6 Mathematics

Quarter 1

PIVOT 4A

LEARN-

This module was carefully examined and revised in accordance with the standards prescribed by DepEd Region 4A and Curriculum and Learning Management Division CALABARZON. All parts and sections of the module are assured not to have violated any rules stated in the IPR for learning standards.

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Mathematics

Grade 6

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Mathematics Grade 6
PIVOT IV-A Learner's Material
First Quarter
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Guide in Using PIVOT Learner's Material

For the Parents/Guardian

This module aims to assist you, dear parents, guardians, or siblings of the learners, to understand how materials and activities are used in the new normal. It is designed to provide the information, activities, and new learning that learners need to work on.

Activities presented in this module are based on the Most Essential Learning Competencies (MELCs) for Mathematics as prescribed by the Department of Education.

You are expected to assist the child in the tasks and ensure the learner's mastery of the subject matter. Be reminded that **learners have to answer all the activities in their own notebook**.

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For the Learners

The module is designed to suit your needs and interests using the IDEA instructional process. This will help you attain the prescribed grade-level knowledge, skills, attitude, and values at your own pace outside the normal classroom setting.

The module is composed of different types of activities that are arranged according to graduated levels of difficulty—from simple to complex. You are expected to **answer all activities on separate sheets of paper** and submit the outputs to your respective teachers on the time and date agreed upon.

PARTS OF PIVOT LEARNER'S MATERIAL

	Parts of the LM	Description
Introduction	What I need to know	The teacher utilizes appropriate strategies in presenting the MELC and desired learning outcomes for the day or week, purpose of the lesson, core content and relevant samples. This allows teachers to maximize learners awareness of their own knowledge as regards content and skills required for the lesson
	What is new	
Development	What I know	The teacher presents activities, tasks , contents of value and interest to the learners. This shall expose the learners on what he/she knew, what he /she does not know and what she/he wanted to know and learn. Most of the activities and tasks must simply and directly revolved around the concepts to develop and master the skills or the MELC.
	What is in	
	What is it	
Engagement	What is more	The teacher allows the learners to be engaged in various tasks and opportunities in building their KSA's to meaningfully connect their learnings after doing the tasks in the D. This part exposes the learner to real life situations /tasks that shall ignite his/ her interests to meet the expectation, make their performance satisfactory or produce a product or performance which lead him/ her to understand fully the skills and concepts .
	What I can do	
	What else I can do	
Assimilation	What I have learned	The teacher brings the learners to a process where they shall demonstrate ideas, interpretation, mindset or values and create pieces of information that will form part of their knowledge in reflecting, relating or using it effectively in any situation or context. This part encourages learners in creating conceptual structures giving them the avenue to integrate new and old learnings.
	What I can achieve	

WEEK 1

Adds and Subtracts Simple Fractions and Mixed Numbers

Lesson

I

After going through this lesson, you are expected to add and subtract simple fractions and mixed number without or with regrouping.

Fractions are very important in our day to day living. Whatever we do daily is just a portion of our tasks or goals on that day. Unconsciously, you are adding parts of your day to know your finished tasks.

Fractions are **similar** if they have the same denominator. It is **dissimilar** if they have different denominators.

Learning Task 1: Identify similar and dissimilar fractions. On your note-book write S if the fractions are similar and D if dissimilar.

1. $\frac{2}{3}$ and $\frac{1}{3}$ 2. $\frac{3}{4}$ and $\frac{1}{4}$ 3. $\frac{4}{7}$ and $\frac{7}{8}$ 4. $\frac{2}{5}$ and $\frac{5}{11}$

5. $\frac{7}{13}$ and $\frac{7}{9}$

D

When we **add/subtract** similar fractions, simply **add/subtract** the numerators and copy the common denominator. Then simplify the resulting fraction if necessary. When the **sum/difference** is an improper fraction, change it to a mixed number.

Example 1: $\frac{3}{5} + \frac{1}{5}$

Solution: $\frac{3}{5} + \frac{1}{5} = \frac{3+1}{5} = \frac{4}{5}$

Example 2: $\frac{7}{9} - \frac{3}{9}$

Solution: $\frac{7}{9} - \frac{3}{9} = \frac{7-3}{9} = \frac{4}{9}$

To **add/subtract** dissimilar fractions, change the fraction to similar fractions using equivalent fraction.

