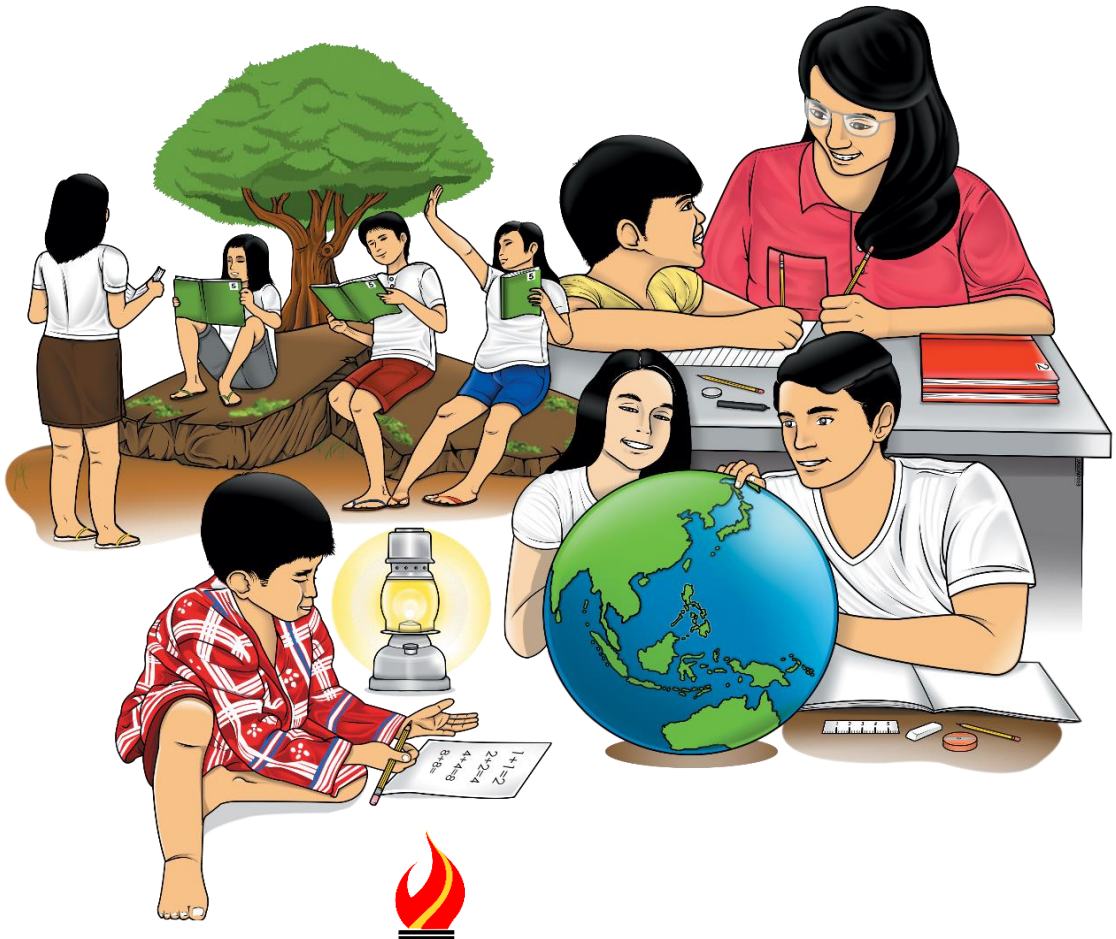
4

Mathematics
Quarter 2 – Module 8:
Understanding Decimals



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Mathematics
Quarter 2 – Module 8: Understanding Decimals

DepED
DEPARTMENT OF EDUCATION

Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

Lesson 1

Visualizing Decimals

What I Need to Know

This module was designed and written to help you master visualizing decimals using models. The scope of this module will give you a clear understanding about decimal numbers.

After going through this module, you are expected to:

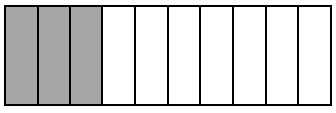
- visualize decimal numbers using models like blocks, grids, number lines and money to show the relationship to fractions.

What I Know

Let us answer first the following.

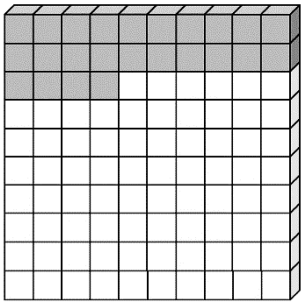
A. Choose the correct decimal number represented by each model.

1.



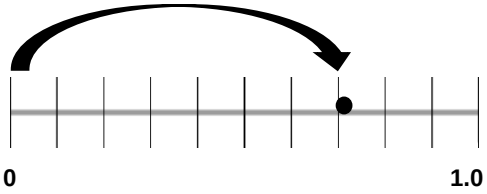
0.03	0.3	0.30

2.



2.4	0.24	0.240

3.

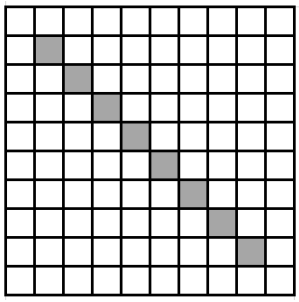


0.7	0.07	0.70

4.

6.4	0.64	0.640

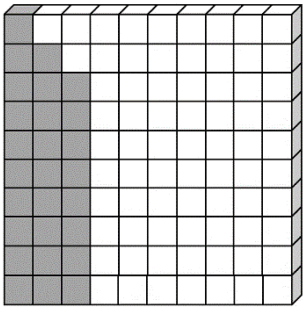
5.



