4

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 4
Lesson
4

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

Development Team

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Research Institute for Teacher Quality
SiMERR National Research Centre

MATHEMATICS / QUARTER 4 / GRADE 4

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	Decimal numbers and their relationship to fractions.
B. Performance Standards	Represent, compare, order, and round decimal numbers.
C. Learning Competencies and Objectives	1. Represent decimal numbers using models and manipulatives to show the relationship to fractions. 2. Read and write decimal numbers using models and manipulatives to show the relationship to fractions.
D. Content	1. Represent decimal numbers using models and manipulatives to show the relationship to fractions using: a. models (grid paper 100's) b. manipulatives (base 10 blocks) 2. Read and write decimal numbers with decimal parts to hundredths
E. Integration	SDG 4 (Quality Education) Educational Resources

II. LEARNING RESOURCES

Brainingcamp. (2016, December 7). Multiplying by One-digit Numbers with Base Ten Blocks [video]. Youtube. https://www.youtube.com/watch?v=gwFI2fdiRUY

Camarista, G. G. (2020). *Teaching Mathematics in the Intermediate Grades*. Lorimar Publishing Inc.

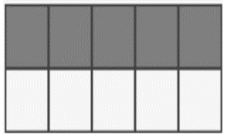
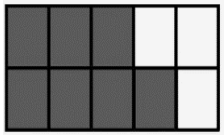
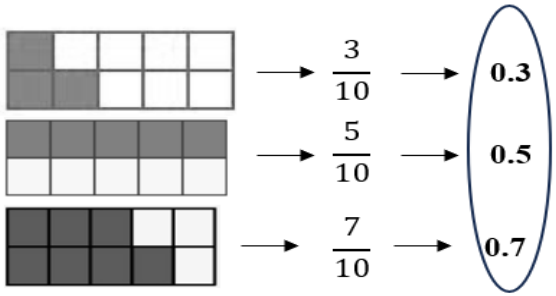
Candler, L. (n.d) How to Introduce Decimals with Base Ten Blocks. https://lauracandler.com/introduce-decimals-with-base-ten-blocks/

Guinness World Records (2023, July 21). Tallest man ever Robert Wadlow's height in every year of his life. https://www.guinnessworldrecords.com/news/2023/7/tallest-man-ever-robert-wadlows-height-in-every-year-of-his-life-755824

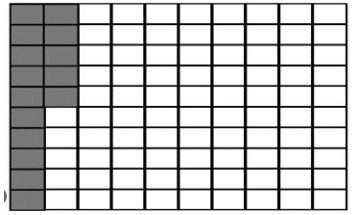
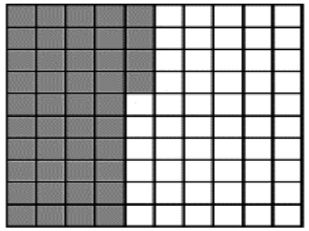
Jalon, H. F. et. al. (2019). *Phoenix Math for the 21st Century Learners*. Phoenix Publishing House, Inc., Quezon City

Misa, E. L. (2019). *The World of Mathematics and Beyond*. Brilliant Creations Publishing, Inc., Quezon City

