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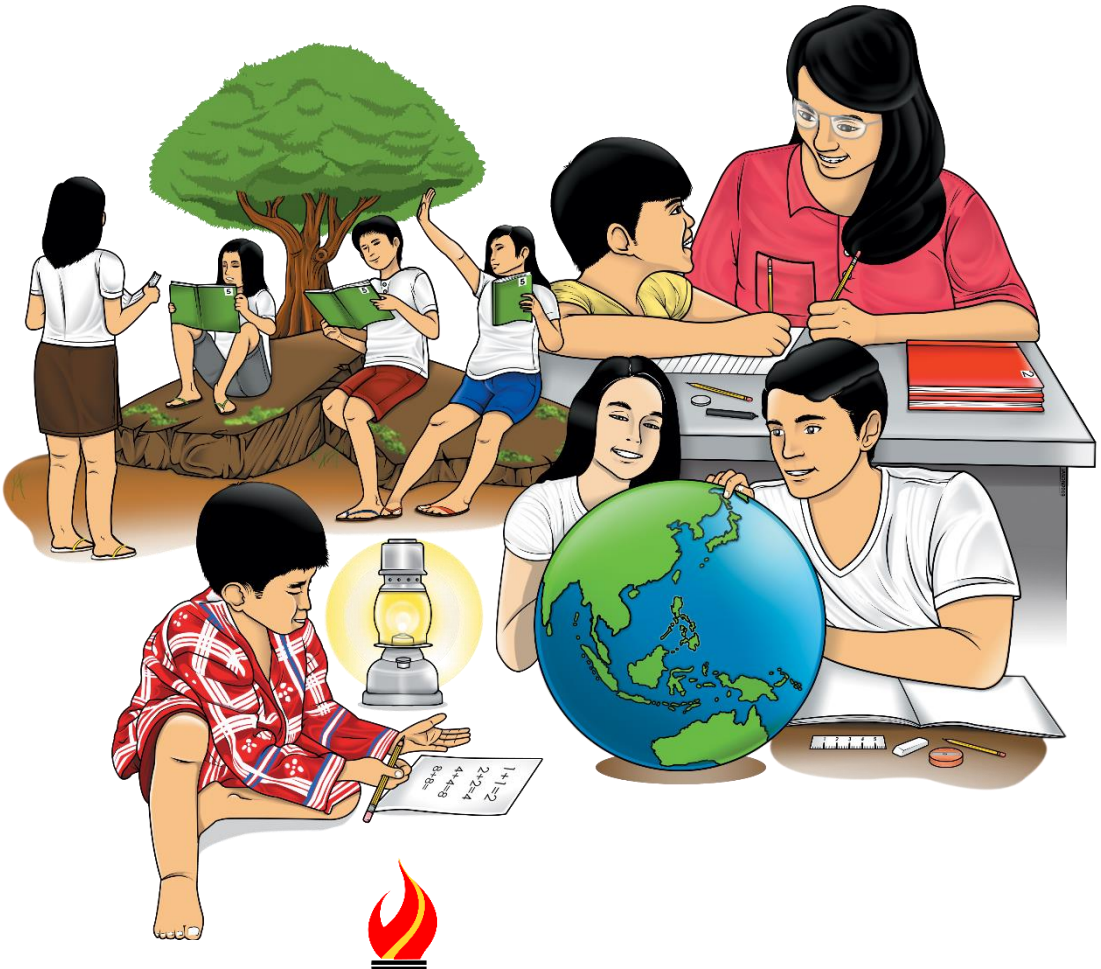
Mathematics

Quarter 1 – Module 11: Differentiating Terminating from Repeating Non-Terminating Decimal Quotients



ALTERNATIVE DELIVERY MODE
ADM

Mathematics – Grade 6
Alternative Delivery Mode
Quarter 1 – Module 11: Differentiating Terminating from Repeating Non-Terminating Decimal Quotients
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6

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Quarter 1 – Module 11: Differentiating Terminating from Repeating Non-Terminating Decimal Quotients

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Introductory Message

For the facilitator:

Welcome to the Mathematics 6 Alternative Delivery Mode (ADM) Module on Differentiating Terminating from Repeating Non-Terminating Decimal Quotients!

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

Notes to the Teacher

This contains helpful tips or strategies that will help you in guiding the learners.