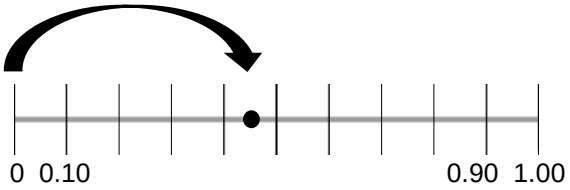
0.08	0.8	0.80

B. Write the decimal number illustrated in each model.

6.



7.



C. Use the following models to visualize each decimal number.

8. Grid

0.8

9. Blocks

0.35

10. Number Line

0.9

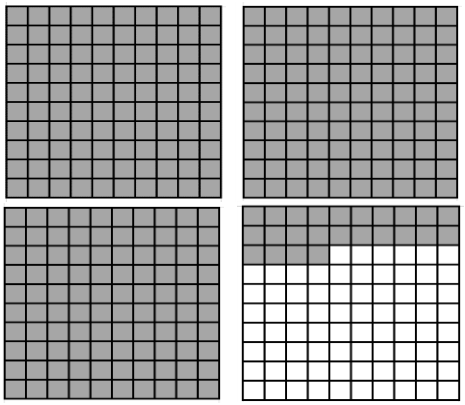
To check, go to page 13 for the ***Answer Key***. If you got a score of 8 – 10, VERY GOOD! The lesson will be easy for you. If you got a score of 7 or below, study carefully the discussion and examples in this module.

What's In

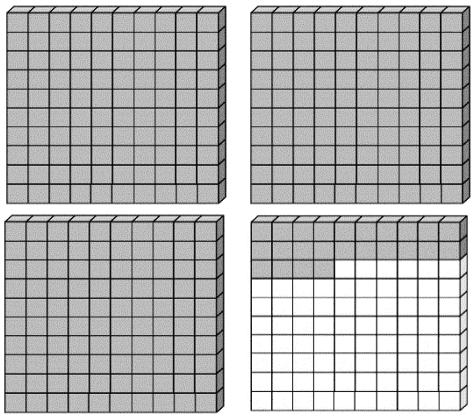
We have learned the use of flats/grids, blocks, number lines and money in visualizing whole numbers. It is important to review them in this lesson.

Let us visualize 324 using different models.

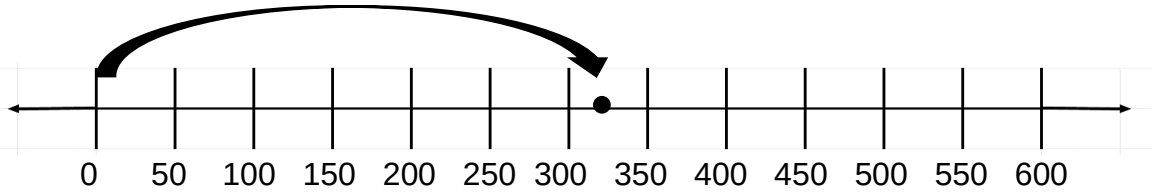
GRIDS



BLOCKS



NUMBER LINE



MONEY

What's New

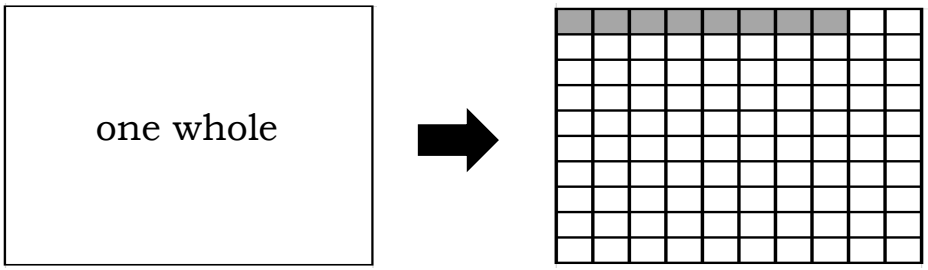
Have you seen ants crawling on the walls or on a dining table? They look similar to termites and are known as hardworking insects.

Suppose that the average length of an ant is $\frac{8}{100}$ of an inch. *How do you visualize* $\frac{8}{100}$ *in decimal number using grids and blocks?*

What is It

Let us visualize $\frac{8}{100}$ in decimal number using grids and blocks.

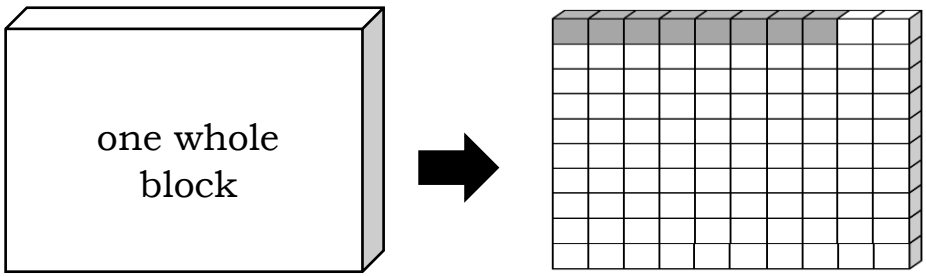
A. USING GRIDS



The whole is divided into 100 parts and 8 parts were shaded.