Yn, G. U. (2017). *Our World of Math*. Vibal Group, Inc., Quezon City

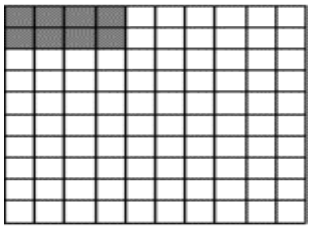
III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** Name the fraction that represents the shaded part of each illustration. a.  _____ b.  _____ c.  _____ **2. Feedback (Optional)**	The teacher may utilize either a PowerPoint presentation or a physical medium such as cartolina or manila paper to show the illustrations. a. $\frac{3}{10}$ b. $\frac{5}{10}$ *or* $\frac{1}{2}$ c. $\frac{7}{10}$
B. Establishing Lesson Purpose	**1. Lesson Purpose** Fractions can be written in another form. Let us look at the following examples.  $\frac{3}{10}$ → three tenths can be written as 0.3 $\frac{5}{10}$ → five tenths can be written as 0.5 $\frac{7}{10}$ → seven tenths can be written as 0.7 The numbers, 0.3, 0.5, and 0.7 are called **decimals**.	Using the same illustrations, the teacher will explain to the learners that fractions can also be written in another form, (e.g., $\frac{3}{10}$ = 0.3 "three tenths", $\frac{5}{10}$ = 0.5 "five tenths" …) It must be emphasized that $\frac{3}{10}$ and 0.3 are read as three tenths, $\frac{5}{10}$ and 0.5 as five tenths, and $\frac{7}{10}$ and 0.7 as seven tenths.

	2. Unlocking Content Area Vocabulary The word *decimal* comes from the Latin word *decimus*, meaning tenth. It is from the root word decem, meaning *ten*. Decimal is a fraction written in a special form where each digit represents a different power of 10. Decimal Number is a number that has a decimal point followed by digits that show a value smaller than one. Ask: Where are decimal numbers commonly encountered?	To relate this lesson to real-life situations, the teacher may ask the learners where they usually encounter or see decimals numbers. The following may be elicited from them. ● General weighted average of a student in school ● Price of goods in malls and supermarkets ● Body temperature ● Height and weight of a person ● Distance from one place to another
C. Developing and Deepening Understanding	**SUB-TOPIC 1: Represent decimal numbers using models and manipulatives** **1. Explicitation** A. Using Grid Paper with 100 squares Decimal can be represented using a model such as the Grid Paper with 100 squares. Activity 1: Coloring Grid Paper *Math Storytelling* In the *Mathemata* Kingdom, there lived a beautiful princess named Snowwy. One day, while walking through the forest to visit her friends, the seven dwarfs, she saw a garden where red apples grew abundantly. She noticed that three of the trees had 100 red apples each. She decided to pick 15 red apples from the 1st tree, 44 apples from the 2nd tree, and 8 apples from the 3rd tree. Then, she excitedly went to her friends' house bringing the red apples. She shared the apples to her friends. Snowwy and the seven dwarfs made a promise to take good care of the forest that provides bountiful fruits to all living things. The teacher will distribute three grid papers to each of the learners. Using the given story, the leaners will be asked to illustrate the fractions found in the story through the use of Grid Paper and coloring materials. Volunteers may be asked to show their outputs in the class. These outputs may be used in processing the activity.	The use of Math Story telling captures learners' attention and imagination, and provides opportunities for values integration. Hence, instead of just simply presenting examples of fractions, contextualizing them helps learners have meaningful understanding of the concepts. The following options may be considered in case the teacher will not be able to provide grid papers to each learner. ● Activity 1 can be a group activity ● Activity 1 can be an individual activity where:

	• What fraction represents the red apples **picked** by Snowwy from the 1st tree? $\frac{15}{100}$ • How should this fraction be written in decimal form? 0.15 • What fraction represents the **remaining** red apples from the 1st tree? $\frac{85}{100}$ • How will this fraction be written in decimal form? 0.85  **The whole grid paper with 100 squares represents the total number of apples hanging in the 1st tree.** Since Snowwy picked 15 apples, the fraction that represents them is $\frac{15}{100}$ which can be written in decimal form as 0.15 and is read as "fifteen hundredths". While the remaining apples from the tree can be represented by the fraction, $\frac{85}{100}$ which can be written in decimal form as 0.85 and is read as "eighty-five hundredths". • What fraction represents the red apples **picked** by Snowwy from the 2nd tree? $\frac{44}{100}$ • How should this fraction be written in decimal form? 0.44 • What fraction represents the **remaining** red apples from the 2nd tree? $\frac{56}{100}$ • How will this fraction be written in decimal form? 0.56 $\frac{44}{100}$ in decimal form is 0.44 which is read as "forty-four hundredths" $\frac{56}{100}$ in decimal form is 0.56 which is read as "fifty-six hundredths" 	- Learners are asked to use graphing paper and draw a big square with 100 squares inside - Learners will make their own grids on a bond paper guided by the teacher (either in school or at home as an assignment) The teacher may already mention in this part that reading and writing decimals has something to do with their place value. For instance, the last digit in the rightmost of 0.15 is 5 which is in the hundredths place. The lesson on place value of decimals will be discussed in the next lesson.

