?	

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**DAY 4** **1. Formative Assessment** A. Represent the following as integers. 1. rising 5 units 2. profit of 500 pesos 3. debt of 200 pesos 4. 10 feet below sea level 5. an increase of 1000 points B. Plot the following integers on the number line. 1. -4 3. -8 5. -12 2. 3 4. 10 C. Compare the following using < or >. 1. −4 ☐ −5 2. 0 ☐ −3 3. −8 ☐ 8 4. −2 ☐ 0 5. 7 ☐ −2 D. Arrange the following integers in a. increasing order and b. decreasing order. 2, -3, 0, 7, 13, -15 **2. Homework (Optional)**	Feedback on the result of the assessment is encouraged.

<table>
<tr><td rowspan="5">B. Teacher's Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="5">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement, and other related stuff.

Teachers may also suggest ways to improve the different activities explored/lesson exemplar.</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
<tr><td>C. Teacher's Reflection</td><td colspan="2">Reflection guide or prompt can be on:
▪ <u>principles behind the teaching</u>
What principles and beliefs informed my lesson?
Why did I teach the lesson the way I did?

▪ <u>students</u>
What roles did my students play in my lesson?
What did my students learn? How did they learn?

▪ <u>ways forward</u>
What could I have done differently?
What can I explore in the next lesson?</td><td colspan="2">Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.</td></tr>
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