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Lesson Exemplar for Mathematics

Quarter 1

Lesson

7

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Lesson Exemplar for Mathematics Grade 7
Quarter 1: Lesson 7 (Week 7)
SY 2024-2025

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MATHEMATICS / QUARTER 1 / GRADE 7

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learner should have knowledge and understanding of rational numbers
B. Performance Standards	By the end of the quarter, the learners will be able to describe, order rational numbers on a number line.
C. Learning Competencies and Objectives	Learning Competency: 1. describe given rational numbers as fractions, decimals, or percentages; and 2. order rational numbers on a number line.
D. Content	Rational Numbers
E. Integration	Discounts (Finance), Value of Sharing

II. LEARNING RESOURCES
Admin. (2022, July 14). Representation of Rational Numbers on a Number Line (Steps & Examples). BYJUS. https://byjus.com/maths/rational-numbers-on-a-number-line/ CK-12 Foundation. (n.d.). CK-12 Foundation. https://flexbooks.ck12.org/cbook/ck-12-cbse-maths-class-8/section/1.4/primary/lesson/representation-of-rational-numbers-on-the-number-line/ Cruz, L. L., & Nolasco, O. M. (2017). Skill Book in Mathematics 7. St. Bernadette Publishing House Corporation. LearnZillion. (2021, September 30). Locate rational numbers using a number line [Video]. YouTube. https://www.youtube.com/watch?v=KZmAMkqrydM Math with Mr. J. (2023, December 21). Comparing and Ordering Rational Numbers Using a Number Line Math with Mr. J [Video]. YouTube. https://www.youtube.com/watch?v=33_Gx-dof7I

III. TEACHING AND LEARNING PROCEDURE	NOTES TO TEACHERS
A. Activating Prior Knowledge DAY 1 1. Short Review A. Identify if the following number is a whole number, fraction, mixed number, decimal (terminating, non-terminating, or repeating decimals), or percentage.	The first part of the review will focus on activating the learner's fundamental concepts of whole

	1) 25 6) 2.718... 11) 6.8% 2) 1.25 7) $\frac{1}{4}$ 12) 53.<u>666</u> 3) $3\frac{4}{5}$ 8) 2% 13) $63\frac{4}{7}$ 4) 1.<u>333</u> 9) 7.636363... 14) $\frac{23}{25}$ 5) 3.14 10) 142.24 15) 4.1562547332...	numbers, fractions, decimals, and percentages. Answers: 1. Whole number 2. Terminating decimal 3. Mixed fraction 4. Repeating decimal 5. Terminating decimal 6. Non-terminating decimal 7. Fraction 8. Percentage 9. Repeating decimal 10. Terminating decimal 11. Percentage 12. Non-terminating decimal 13. Mixed number 14. Fraction 15. Non-terminating decimal In B, the review will focus on percentages and their relationships with fractions and decimals. Answers: 1. $\frac{23}{100}$, 0.23 2. $\frac{1}{4}$, 0.25 3. $\frac{9}{25}$, 0.36 4. $\frac{9}{10}$, 0.9 5. $\frac{71}{500}$, 0.142 6. $\frac{37}{200}$, 0.185 7. $\frac{1}{5}$, 0.2 8. $\frac{99}{100}$, 0.99 9. $\frac{11}{200}$, 0.055 10. $\frac{12}{25}$, 0.48 Emphasize that percentage is a ratio and ratio can be written as a fraction, and a fraction can be
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		written as a decimal. Since rational numbers are expressed as a ratio of two integers then, it can be expressed or converted as fractions, decimals and percentages.
B. Establishing Lesson Purpose	1. Lesson Purpose Answer the question: About our review, what do you think is the relation between a fraction, a decimal, and a percent? 2. Unlocking Content Vocabulary Definition 1: A rational number is a number that can be written as a ratio of two integers, where the denominator is not zero. Integers, fractions, and mixed numbers, and percentages are examples of rational numbers. Definition 2: A rational number is defined as a number that can be written in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$. Even an integer that is not expressed as a ratio (meaning without a denominator) is also considered a rational number. (e.g. 3 can be expressed as $\frac{3}{1}$, the ratio of 3 and 1)	The teacher is encouraged to gather responses from the students to generalize and introduce the topic lesson on rational numbers. Emphasize that aside from converting numbers to one form to another, these are examples of what we call rational numbers, another type of numbers aside from integers. It is also important to recognize that formal lessons about integers will happen in the 3rd quarter, so the involvement of negative integers is not advised.
C. Developing and Deepening Understanding	DAY 2 1. Explicitation Part 1. Taking the definition of a rational number, come up with 2 whole numbers, then form the ratio of these 2 integers. Example: Set 1 of integers: 2, 4, 5, 10, 13 Set 2 of integers: 3, 15, 8, 1, 27 Ratio (formed from the 2 sets of numbers provided) $\frac{2}{27}, \frac{4}{8}, \frac{10}{1}, \frac{5}{4}$ What are the decimal forms of these rational numbers?	In part 1, the teacher is encouraged to list down the 2 sets of numbers that the students provided and then call another student to choose 2 integers and form the ratio. It is advisable to encourage students to also provide the simplest form of the ratio provided, if necessary as well as