- What fraction represents the red apples **picked** by Snowwy from the 3rd tree? $\frac{8}{100}$
- How should this fraction be written in decimal form? 0.08
- What fraction represents the **remaining** red apples from the 3rd tree? $\frac{92}{100}$
- How will this fraction be written in decimal form? 0.92

$\frac{8}{100}$ in decimal form is 0.08 which is read as "eight hundredths"

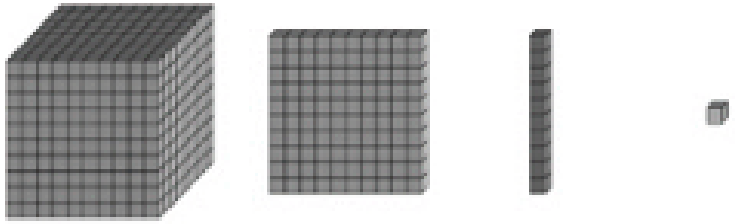


$\frac{92}{100}$ in decimal form is 0.92 which is read as "ninety-two hundredths"

B. Using Base-10 Blocks

Base-10 blocks can be used in lessons on whole numbers and decimals. For whole numbers, cube represents thousands, flat represents hundreds, rod represents tens, and unit represents ones. However, for decimals, cube represents tens, flat represents ones, rod represents tenths, and unit represents hundredths

Cube Flat Rod Unit



A decimal value can be represented using base ten blocks.

Tens ones tenths hundredths

- How many rods will make 1 flat? 10
  - One rod is $\frac{1}{10}$ of a flat.
- How many units will make 1 flat? 100
  - One unit is $\frac{1}{100}$ of a flat.

In this lesson, cube represents tens, flat represents ones, rod represents tenths, and unit represents hundredths.

However, it must be noted that when utilizing base-10 blocks on lessons about decimals, the roles of flats, rods, and units may vary depending on the representation assigned to the cube. For instance, some references use cube to represent ones instead of tens. If a cube is used to represent ones, flat would then represent tenths, rods would represent hundredths, and units would represent thousandths.

Using the same examples from Math Storytelling, the teacher will show how they are represented using base-10 blocks.

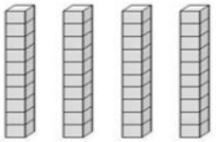
The learners will be asked to complete the given table below.

Fraction	Decimal	In Words
$\frac{15}{100}$	0.15	Fifteen hundredths
$\frac{44}{100}$	0.44	Forty-four hundredths
$\frac{8}{100}$	0.08	Eight hundredths

Example 1: Represent 0.15 using base-10 blocks.

	
0.1	0.05
$\left(\frac{1}{10}\right)$	$\left(\frac{5}{100}\right)$

Example 2: Represent 0.44 using base-10 blocks.



0.4 $\left(\frac{4}{10}\right)$

0.04 $\left(\frac{4}{100}\right)$

Example 3: Represent 0.08 using base-10 blocks.

0.08
$\left(\frac{8}{100}\right)$

To access more information on based 10-blocks, the following links may be helpful:

- https://www.youtube.com/watch?v=gwFI2fdiRUY
- https://lauracandler.com/introduce-decimals-with-base-ten-blocks/

In this part, only fractions that represent the number of red apples picked by the main character will be represented using base-10 blocks.