Example $\frac{3}{5} + \frac{7}{10}$

Find the equivalent fraction of $\frac{3}{5}$ with same denominator as $\frac{7}{10}$

$\frac{3}{5} = \frac{6}{10}$ Thus $\frac{3}{5} + \frac{7}{10} \longrightarrow \frac{6}{10} + \frac{7}{10}$

$= \frac{6+7}{10} = \frac{13}{10} = 1\frac{3}{10}$

Change the improper fraction $\frac{13}{10}$ to mixed number

Learning Task 2: Perform the indicated operations. Write your answer in your notebook.

1. $\frac{5}{7} - \frac{2}{7}$
2. $\frac{9}{10} + \frac{3}{10}$
3. $\frac{3}{4} - \frac{2}{3}$
4. $\frac{5}{6} + \frac{1}{7}$
5. $\frac{9}{10} - \frac{3}{10} - \frac{2}{10}$
6. $\frac{2}{7} + \frac{3}{7} + \frac{5}{7}$

E

If you know how to add/subtract similar and dissimilar fractions, you can also add/subtract mixed numbers easily. Add/subtract the whole numbers and also add/subtract the fractional part.

Example $1\frac{3}{5} + 2\frac{1}{5} \longrightarrow (1 + 2) + \left(\frac{3}{5} + \frac{1}{5}\right)$

$3 + \frac{4}{5} = 3\frac{4}{5}$

therefore $1\frac{3}{5} + 2\frac{1}{5} = 3\frac{4}{5}$

Learning Task 3: Perform the indicated operations. Write your answer in your notebook.

1. $2\frac{1}{4} + 3\frac{1}{2} - 2\frac{1}{3}$
2. $3\frac{2}{5} - \frac{3}{4} + 5\frac{1}{2}$
3. $\frac{2}{5} + 6\frac{3}{7} - 2\frac{2}{3}$
4. $2\frac{4}{5} + 7\frac{1}{2} - 1\frac{3}{4}$
5. $6\frac{2}{5} + 3\frac{1}{8} + \frac{2}{3}$

There are cases that the fractional parts cannot be subtracted. That is, minuend is smaller than the subtrahend. If it happens, you can apply regrouping. Regrouping means you need to borrow one from a whole number to make the fraction of the minuend larger than the fraction of the subtrahend.

Example: $4\frac{1}{5} - 2\frac{3}{5}$

Write in vertical form:

$4\frac{1}{5} \longrightarrow 3\frac{6}{5}$ Borrow 1 from 4 and change to fraction 1 = $\frac{5}{5}$ then add to $\frac{1}{5}$

$-2\frac{3}{5} \quad -2\frac{3}{5}$

$1\frac{3}{5}$ Subtract the whole numbers then subtract the fractions

A

Learning Task 4: Add / Subtract the following fractions. Write your answer to its simplest form.

1. $\frac{7}{8} - \frac{5}{6}$
2. $\frac{7}{6} + \frac{3}{4}$
3. $10\frac{5}{7} - 5\frac{2}{3}$
4. $8\frac{5}{8} + 5\frac{3}{4}$

Solve Routine and Non-routine Problems Involving Addition and/or Subtraction of Fractions Using Appropriate Problem Solving Strategies and Tools

Lesson

I

After going through this lesson, you are expected to solve routine and non-routine problem involving addition and/or subtraction of fractions using appropriate problem solving strategies and tools.

Routine problem can easily be solved using at least one arithmetic operation and or ratio. **Non-routine problem** is a type of problem that requires analysis, manipulation or derivation of formulas and the like. Oftentimes, this problem can be solved in multiple ways. It encourage group discussion in finding the correct solution.

Phrases used in addition of numbers are: plus, the sum of, the total of; increased by, more than and added to. For subtraction we use the words like the difference of, reduced by, diminished by, subtract from, subtracted to.

Learning Task 1. Translate each of the following problem to mathematical symbol. Write your answer in your notebook.