As a facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the Mathematics 6 Alternative Delivery Mode (ADM) Module on Differentiating Terminating from Repeating Non-Terminating Decimal Quotients!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:

 ***What I Need to Know***	This will give you an idea of the skills or competencies you are expected to learn in the module.
 ***What I Know***	This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correct (100%), you may decide to skip this module.
 ***What's In***	This is a brief drill or review to help you link the current lesson with the previous one.
 ***What's New***	In this portion, the new lesson will be introduced to you in various ways; a story, a song, a poem, a problem opener, an activity or a situation.
 ***What is It***	This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.
 ***What's More***	This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.
 ***What I Have Learned***	This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.
 ***What I Can Do***	This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.
 ***Assessment***	This is a task which aims to evaluate your level of mastery in achieving the learning competency.

 ***Additional Activities***	In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned.
 ***Answer Key***	This contains answers to all activities in the module.

At the end of this module you will also find:

References	This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!

What I Need to Know

This module was designed and written with you in mind. It is here to help you master the skills in differentiating terminating from repeating, non-terminating decimal quotients. The scope of this module allows you to use it in many different learning situations. The language used recognizes your diverse vocabulary level. The lessons are arranged to follow the standard sequence of your course. But the order in which you read them can be changed to match with the textbook you are now using.

After going through this module, you are expected to differentiate terminating from repeating, non-terminating decimal quotients. **(M6NS-Ii-119)**

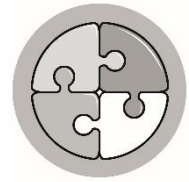
What I Know

Solve for the quotient. Write **T** if the quotient is a terminating decimal and **NT** if repeating non-terminating. Write your answers in your answer sheet.

1. 3 ÷ 4
2. 5 ÷ 6
3. 8 ÷ 12
4. 7 ÷ 8
5. 5 ÷ 10
6. 9 ÷ 15
7. 1 ÷ 11
8. 10 ÷ 50
9. 3 ÷ 16
10. 4 ÷ 5

Lesson 1 Differentiating Terminating from Repeating Non-Terminating Decimal Quotients

In the previous lessons you have learned how to divide decimals. This time we will focus on how to differentiate terminating from repeating non-terminating decimal quotients.



What's In

A. Find the value of **N**. Find the decimal equivalent of the following fractions. Write your answers in a piece of paper.

1. $\frac{2}{4} = \mathbf{N}$

2. $\frac{4}{9} = \mathbf{N}$

B. Find the value of **N**. Find the quotient. Write your answers in a separate piece of paper.

3. $79 \div 3 = \mathbf{N}$

4. $96 \div 9 = \mathbf{N}$

5. $185 \div 11 = \mathbf{N}$

What's New

Read the problem below.

Mabuhay Elementary School conducted school meet. Girls' team won 1 out of 3 or $\frac{1}{3}$ game in Badminton and Boys' team won 3 out of 4 or $\frac{3}{4}$ game in volleyball. The School Sports Coordinator converted the averages of each team in decimal form.

What is It

This is how he converted the averages of each team into decimal form.

Boys' Team

$$
\begin{array}{r}
0.75 \\
4\overline{)\,3.00} \\
-\,0 \\
\hline
30 \\
-\,28 \\
\hline
20 \\
-\,20 \\
\hline
0
\end{array}
$$

Girls' Team

$$
\begin{array}{r}
0.\overline{333} \\
3\overline{)\,1.00} \\
-\,0 \\
\hline
10 \\
-\,9 \\
\hline
10 \\
-\,9 \\
\hline
1
\end{array}
$$

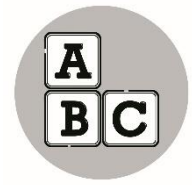
- A **terminating decimal quotient** results when the division process terminates or stops with a zero remainder.
- What is the average of the boys' team in decimal form? *The average of boys' team in decimal is* ***0.75***
- The quotient **0.75** is an example of a terminating decimal.
- What is the remainder? *The remainder is* ***0***
- What is the average of the girls' team in decimal form? The average of the girls' team in decimal is $\boldsymbol{0.\overline{333}}$.
- What is the remainder? *(It has always a remainder of 1 no matter how many zeros you will add in the dividend. The division process never ends and the digit 3 in the quotient is repeating.)*

- The quotient **$0.33\overline{3}$** is a repeating non-terminating decimal.