The teacher needs to reiterate that one rod represents $\frac{1}{10}$ of a flat while one unit represents $\frac{1}{100}$ of a flat.

For the 1st example:

- There is one rod (tenths) which consists of 10 units (hundredths).
- In addition, there are five units (hundredths).
- In total, there are 15 units (hundredths).

For the 2nd example:

- There are four rods (tenths) which consist of 40 units (hundredths) in all.

DAY 2

2. Worked Example

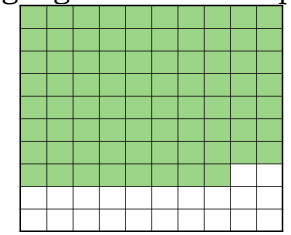
Activity 2. There are three Grade 4 pupils who took a 100-point achievement test in Mathematics. They got the following scores.

Pupil	Score	
	In fraction form	In decimal form
Cris	$\frac{78}{100}$	0.78
Catherine	$\frac{95}{100}$	0.95
Vince	$\frac{62}{100}$	0.62

The learners will be asked to represent the scores of Grade 4 pupils using grid papers and base-10 blocks. Answers will be presented in the class.

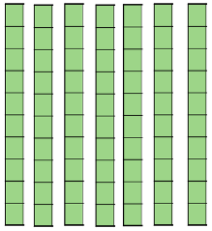
Score of Cris:

Using a grid with 100 squares



0.78 or ($\frac{78}{100}$)

Using base- 10 blocks

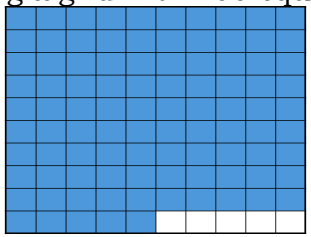


0.7 or ($\frac{7}{10}$)

0.08 or ($\frac{8}{100}$)

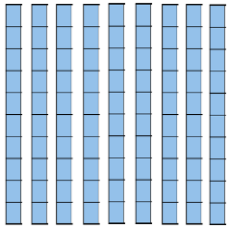
Score of Catherine:

Using a grid with 100 squares



0.95 or ($\frac{95}{100}$)

Using base- 10 blocks



0.9 or ($\frac{9}{10}$)

0.05 or ($\frac{5}{100}$)

- In addition, there are four units (hundredths).
- In total, there are 44 units (hundredths).

For the 3rd example:

- There are eight units (hundredths) in all.

Activity 2 may be answered individually or as a group. Group activity is preferred if there are limited sets of base-10 blocks available to be utilized by the learners.

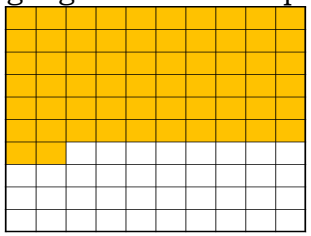
If individual activity is considered, the teacher may ask the learners to just draw base-10 blocks on a sheet of paper.

Given the scores of the pupils in fraction form, the teacher may ask the learners to write the scores in decimal form.

Through the use of a manipulative (base-10 blocks) and a model (10 x10 grid) in representing decimals and fractions, the learners can visualize that the illustrations appear the same even though different strategies were used.

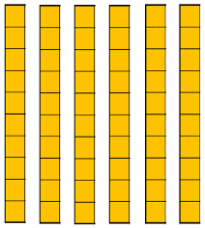
Score of Vince:

Using a grid with 100 squares



0.62 or $(\frac{62}{100})$

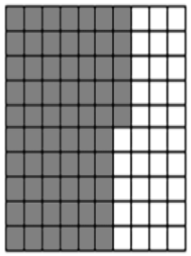
Using base- 10 blocks

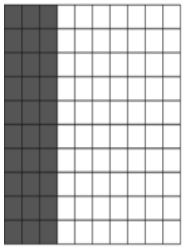


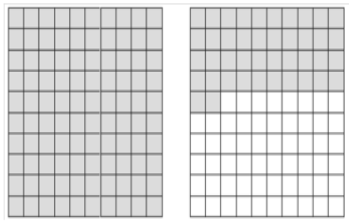
0.6 or $(\frac{6}{10})$

0.02 or $(\frac{2}{100})$

Activity 3. The learners will be asked to write the fractions and decimals that represent each illustration.