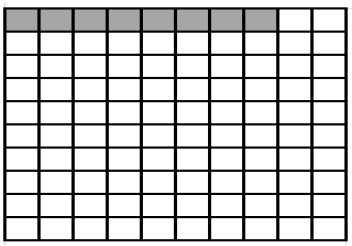
$\frac{8}{100}$ or $\frac{2}{25}$ in decimal number is **0.08 (eight hundredths)**.

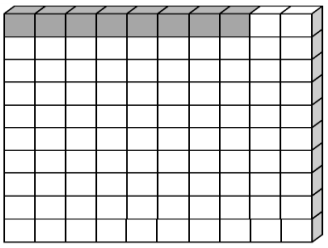
B. USING BLOCKS



The whole block is divided into 100 blocks and 8 blocks were shaded.

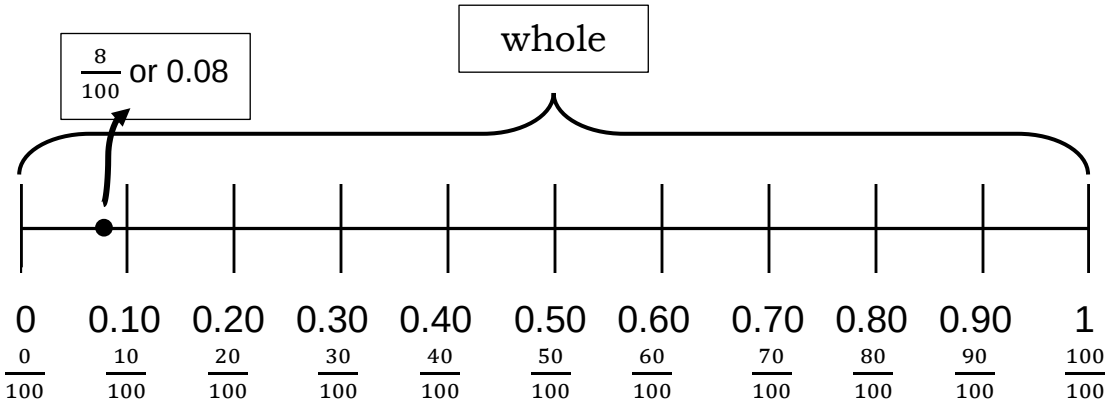
Therefore, the average length of an ant in decimal is **0.08** inch and it is represented by grids and blocks below:





*We can also use number lines and money to visualize **0.08**.*

NUMBER LINE



MONEY

One peso is equal to 100 centavos.

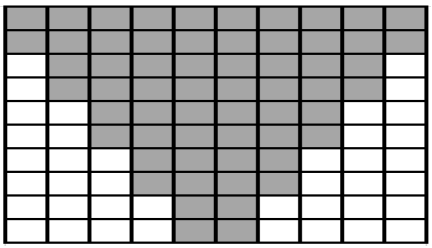
₱1.00 = 100¢

5¢ + 1¢ + 1¢ + 1¢ = 8¢ or ₱0.08

Study the examples.

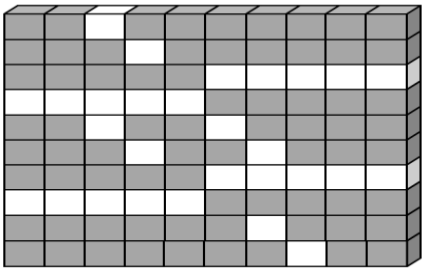
A. GRIDS

0.3



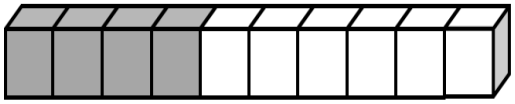
0.60

B. BLOCKS



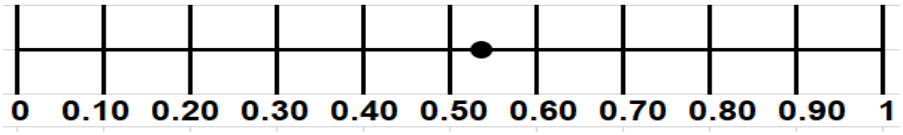
0.72

0.4



C. NUMBER LINE

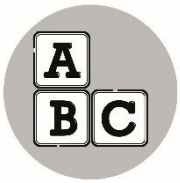
0.2



0.53

D. MONEY

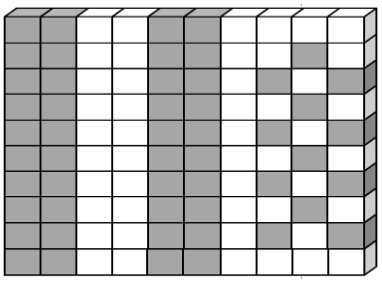
0.37

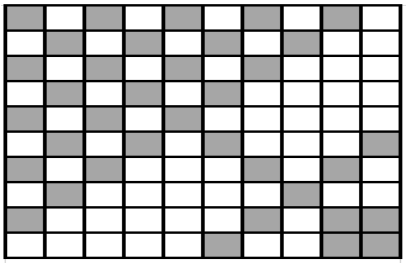


What's More

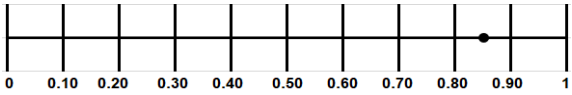
ACTIVITY 1

Name the decimal number for each model.

1. 

2. 