A **repeating non-terminating decimal quotient** results when the division process never ends. It has always a remainder. A **remainder** is a digit or group of digits in the decimal part that keeps repeating itself without end. A **bar** is placed on top of the repeating digit.

Study more examples of terminating and repeating non-terminating decimal quotients.

Given	Quotient	Terminating or repeating non-terminating decimal
1. $\frac{2}{10}$	0.2	terminating decimal
2. 8 ÷ 12	$0.6\overline{6}$	repeating non-terminating decimal
3. 10 out of 100	0.1	terminating decimal
4. $40\overline{)\,5}$	0.125	terminating decimal



What's More

Find the quotient. Differentiate whether the quotient is terminating or repeating non-terminating decimal by putting a check (/) under the corresponding column. Write your answers in your answer sheet.

Equation	Quotient	Terminating	Repeating Non-terminating
Ex. 5 ÷ 15 =	$0.\overline{33}$		/
1. 3 ÷ 15 =			
2. 4 ÷ 45 =			
3. 9 ÷ 12 =			
4. 8 ÷ 12 =			
5. 2 ÷ 4 =			

What I Have Learned

How do you differentiate terminating decimal quotient from non-terminating/repeating decimal quotient?

- A **terminating decimal quotient results** when the division process terminates or comes to an end with a zero remainder.
- A **repeating non-terminating decimal quotient** results when the division process never ends. It has always a remainder.
- A **Remainder** is a digit or group of digits in the decimal part that keeps repeating itself without end.
- A **bar** is placed above the repeated digit/s.

What I Can Do

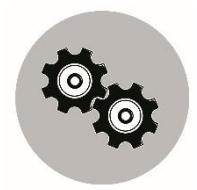
Draw a star ☆ if the statement is correct and triangle △ if not. Write your answers in your answer sheet.

1. The quotient of 20 divided by 30 is a repeating non-terminating decimal.
2. When you divide 7 by 30, the quotient is a terminating decimal.
3. The decimal value of $\frac{3}{5}$ is a repeating non-terminating decimal.
4. Nine divided by ten is equal to 0.9, which is a terminating decimal.
5. The equivalent value of $\frac{8}{11}$ in decimal form is $0.\overline{72}$, which is a terminating decimal.

Assessment

Solve for the quotient. Write **T** if the quotient is a terminating decimal and **NT** if repeating non-terminating. Write your answers in your answer sheet.

1. 3 ÷ 20
2. 5 ÷ 30
3. 8 ÷ 12
4. 10 ÷ 40
5. 8 ÷ 9
6. 1 ÷ 5
7. 2 ÷ 8
8. 7 ÷ 12
9. 3 ÷ 8
10. 1 ÷ 20



Additional Activities

Give the equivalent value in decimal form. Tell whether the quotient is terminating or repeating non-terminating decimal. Write your answers in your answer sheet.

Example: $\frac{8}{10}$ = 0.8 – terminating decimal $\frac{4}{6}$ = $0.6\overline{6}$ – repeating non-terminating decimal

1. $\frac{15}{20}$
2. $\frac{6}{11}$
3. $\frac{3}{16}$
4. $\frac{4}{16}$
5. $\frac{2}{12}$

Answer Key

What I Know

1. T
2. NT
3. NT
4. T
5. T
6. T
7. NT
8. T
9. T
10. T

What's In

1. 0.5
2. $0.\overline{44}$
3. $26.\overline{33}$
4. $10.\overline{66}$
5. $14.\overline{36}$

What's More

1. 0.2 – Terminating
2. $0.\overline{88}$ – Repeating
3. 0.75 – Terminating
4. $0.\overline{66}$ – Repeating Non Terminating
5. 0.5 – Terminating

What I Can Do

1. ★
2. ▼
3. ▼
4. ★
5. ▼

Assessment

1. T
2. NT
3. NT
4. T
5. NT
6. T
7. T
8. NT
9. T
10. T

Additional Activities

1. 0.75 – Terminating
2. $0.\overline{54}$ – Repeating Non Terminating
3. 0.1875 – Terminating
4. 0. 25 – Terminating
5. $0.1\overline{6}$ - Repeating Non Terminating

Reference:

- *K to 12 Curriculum Guide in Mathematics*

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