1. 

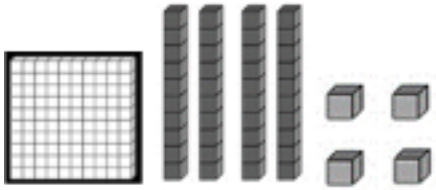
2. 

3. 

	Fraction	Decimal
1.		
2.		
3.		

Activity 4. The learners will be asked to write the decimals represented by the base-10 blocks.

1. 

2. 

Answers (Activity 3):

	Fraction	Decimal
1.	65/100	0.65
2.	30/100	0.30
3.	1 42/100	1.42

Answers (Activity 4):

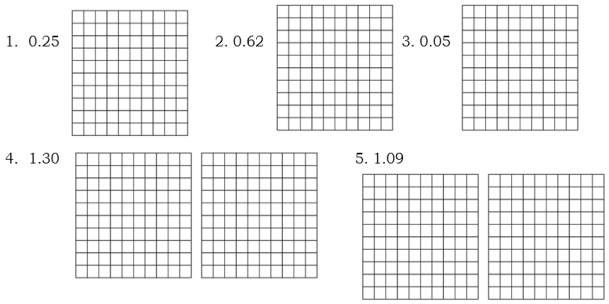
1. 0.25
2. 1.44

Reiterate that a flat represents the ones place. Hence, 1 flat combined with 4 rods and 4 units equals 1.44.

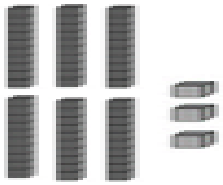
DAY 3

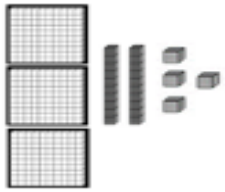
3. Lesson Activity

A. Using the grid papers with 100 squares, illustrate the following decimals.



B. Name the decimals represented by the following base-10 blocks.

1. 

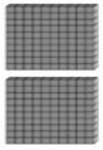
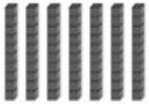
2. 

SUB-TOPIC 2: Read and write decimal numbers with decimal parts to hundredths

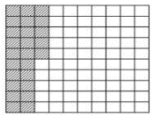
1. Explicitation

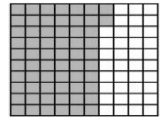
Using Base-10 blocks and Place Value Mat, the teacher will present how decimals numbers are read considering the place value.

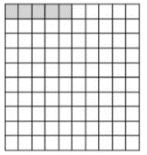
Place Value Mat

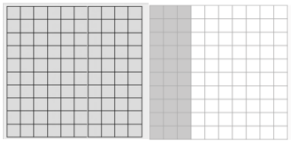
 tens	ones	•	tenths	 hundredths
	2 	•	7 	2 

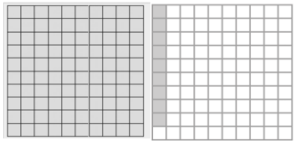
Answers:

1. 0.25 

2. 0.62 

3. 0.05 

4. 1.30 

5. 1.09 

B.

1. 0.63
2. 3.24

You may include trivia in the explicitation part. For example: According to Guinness World Records, the tallest man ever recorded is Robert Wadlow with a height of **2.72** meters.

The use of base-10 blocks may aid learners in visualizing decimal numbers.

From left to right, the place value of 2 is ones, 7 is tenths, and 2 (rightmost) is hundredths. Therefore, there are 2 ones, 7 tenths, and 2 hundredths.