1. 7 is added to the sum of $\frac{4}{5}$ and $\frac{6}{7}$
2. $2\frac{3}{4}$ subtracted from 11 is equal to $8\frac{1}{4}$
3. The total of $8\frac{4}{7}$ and $\frac{11}{14}$
4. $6\frac{7}{8}$ decreased by $2\frac{2}{5}$
5. 14 increased by $14\frac{5}{7}$

D

In problem solving, you have to understand the mathematical phrases used in the problem so that you can determine the operations to be used in solving the problem.

Learning Task 2: Solve the given problems. Write your answer in your notebook.

1. Find the perimeter of a triangle whose sides are $5\frac{1}{2}$ cm, $7\frac{3}{5}$ cm, and $3\frac{1}{4}$ cm respectively.
2. In making of a palamig, you need to mix $2\frac{1}{2}$ pitcher of pineapple juice and $4\frac{3}{4}$ pitcher of water. How much is the mixture?
3. Zailene wants to make two kinds of *kakanin, puto* and *kutsinta. Puto* recipe needs $3\frac{2}{5}$ cup of flour while *kutsinta* needs $5\frac{1}{4}$ cup of flour. How many cups of flour will my wife be needed in all?

E

Learning Task 3. From the given data or information, below, create the problem and solve . Use Appropriate Problem Solving Strategies and Tools. Write your answer in your notebook.

1. recipe: $3\frac{1}{4}$ tbsp. of sugar and $5\frac{1}{2}$ tbsp. of flour

2. sides of triangle: $7\frac{3}{4}$ cm and $4\frac{2}{3}$ cm ; perimeter is 18 cm

$53\frac{1}{2}$ $33\frac{4}{5}$ $34\frac{2}{3}$

A

Learning Task 4: AGREE, DISAGREE, or MORE. Read each statement below. On your notebook write **AGREE**, if you can do it. **DISAGREE** if you cannot do it or **MORE** if you can do it with the help of others.

_____ I can easily identified the given in a problem.

_____ I can determine what is asked in the problem easily.

_____ I can now easily check whether the operation to be used is addition or not because of the phrases and hints I've learned.

_____ I can now easily solve the number sentence involving fractions.

_____ I can easily write the label or units of my answer correctly.

_____ I can easily answer or solve any routine problems.

_____ I can answer or solve non-routine problems easily.

_____ I can create problem from a given data.

_____ I can write my answer in lowest term correctly.

WEEK 2

Multiplies Simple Fractions and Mixed fractions

Lesson

I

After going through this module, you are expected to multiply simple fractions and mixed fractions . **(MELC 3 PIVOT 4A)**

Multiplying fractions are just like multiplying numbers. To multiply fractions, you have to multiply the numerators and then multiply also the denominators of the fractions to be multiplied. If the product is in an improper fraction, simplify it or reduced to its lowest term.

Learning Task 1: Multiply the given fractions. Write your answer in your notebook.

1. $\frac{3}{4} \times \frac{1}{2}$
2. $\frac{1}{5} \times \frac{3}{7}$
3. $\frac{8}{11} \times \frac{7}{9}$
4. $\frac{5}{13} \times \frac{6}{7}$
5. $\frac{8}{17} \times \frac{4}{5}$

D

Cancellation Method can be applied before multiplying the fractions so that the product is already in its lowest term. You van apply cancellation if there is a common factor in the numerator and the denominator.

Example 1. Multiply $\frac{4}{5}$ and $\frac{10}{11}$

Possible numerator and denominator to cancel are: 4 and 5, 10 and 11, 4 and 11 or 5 and 10. The pair of numerator and denominator with common factor is 5 and 10 and the common factor is 5. Therefore, divide both by 5.

$$\frac{4}{\cancel{5}} \times \frac{\cancel{10}^{2}}{11} = \frac{4}{1} \times \frac{2}{11} = \frac{8}{11}$$

Learning Task 2: Multiply the given fractions. Use cancellation method. Write your answer in your notebook.

1. $\frac{4}{5} \times \frac{10}{11}$
2. $\frac{7}{9} \times \frac{18}{25}$
3. $\frac{8}{15} \times \frac{9}{24}$
4. $\frac{9}{16} \times \frac{6}{9}$
5. $\frac{18}{25} \times \frac{8}{27}$

E

Aside from multiplying fraction by another fraction, we can also perform the following types: (1) Multiplication of fraction by a whole number and vice versa; (2) Multiplication of fraction by a mixed number and vice versa; (3) Multiplication of whole number by a mixed number; and, (4) Multiplication of mixed number by another mixed number.