Part 2. Compare the given rational numbers by writing $>$, $<$, or $=$ on the blank.

$$1. \frac{2}{3} \text{ — } \frac{3}{4}$$

$$6. 1\frac{1}{2} \text{ — } \frac{4}{9}$$

$$2. 1.4 \text{ — } \frac{3}{5}$$

$$7. 5 \text{ — } \frac{1}{5}$$

$$3. \frac{1}{2} \text{ — } 0.5$$

$$8. 9.6 \text{ — } 8\frac{1}{3}$$

$$4. 4 \text{ — } 2\frac{2}{3}$$

$$9. 8\frac{1}{8} \text{ — } 8$$

$$5. 6 \text{ — } \frac{2}{3}$$

$$10. 6\frac{1}{5} \text{ — } 6.2$$

DAY 3

2. Worked Example

Problem 1: Observe the following rational numbers and arrange them in ascending order.

$$1.1, 1\frac{3}{10}, 1.7, 1\frac{1}{2}, 1.2$$

In arranging rational numbers in order, we need to make these numbers to either all fractions or all decimals.

Solution 1: Changing the rational numbers to all decimals:

$$1.1, 1\frac{3}{10}, 1.9, 1\frac{1}{2}, 1.2$$



$$1.1, 1.3, 1.9, 1.5, 1.2$$

After changing all the numbers to decimals, we can now easily arrange them in ascending order.

Result:

$$1.1, 1.2, 1\frac{3}{10}, 1\frac{1}{2}, 1.9$$

Solution 2: Changing the rational numbers to all fractions:

In changing to fractions, we normally express the rational numbers with the same denominators to help us in comparing their numerators.

the final sign of the rational number.

In part 2, it will establish the understanding of students on comparing rational numbers. This will guide them in arranging the rational numbers and later putting rational numbers in a number line.

Answers:

- | | |
|--------|---------|
| 1. $<$ | 6. $>$ |
| 2. $>$ | 7. $>$ |
| 3. $=$ | 8. $>$ |
| 4. $>$ | 9. $>$ |
| 5. $>$ | 10. $=$ |

The teacher is encouraged to elicit initial responses from students before working on the solutions.

The teacher has the prerogative on how he/she will execute the worked example.

$$\begin{array}{ccccccc}
 1.1 & , & 1\frac{3}{10} & , & 1.9 & , & 1\frac{1}{2} & , & 1.2 \\
 \downarrow & & & \downarrow & \downarrow & & \downarrow & & \\
 1\frac{1}{10} & , & 1\frac{3}{10} & , & 1\frac{9}{10} & , & 1\frac{5}{10} & , & 1\frac{2}{10}
 \end{array}$$

Since all numbers are already expressed in mixed form with the same denominators, all we need is to arrange them by taking note of their numerators.
Result:

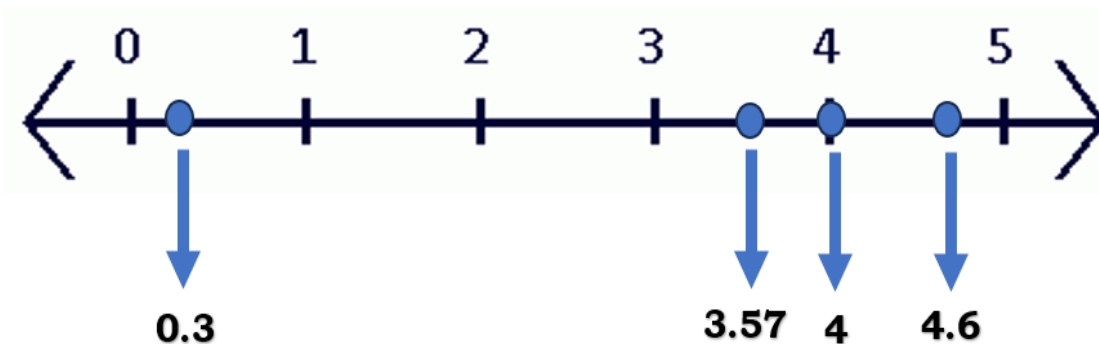
$$1.1, 1.2, 1\frac{3}{10}, 1\frac{1}{2}, 1.9$$

Problem 2: Observe the following rational numbers and put their location on a number line.

$$0.3, \frac{1}{2}, 4, 1\frac{2}{3}, 4.6, 2\frac{1}{5}, 1\frac{2}{7}, 3.57$$



First is to put all rational numbers that are easy to locate (normally, whole numbers and decimals are easier to locate on a number line).



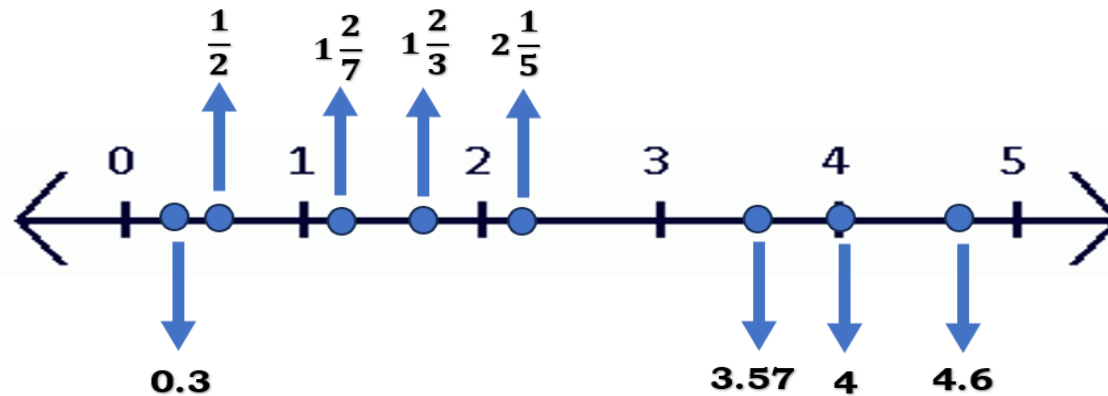
Next is to work on the remaining rational numbers and determine their positions on the number line.

$$\frac{1}{2} = 0.5$$

$$1\frac{2}{3} = 1.67$$

$$2\frac{1}{5} = 2.2$$

$$1\frac{2}{7} = 1.29$$



In plotting on the number line, it is important to let the students plot it in from of the class so they will have the experience and so that teacher can provide immediate feedback on the student answers.

DAY 4

3. Lesson Activity

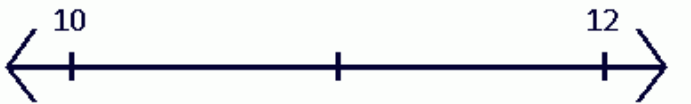
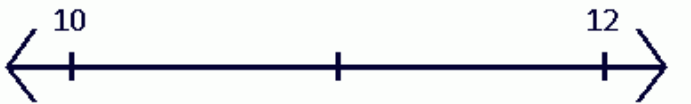
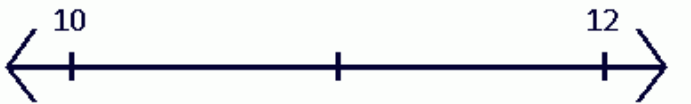
- A. Compare the two rational numbers by writing $<$ or $>$ and locate the numbers on the number line.