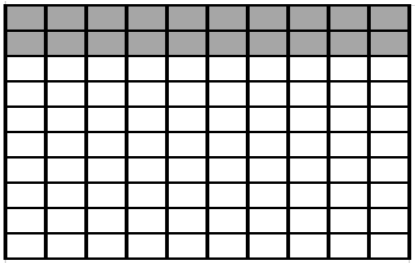
3. 

4. 

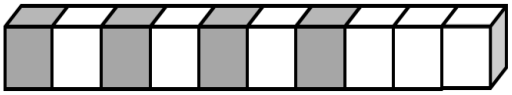
5. 

ACTIVITY 2

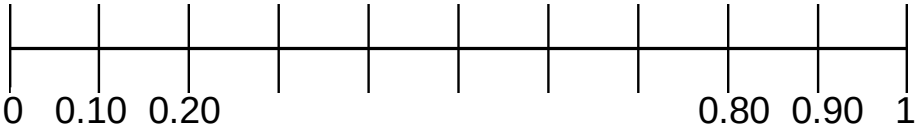
Complete the model of each decimal number.

1. 

0.42

2. 

0.7

3. 

0.65

4. 

0.6

5. 

0.19

To check, go to page 13 for the ***Answer Key***.

What I Have Learned

- Fractions can also be expressed as decimal numbers.
- Decimal number uses place value and a decimal point to show a value less than one.
- We can use grids, blocks, number lines and money to help us visualize decimal numbers.

What I Can Do

ACTIVITY 1

Use the following models to visualize each decimal number.

1. Grid

0.3

2. Grid

0.57

3. Blocks

0.88

4. Number Line

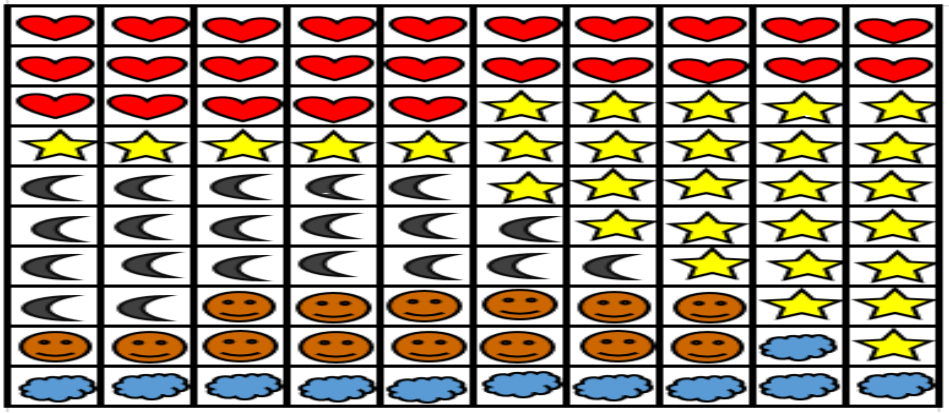
0.15

5. Money

0.63

ACTIVITY 2

Write the decimal number for each symbol illustrated by each model.



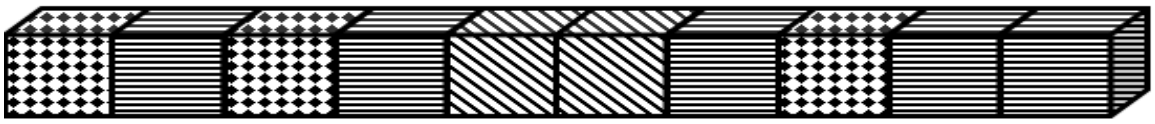
1.  _____

2.  _____

3.  _____

4.  _____

5.  _____



6.  _____

7.  _____

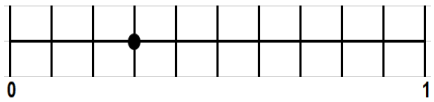
8.  _____

To check, go to page 13 for the ***Answer Key***.

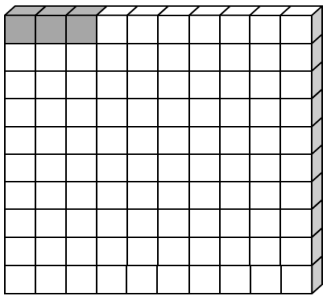
Assessment

A. Choose the letter of the correct model for each decimal number.

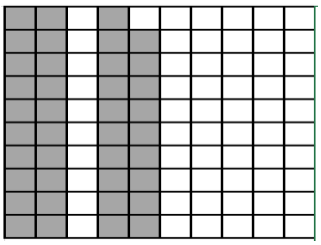
1. 0.3

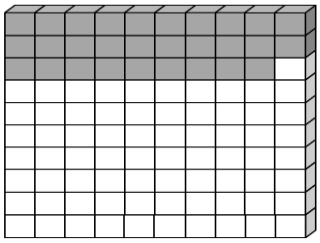
A. 

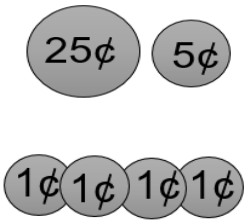
B. 

C. 

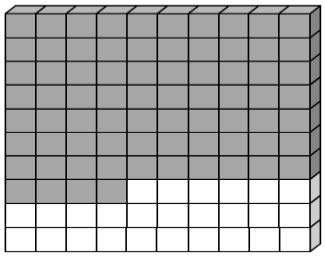
2. 0.29

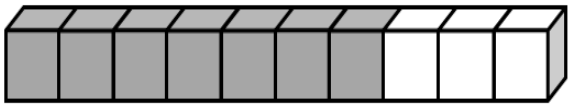
A. 