Example 1.

$$\frac{3}{5} \times 8 = \frac{3}{5} \times \frac{8}{1} = \frac{24}{5}$$

Example 2.

$$\frac{5}{6} \times 3\frac{1}{2} = \frac{5}{6} \times \frac{7}{2} = \frac{35}{12}$$

Learning Task 3. Multiply the given fractions below. Write your solution in your notebook.

1. $6 \times \frac{5}{12}$
2. $\frac{7}{8} \times 24$
3. $\frac{4}{9} \times 27 \times \frac{1}{2}$
4. $8\frac{2}{5} \times 18\frac{1}{3}$
5. $6 \times \frac{2}{3} \times 2\frac{1}{2}$

A

Aside from the symbol "x", we can also use • or ( ) to indicate multiplication. Also, phrases such as "times", "the product of", "multiplied by" and "of" can be used too in multiplication.

Example

Instead $\frac{3}{4} \times \frac{1}{2}$ of it could be written any of the following:

- $\frac{1}{2} \bullet \frac{3}{4}$
- $\left[\frac{1}{2}\right]\left[\frac{3}{4}\right]$
- $\frac{1}{2}$ times $\frac{3}{4}$
- the product of $\frac{1}{2}$ and $\frac{3}{4}$
- $\frac{1}{2}$ multiplied by $\frac{3}{4}$
- $\frac{1}{2}$ of $\frac{3}{4}$

Learning Task 4. Multiply each of the following. Use cancellation method if possible. Write your answer in your notebook.

1. $\frac{5}{7} \bullet \frac{14}{35}$
2. $\left[\frac{4}{5}\right]\left[\frac{10}{11}\right]$
3. $8\frac{3}{4}$ multiplied by $\frac{2}{9}$
4. $\left[\frac{4}{5}\right]\left[\frac{10}{11}\right]\left[\frac{7}{8}\right]$

Solves Routine or Non-routine Problems Involving Multiplication without or with Addition or Subtraction of Fractions and Mixed fractions

Lesson

I

After going through this lesson, you are expected to solve routine or non-routine problems involving multiplication without or with addition or subtraction of fractions and mixed fractions using appropriate problem solving strategies and tools.

In solving word problems, we have routine and non-routine types of problems. Since it was already defined in Lesson 2, we will not define it in this topic. In multiplication, we will take note of the possible phrases that we can use in multiplying any kinds of numbers. These are: times, the product of, multiplied by, of, twice, and thrice.

Learning Task 1. Translate the given phrases to mathematical phrases. Write your answer in your notebook.

1. Thrice the sum of three fifths and two thirds less one half is what number?
2. One-fourth times two-thirds
3. The product of two– fourths and the sum of three-halves and four
4. The difference of five and the product of the two-thirds and one-sixth.
5. The product of eight and the sum of three-fourths and its reciprocal.

D

In problem solving, there are steps that we need to follow. First, identify the given facts, the data needed to solve the problem. Next, identify what is asked in the problem. Third, determine the operation then write the number sentence. Fourth, solve the problem. And last, check your answer to know whether your answer is correct.

Learning Task 2. Translate each of the following problem into mathematical sentence then solve. Write your answer in your notebook.

1. $\frac{3}{4}$ multiplied by $\frac{16}{21}$ is what number?
2. The product of $5\frac{7}{9}$ and $\frac{27}{56}$ is what number?
3. $4\frac{2}{5}$ times $7\frac{1}{3}$ is what number?
4. Twice the product of $\frac{8}{15}$ and $2\frac{4}{7}$

E

Learning Task 3: Solve the following problems. Write your solution in your notebook.

1. A room is $8\frac{2}{3}$ m by $5\frac{1}{4}$ m. What is the area of the room?
2. A group of volunteers packed 198 bags of rice. Each bag contained $3\frac{1}{4}$ kilo of rice. How many kilograms of rice did the volunteers pack?
3. A baker uses $3\frac{3}{5}$ tablespoon of melted butter for every kilogram of flour. How many tablespoons of melted butter he used for $13\frac{1}{2}$ kilograms of flour?
4. Aling Luz bought $\frac{3}{8}$ yards of linen cloth which cost Php 72.00 per yard. She gave Php 1 000.00 to the cashier. How much change will she receive?