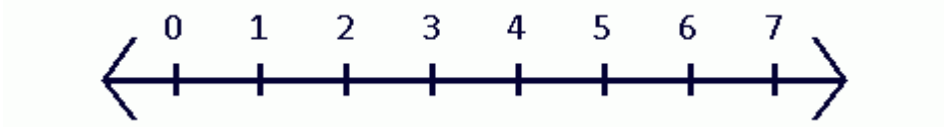
1	4.5	—	$4\frac{1}{3}$	
2	0.9	—	1.9	
3	3	—	$\frac{17}{5}$	

See the Learning Activity Worksheet.

Answers:

1. $>$
2. $<$
3. $<$
4. $>$
5. $<$
6. $<$
7. $<$
8. $>$
9. $<$
10. $<$

	<table><tr><td>4</td><td>$3\frac{5}{6}$</td><td>—</td><td>3</td><td></td></tr><tr><td>5</td><td>5.3</td><td>—</td><td>$\frac{28}{5}$</td><td></td></tr><tr><td>6</td><td>0.2</td><td>—</td><td>$\frac{3}{5}$</td><td></td></tr><tr><td>7</td><td>$6\frac{1}{7}$</td><td>—</td><td>6.69</td><td></td></tr><tr><td>8</td><td>1</td><td>—</td><td>0</td><td></td></tr><tr><td>9</td><td>10.78</td><td>—</td><td>$\frac{120}{10}$</td><td></td></tr><tr><td>10</td><td>$5\frac{5}{9}$</td><td>—</td><td>$5\frac{13}{15}$</td><td></td></tr></table>	4	$3\frac{5}{6}$	—	3		5	5.3	—	$\frac{28}{5}$		6	0.2	—	$\frac{3}{5}$		7	$6\frac{1}{7}$	—	6.69		8	1	—	0		9	10.78	—	$\frac{120}{10}$		10	$5\frac{5}{9}$	—	$5\frac{13}{15}$		Note: The plotting is in the discretion of the teacher.
4	$3\frac{5}{6}$	—	3																																		
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D. Making Generalizations	1. Learners’ Takeaways Answer the following problem: 1. What new knowledge did you gain from this week’s topic? 2. Which part of the lesson do you find challenging to understand? 3. What aspects of the lesson surprised you the most? 2. Reflection on Learning Answer the following reflection questions. 1. Looking back, what was the most valuable takeaway from this week’s lesson for you? 2. In what ways has this learning guide impacted your perspective or thinking?	The teacher will guide the students in answering the takeaway questions and reflections.																																			

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION				NOTES TO TEACHERS
A. Evaluating Learning	DAY 5 1. Formative Assessment Arrange the following rational numbers by plotting them on the number line below. You can use the letter to indicate the point.  A. 1 B. $\frac{1}{2}$ C. 5 D. 1.25 E. 3.33 F. $\frac{9}{2}$ G. $4\frac{1}{2}$ H. 5.75 I. 6.25 J. $\frac{7}{3}$ 2. Homework (Optional)			Answers: Arrangement (Ascending Order): B. $\frac{1}{2}$ A. 1 D. 1.25 J. $\frac{7}{3}$ E. 3.33 G. $4\frac{1}{2}$ F. $\frac{9}{2}$ C. 5 H. 5.75 I. 6.25 Note: The plotting is in the discretion of the teacher.
	B. Teacher's Remarks	Note observations on any of the following areas:	Effective Practices	Problems Encountered
		strategies explored		
		materials used		
		learner engagement/interaction		
		others		

C. Teacher's Reflection	<i>Reflection guide or prompt can be on:</i> • <u>principles behind the teaching</u> <i>What principles and beliefs informed my lesson?</i> <i>Why did I teach the lesson the way I did?</i> • <u>students</u> <i>What roles did my students play in my lesson?</i> <i>What did my students learn? How did they learn?</i> • <u>ways forward</u> <i>What could I have done differently?</i> <i>What can I explore in the next lesson?</i>	
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