How do we read the given decimal? 2.72 is read as "two and seventy-two hundredths".

What are the guides/rules in reading decimal numbers?

- Read the whole number part (if the whole number is zero, then simply read the decimal part).
- Read the decimal point as "and".
- Read the decimal part like a whole number and affix the place value of the right-most digit.

DAY 4

2. Worked Example

Let us have other examples.

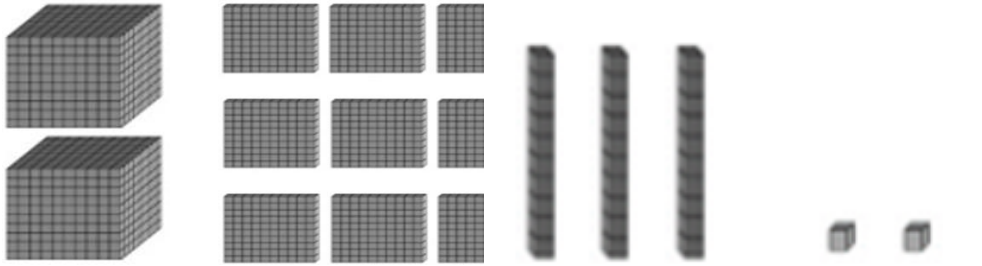
A. Reading decimal numbers

Read the given decimal number and represent it using base-10 blocks.

Hundreds	Tens	Ones	Decimal Point	Tenths	Hundredths
	2	9	.	3	2

We read 29.32 as *"twenty-nine and thirty-two hundredths".*

To represent using base-10 blocks:



2 tens 9 ones 3 tenths 2 hundredths

More examples:

Hundreds	Tens	Ones	Decimal Point	Tenths	Hundredths
		0	.	4	3
		0	.	7	
		5	.	8	2

How to read the given decimals?

- 0.43 is read as "forty-three hundredths"
- 0.7 is read as "seven tenths"
- 5.82 is read as "five and eighty-two hundredths"

B. Writing decimal numbers

Write the following figures in words.

1. 0.6 _____
2. 0.65 _____
3. 14.5 _____
4. 0.05 _____
5. 102.75 _____

3. Lesson Activity

A. Complete the table.

No.	Decimal Number	Read as/Word Form
1	12.3	
2	514.53	
3		Forty-five hundredths
4		Sixteen and ninety-seven hundredths
5	78.7	
6	0.17	
7		Fifteen and four tenths
8	324.09	
9	6.46	
10	9.16	

For these examples, the teacher may do the following:

a) Ask learners to read aloud the given decimal number (readings may be individual, with a partner, with the whole class).
b) Ask volunteers to write their answers on the board after reading the decimals.

Answers (writing decimals):

1. six tenths
2. sixty-five hundredths
3. fourteen and five tenths
4. five hundredths
5. one hundred two and seventy-five hundredths

Answers (Lesson Activity):

1. twelve and three tenths
2. five hundred fourteen and fifty-three hundredths
3. 0.45
4. 16.97
5. Seventy-eight and seven tenths
6. Seventeen hundredths
7. 15.4
8. Three hundred twenty-four and nine hundredths
9. Six and forty-six hundredths
10. Nine and sixteen hundredths

D. Making Generalizations

1. Learners' Takeaways

What I Learned about Decimals

How do we define decimal?	Fractions can be written in _____form
Decimal numbers can be represented using a model such as _____ and manipulatives such as _____	How do we read decimals? (guides/procedures)

2. Reflection on Learning

1. How can we connect this lesson to our everyday lives?
2. Cite instances where knowledge of decimals is useful in practical contexts.