A

To solve multistep routine and non-routine problems involving multiplication of fractions and mixed fractions using appropriate problem solving strategies and tools, it is better to translate the given phrases to mathematical phrases. This will help you understand what is being asked.

Learning Task 4: Write the equation and solve in your notebook.

1. Multiply $\frac{7}{9}$ to the sum of $8\frac{3}{7}$ and $5\frac{11}{14}$
2. The product of $\frac{6}{7}$ and $\frac{2}{3}$ is _____.
3. Find the area of a room $\frac{9}{7}$ m and $\frac{2}{7}$ m.
4. A bus can travel $18\frac{3}{8}$ km in an hour. How far can it travel in $\frac{3}{8}$ hours?
5. Inday wanted to have 120 kilograms of indian mango. She picked 10 bags of it. Each bag contains $9\frac{1}{2}$ kilograms. How many kilograms of indian mango did she needs more?

WEEK 3

Divides Simple Fractions and Mixed

I

Lesson

After going through this lesson, you are expected to divide simple fractions and mixed fractions.

In dividing fraction is simply multiplying the first fraction by the reciprocal of the second fraction or number. The **reciprocal** of a fraction is found by flipping its numerator and denominator. Make it sure that the dividend and the divisor is always written in its fractional form. Simplify or write your answer in lowest term through cancellation method.

Example 1. Find the quotient of $\frac{8}{9}$ and $\frac{2}{3}$

Solution: $\frac{8}{9} \div \frac{2}{3} \longrightarrow \frac{8}{9} \times \frac{3}{2}$ Change the division sign to multiplication and get the reciprocal of the divisor only.

$\frac{\cancel{8}^{4}}{\cancel{9}_{3}} \times \frac{\cancel{3}^{1}}{\cancel{2}_{1}}$ Apply cancellation

$\frac{4}{3}$ Multiply the numerators and then denominators

Learning Task 1: Find the quotient of the given fractions below. Write your solution in your notebook.

1. $\frac{7}{8} \div \frac{3}{4}$ 2. $\frac{7}{6} \div \frac{5}{6}$ 3. $\frac{5}{12} \div \frac{1}{60}$ 4. $\frac{12}{5} \div \frac{1}{6}$

D

In dividing mixed number by another mixed number, we have to consider the following steps. First, change mixed numbers to improper fractions. Second, get the reciprocal of the divisor and change the division sign to multiplication. Third, multiply the numerators and denominators separately. And finally, change improper fraction into a mixed number.

Example 2. What is the quotient if $8\frac{3}{5}$ is divided by $3\frac{3}{4}$?

Solution: $8\frac{3}{5} \div 3\frac{3}{4} \longrightarrow \frac{43}{5} \div \frac{15}{4}$ Change mixed numbers to improper fractions.

$\frac{43}{5} \times \frac{4}{15}$ Change division sign to multiplication and get the reciprocal of the divisor.

$\frac{172}{75}$ or $2\frac{22}{75}$ Multiply the numerators and denominators. Change improper fraction into a mixed number

Learning Task 2: Find the quotient of the given fractions below. Write your solution in your notebook.

1. $12\frac{3}{8} \div 2\frac{3}{4}$
2. $9\frac{2}{5} \div 1\frac{3}{10}$
3. $7\frac{1}{4} \div 1\frac{7}{8}$
4. $8\frac{5}{6} \div 2\frac{1}{4}$
5. $5\frac{4}{7} \div 2\frac{10}{21}$
6. $12\frac{5}{8} \div 3\frac{19}{24}$
7. $7\frac{5}{6} \div 3\frac{1}{2}$
8. $14\frac{2}{3} \div 2\frac{2}{9}$

E

Learning Task 3: Solve the given problems. Write your solution in your notebook.

1. A cook has $2\frac{3}{4}$ pounds of ground beef. How many quarter- pound burgers can he make?
2. A child needs to take $\frac{1}{6}$ tablespoons of medicine per day in 4 equal dos es. How much medicine is in each dose?
3. How many $\frac{5}{6}$-cup salt shakers can be filled from 24 cups of salt?