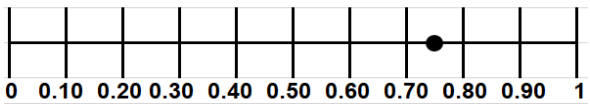
B. 

C. 

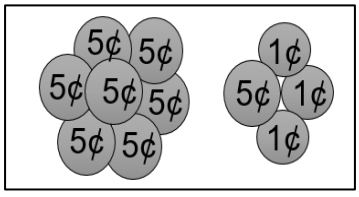
3. 0.75

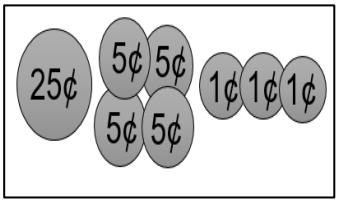
A. 

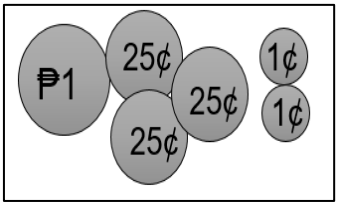
B. 

C. 

4. 0.48

A. 

B. 

C. 

5. 0.9

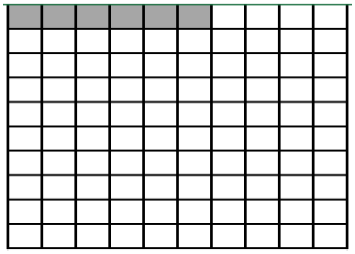
A. 

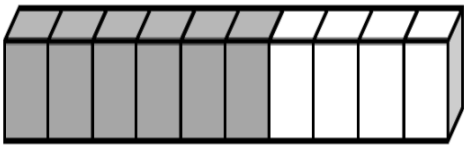
B. 

C. 

6. 0.06

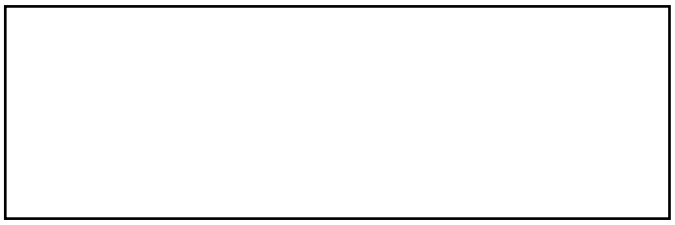
A. 

B. 

C. 

B. Use the following models to visualize each decimal number.

7. Grid



0.05

8. Blocks

0.1

9. Number Line

0.55

10. Money

0.27

To check, go to page 13 for the ***Answer Key***. If you got a score of 8 - 10, VERY GOOD! You can proceed to the next activity. If you got 7 or below, take time to review the discussion in the previous pages.

Additional Activities

Myka got 85 points out of 100 questions in the test. Use any model to show Myka's test results and write the decimal number.

Decimal Number : _____

To check, go to page 13 for the ***Answer Key***. Congratulations for reaching this part of the module. You can always review the previous pages of this module if you need to.

Answer Key

What I Know

1. 0.3
2. 0.24
3. 0.7
4. 0.64
5. 0.08
6. 0.27
7. 0.45

8.

9.

10.

What's More

ACTIVITY 1

1. 0.52
2. 0.36
3. 0.5
4. 0.85
5. 0.87

ACTIVITY 2

1.

2.

3.

4.

5.

What I CAN DO

ACTIVITY 1

1.

2.

3.

4.

5.

ACTIVITY 2

1. – 0.25
2. – 0.30
3. – 0.14
4. – 0.11
5. – 0.20
6. 0.3
7. 0.2
8. 0.5

ASSESSMENT

1. A
2. B
3. C
4. B
5. C
6. B

7.

8.

9.

10.

Additional Activities

Four Possible Answers

Decimal Number: 0.85

Lesson 2

Renaming Decimals

What I Need to Know

This module was designed and written to help you master renaming decimals to fractions and vice versa. The scope of this module would give you a clear understanding on renaming decimals and fractions.

After going through this module, you are expected to:

1. rename decimal numbers to fractions; and
2. rename fractions whose denominators are factors of 10 and 100 to decimals.

What I Know

A. Rename the following fractions in decimal form.

1. $\frac{5}{10}$ = _____

2. $\frac{12}{100}$ = _____

3. $\frac{48}{100}$ = _____

4. $\frac{9}{10}$ = _____

5. $\frac{25}{100}$ = _____

B. Choose the equivalent fraction for each given decimal number.

6.	**0.5**	$\frac{5}{10}$	$\frac{50}{10}$	$\frac{5}{100}$
7.	**0.42**	$\frac{42}{10}$	$\frac{42}{100}$	$\frac{420}{100}$
8.	**0.07**	$\frac{7}{10}$	$\frac{70}{100}$	$\frac{7}{100}$
9.	**0.9**	$\frac{9}{10}$	$\frac{9}{100}$	$\frac{90}{100}$
10.	**2.81**	$2\frac{81}{10}$	$2\frac{81}{100}$	$\frac{81}{100}$

*To check, go to page 24 for the **Answer Key**. If you got a score of 8 – 10, VERY GOOD! The lesson will be easy for you. If you got a score of 7 or below, study carefully the discussion and examples in this module.*

What's In

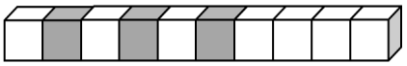
Let us review what you have learned in the previous lesson.