The teacher will guide the learners in generalizing what they have learned by answering the guide questions and completing the sentences given.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION

NOTES TO TEACHERS

A. Evaluating Learning

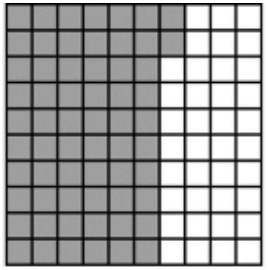
DAY 5

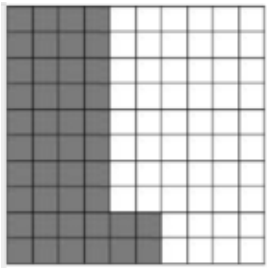
1. Formative Assessment

A. Name the fractions and decimals represented by the shaded parts of the grids. Write them in words. Use the table provided to organize your answers.

Fraction Form	Decimal Form	Word Form
1.		
2.		
3.		
4.		
5.		

Grids

1. 

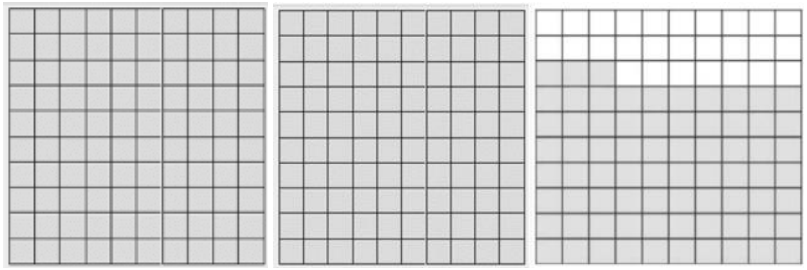
2. 

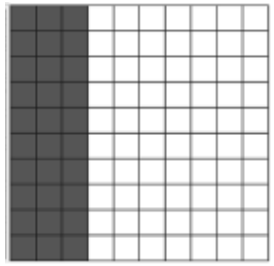
Answers:

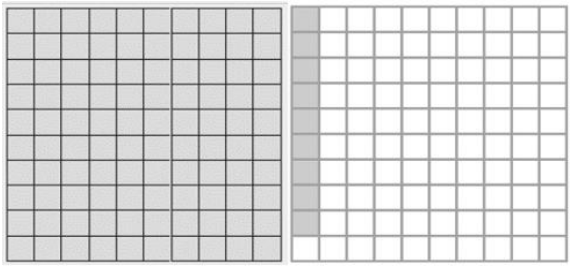
A.

Fraction Form	Decimal Form
1. $\frac{62}{100}$	0.62
2. $\frac{44}{100}$	0.44
3. $2\frac{73}{100}$	2.73
4. $\frac{30}{100}$	0.30
5. $1\frac{9}{100}$	1.09

Word form
Sixty-two hundredths
Forty-four hundredths
Two and seventy-three hundredths
Thirty hundredths
One and nine hundredths

3. 

4. 

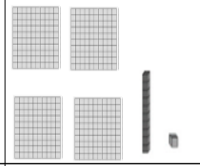
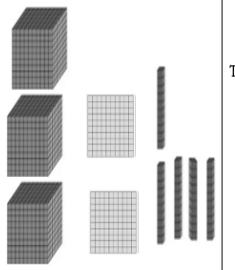
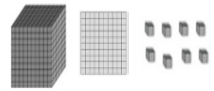
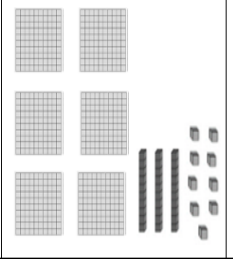
5. 

B. Draw figures of base-10 blocks to represent the given decimal numbers. Then write the numbers in words.

Decimal	Illustration (base-10 blocks)	In Words
0.76		
4.11		
32.5		
21.08		
6.39		

2. Homework (Optional)

B.

Decimal	Illustration (base-10 blocks)	In Words
1) 0.76		Seventy-six hundredths
2) 4.11		Four and eleven hundredths
3) 32.5		Thirty-two and five tenths
4) 21.08		Twenty-one and eight hundredths
		
5) 6.39		Six and thirty-nine hundredths

<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>
</table>