Name the decimal for each model. Choose the letter of the correct answer.

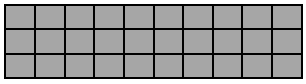
1)

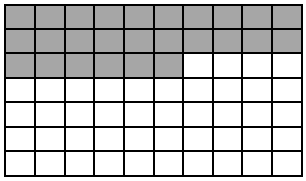
a. 0.6 b. 0.06 c. 6.0

2)



a. 3.0 b. 0.03 c. 0.3



3) 

a. 0.56 b. 5.6 c. 0.65

4) 

a. 0.9 b. 0.7 c. 0.8

5) 

a. 0.25 b. 2.5 c. 0.5

To check, go to page 24 for the ***Answer Key***. If you got a score of 4 - 5, VERY GOOD! You are now ready for this module. If you got 3 or below, take time to review past lessons.

What's New

Like ants, are you a hardworking person? Do you share things to your friends?

Anthony is a hardworking and generous ant. Whatever food he gets, he shares it to his friends in the colony. One day, he found one big bread crumb. He shared 0.8 of it to his friends.
What fractional part of bread crumb did he share to his friends?
What fractional part did he keep for himself?

What is It

How do you rename a decimal number to a fraction?

You can rename a decimal number to a fraction by writing it as a fraction with 10 or 100 as a denominator and changing it to lowest term if possible.

Here are the steps:

1. Count the digits after the decimal point.
   The number of digits after the decimal point will identify the number of zeroes in the denominator.

   - *If there are two digits after the decimal point, the denominator is 100.*
   - *If there is one digit after the decimal point, the denominator is 10.*

   Bread crumb shared to friends: $0.\underline{8} = \frac{\quad}{10}$

   Bread crumb kept for himself: $0.\underline{2} = \frac{\quad}{10}$ (10 - 8)

2. Copy the digits after the decimal point in the numerator.

$0.\underline{8} = \frac{8}{10}$ $\qquad$ $0.\underline{2} = \frac{2}{10}$

3. Change to lowest term if possible.

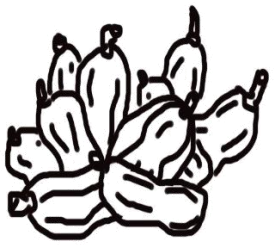
$0.\underline{8} = \frac{8}{10}$ or $\frac{4}{5}$ ← $\frac{8\div2}{10\div2}$ $\qquad$ $0.\underline{2} = \frac{2}{10}$ or $\frac{1}{5}$ ← $\frac{2\div2}{10\div2}$

Therefore, the fractional part of the bread crumb he shared to his friends is $\frac{8}{10}$ or $\frac{4}{5}$.

The fractional part he kept for himself is $\frac{2}{10}$ or $\frac{1}{5}$.

This is renaming decimals to fractions. How about renaming fractions whose denominators are factors of 10 and 100 to decimals? Let me show you an example.

Eugene helps her mother sell papayas in the market during weekends. If they sold $\frac{6}{10}$ of the papayas:
What decimal part of papayas was sold?
What decimal part of papayas was left unsold?



Papayas sold: $\frac{6}{10}$ Papayas left unsold: $\frac{4}{10}$ (10 – 6)

To rename a fraction whose denominators are factors of 10 and 100 to decimal numbers:

1. Count the zeroes in the denominator.

   The number of zeroes in the denominators tells us the number of digits after the decimal point.

   - *If the denominator is 10 or with one zero, there is only one digit after the decimal point.*
   - *If the denominator is 100 or with two zeroes, there are two digits after the decimal point.*

   sold $\frac{6}{10} = 0.\_$ unsold $\frac{4}{10} = 0.\_$

2. Copy the numerator.

$\frac{6}{10} = 0.6$ $\frac{4}{10} = 0.4$

Therefore: The decimal part of sold papayas is 0.6.
The decimal part of papayas left unsold is 0.4.

Let us study the following examples.

RENAMING DECIMALS TO FRACTIONS

- **with 1 digit after decimal point**

a. $0.1 = \frac{1}{10}$ b. $0.3 = \frac{3}{10}$ c. $0.2 = \frac{2}{10}$ or $\frac{1}{5}$

- **with 2 digits after decimal point**

a. $0.25 = \frac{25}{100}$ or $\frac{1}{4}$ b. $0.45 = \frac{45}{100}$ or $\frac{9}{20}$ c. $0.72 = \frac{72}{100}$ or $\frac{18}{25}$

- **with whole numbers**

a. $2.5 = 2\frac{5}{10}$ or $2\frac{1}{2}$ b. $7.3 = 7\frac{3}{10}$ c. $3.18 = 3\frac{18}{100}$ or $3\frac{9}{50}$

RENAMING FRACTIONS TO DECIMALS

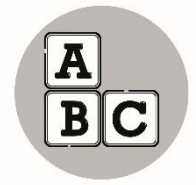
- **with denominator of 10**

$\frac{3}{10} = 0.3$ $\frac{2}{10} = 0.2$ $\frac{9}{10} = 0.9$

- **with denominator of 100**

$\frac{21}{100} = 0.21$ $\frac{6}{100} = 0.06$ $4\frac{34}{100} = 4.34$

Did you find it easy? Just be reminded of the rules kids.



What's More

Let us do the following exercises.

ACTIVITY 1: Renaming Decimals to Fractions

A. Complete the solution by supplying the missing number in the box.

1) $0.56 = \frac{\square}{100} \frac{\div 4}{\div 4} = \frac{14}{\square}$

2) $0.40 = \frac{40}{\square} \frac{\div 20}{\div 20} = \frac{\square}{5}$

3) $0.2 = \frac{2}{10} \frac{\div 2}{\div 2} = \frac{\square}{\square}$

4) $0.82 = \frac{82}{\square} \frac{\div 2}{\div 2} = \frac{\square}{50}$

5) $0.6 = \frac{\square}{10} \frac{\div 2}{\div 2} = \frac{3}{\square}$

B. Tell whether each of the following decimals and fractions in lowest term are equivalent. Write = in the box if they are equal and ≠ if they are not equal.

6) $0.45 \square \frac{9}{20}$

7) $0.3 \square \frac{3}{100}$

8) $0.35 \square \frac{7}{20}$

9) $0.8 \square \frac{2}{5}$

10) $5.64 \square 5\frac{16}{25}$

ACTIVITY 2: Renaming Fractions to Decimals

A. Choose the equivalent decimal for each fraction.

1. $\frac{72}{100}$ = ___ a. 7.2 b. 0.72 c. 0.072

2. $\frac{6}{10}$ = ___ a. 0.6 b. 0.06 c. 0.60

3. $\frac{48}{100}$ = ___ a. 4.8 b. 0.048 c. 0.48

4. $\frac{7}{100}$ = ___ a. 0.7 b. 0.07 c. 7.0

5. $5\frac{4}{100}$ = ___ a. 5.4 b. 5.04 c. 0.54

B. Rename each fraction to decimal. Choose your answers from the decimals inside the box.

0.12	0.76	0.05	0.15
7.6		9.32	1.2
0.5	1.5	0.932	0.50

6. $\frac{12}{100}$ = _____

7. $\frac{76}{100}$ = _____

8. $9\frac{32}{100}$ = _____

9. $\frac{15}{100}$ = _____

10. $\frac{5}{10}$ = _____

To check, go to page 24 for the ***Answer Key***. If you got a score of 8 - 10, VERY GOOD! You can proceed to the next activity. If you got 7 or below, take time to review the discussion in the previous pages.

What I Have Learned

Let us remember.

To rename decimal numbers to fractions:

- ✓ Count the digits after the decimal point. (This identifies the number of zeroes in the denominator.)
- ✓ Copy the digits after the decimal point. (That becomes the numerator.)
- ✓ Change to lowest terms if possible.

To rename fractions whose denominators are factors of 10 and 100 to decimal numbers:

- ✓ Count the zeroes in the denominator. (This determines the number of decimal places.)
- ✓ Copy the numerator in the decimal places.

What I Can Do

A. Complete the table below.

Decimals	Fractions
1. _____	$\frac{62}{100}$
2. _____	$\frac{2}{10}$
3. 0.31	_____
4. _____	$2\frac{7}{10}$
5. 4.75	_____

A. Solve the following problems.

6. Lolita used 0.82 meters of ribbon for her gift. What is 0.82 in fraction form?
7. Anrey is cleaning 10 containers. If he already cleaned $\frac{8}{10}$ of the containers, what decimal part of the number of containers is still left uncleaned?
8. A bus travels a distance of $\frac{63}{100}$ kilometers. Write $\frac{63}{100}$ in decimal.

To check, go to page 24 for the ***Answer Key***. If you got a score of 8 - 10, VERY GOOD! You can proceed to the next activity. If you got 3 or below, take time to review the discussion in the previous pages.

Assessment

A. Rename the following decimal numbers to fractions. Reduce to lowest terms if possible.

1. 0.34 = _____
2. 0.01 = _____
3. 0.6 = _____
4. 8.9 = _____

B. Rename the following fractions to decimal numbers.

5. $\frac{9}{10}$ = _____
6. $\frac{23}{100}$ = _____
7. $\frac{5}{10}$ = _____
8. $\frac{2}{10}$ = _____

C. Read and solve each problem carefully.

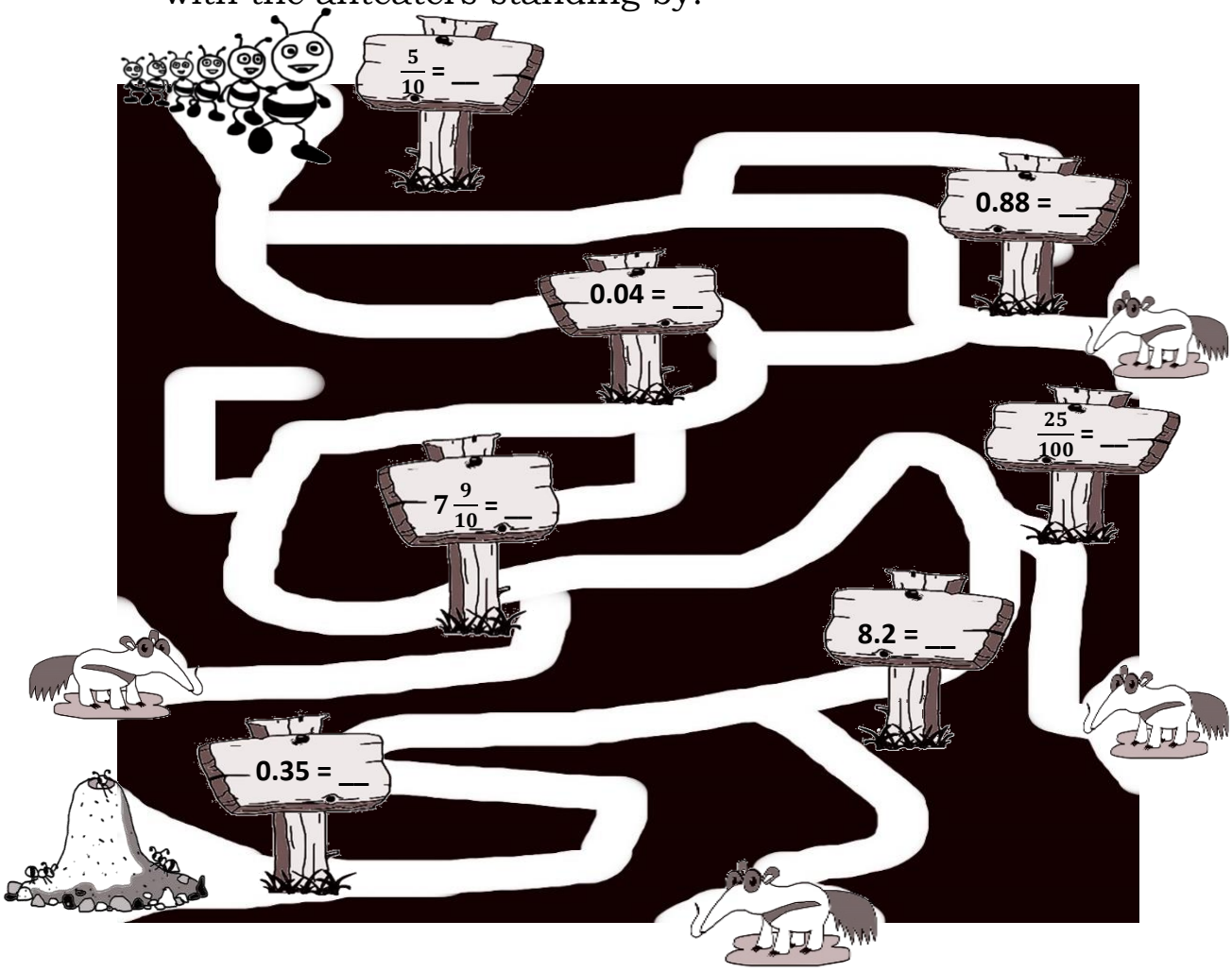
9. Lyra got 87 points right out of 100 questions in the test. Write a fraction and a decimal that shows Lyra's test results.
10. Menchie has 0.50 kilo of rice while Nelia has 0.5 kilo of rice. If you rename each decimal to fraction in lowest term, do they have the same kilos of rice? Why?

*To check, go to page 24 for the **Answer Key**. If you got a score of 8 - 10, VERY GOOD! You can proceed to the next activity. If you got 7 or below, take time to review the discussion in the previous pages.*

Additional Activities

FOLLOW ME

Help Anthony lead his friends to find their home by renaming decimals to fractions and vice versa. Be careful with the anteaters standing by.



Answer Key

ASSESSMENT

1. $\frac{17}{50}$
2. $\frac{1}{100}$
3. $\frac{3}{5}$
4. $8\frac{9}{10}$
5. 0.9
6. 0.23
7. 0.5
8. 0.2
9. $\frac{87}{100} = 0.87$
10. Yes, both decimal is equal to ½ in lowest term. Hence, Menchie and Nelia have the same kilos of rice

WHAT 'S MORE

ACTIVITY 1

1) $0.56 = \frac{56}{100} \div \frac{4}{4} = \frac{14}{25}$

2) $0.40 = \frac{40}{100} \div \frac{20}{20} = \frac{2}{5}$

3) $0.2 = \frac{2}{10} \div \frac{2}{2} = \frac{1}{5}$

4) $0.82 = \frac{82}{100} \div \frac{2}{2} = \frac{41}{50}$

5) $0.6 = \frac{6}{10} \div \frac{2}{2} = \frac{3}{5}$

6. =
7. ≠
8. =
9. ≠
10. =

ACTIVITY 2

1. B
2. A
3. C
4. B
5. B
6. 0.12
7. 0.76
8. 9.32
9. 0.15
10. 0.5

WHAT I KNOW

1. 0.5
2. 0.12
3. 0.48
4. 0.9
5. 0.25
6. $\frac{5}{10}$
7. $\frac{42}{100}$
8. $\frac{7}{100}$
9. $\frac{9}{10}$
10. $2\frac{81}{100}$

WHAT 'S IN

1. A
2. C
3. A
4. C
5. A

WHAT I CAN DO

1. 0.62
2. 0.2
3. $\frac{31}{100}$
4. 2.7
5. $4\frac{75}{100}$ or $4\frac{3}{4}$
6. $\frac{82}{100}$ or $\frac{41}{50}$
7. 0.2
8. 0.63

ADDITIONAL ACTIVITIES

References

Guadarrama, Maria Teresita A. et. al, 2015, **Number Smart 4 Worktext in Mathematics,** REX Book Store

Tabilang, Alma R. et. al, 2015**, Mathematics 4 Learner's Material**, Department of Education

Tabilang, Alma R. et. al, 2015, **Mathematics 4 Teacher's Guide**, Department of Education

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