A

Learning Task 4. Read each statement and in your notebook, write the word **TRUE if the** statement is correct, and if the statement is wrong, write the word/s that makes the statement incorrect in your notebook.

1. The denominator of any whole number is 1.
2. To find the reciprocal of a fraction, simply interchange the numerator and the denominator of the given fraction.
3. There is no need to change the division sign into multiplication sign if you are going to divide fraction by another fraction.
4. There is always a need to write answers in simplest form.
5. In dividing fractions, you'll need to get the reciprocal of the given divi- sor before you multiply the numerators and the denominators.
6. The reciprocal of $8\frac{1}{4}$ is $\frac{8}{4}$
7. The product of $\frac{3}{4}$ and another fractions is $\frac{5}{4}$ The other fraction $\frac{3}{5}$
8. One half pizza will be divide among 3 pupils. Each pupil receives $\frac{1}{6}$

Solves Routine or Non-routine Problems Involving Division of Fractions Using Appropriate Problem Solving Strategies and Tools

I

Lesson

After going through this lesson, you are expected to solve routine or non-routine problems involving division without or with any of the other operations of fractions and mixed fractions using appropriate problem solving strategies and tools.

To check if division is the operation involved in solving a problem, you need to know the following terms: quotient, divided by, cut, average, split into .

Learning Task 1: Translate each of the following problem. Write your answer in your notebook.

1. The quotient of $9\frac{3}{4}$ and $\frac{5}{8}$
2. $15\frac{1}{3}$ divide by $\frac{23}{18}$
3. $12\frac{1}{2}$ split into 4
4. The quotient of $3\frac{1}{5}$ and $2\frac{1}{3}$
5. The quantity six times $3\frac{1}{2}$ over 2.

D

Learning Task 2. Solve the given problems. Write your answer in your notebook.

1. Mario has 12 boxes of pizza. He cut each pizza into eights. How many pieces of pizza will there be?
2. Tony had $5\frac{1}{2}$ kilograms of sugar. How many cakes can he bake if he will use $\frac{1}{4}$ kilogram of sugar per cake?
3. What is the average $2\frac{1}{3}$ and ? $3\frac{1}{2}$
4. Jay will put $\frac{4}{5}$ mg of salt in each plastic. How many plastics will he need for 14 mg of salt?

E

Learning Task 3. Solve the following problems. Write your answer in your notebook.

1. How many one-fifths are there in $17\frac{1}{2}$
2. How many $\frac{2}{3}$ cm can be cut from a 20 cm piece of ribbon?
3. A glass can hold $\frac{1}{5}$ liters of juice. How many glasses can $13\frac{3}{5}$ liters of juice be poured into it?
4. A tailor uses $2\frac{1}{2}$ yards of cloth for a t-shirt. If he has 20 yards of cloth, how many t-shirts can he make?

A

Learning Task 4. Read the statement below. On your notebook write AGREE If you can do it, DISAGREE if you cannot do it or MORE if you need assistance in doing it.

1. I can easily identified the given in a problem.
2. I can determine what is asked in the problem easily.
3. I can now easily check whether the operation to be used is division or not because of the phrases and hints I've learned.
4. I can now easily solve the number sentence involving division of fractions.
5. I can easily write the label or units of my answer correctly.
6. I can easily answer or solve any routine problems about division of fractions.
7. I can answer or solve non-routine problems about division of fractions easily.
8. I can solve the problem on division of fraction without help.
9. If needed, I can write my answer in lowest term correctly.

WEEK 4

Add and Subtracts Decimals and Mixed Decimals Through Ten Thousandths

Lesson

I

After going through this lesson, you are expected to add and subtract decimals and mixed decimals through ten thousandths without or with regrouping.

Let's recall the process on how to round off decimals. Add 1 to the digit in the rounding place if the digit to its right is 5 or greater otherwise leave the digit unchanged. Drop all digits after the rounding place.

Example 1. A bird house was built 6.243 meters above the ground. Round to the nearest whole number.

Step 1	Step 2	Step 3
Identify the rounding place. Example: 6.243 **6** is the whole number	Look at the digit which is to the right of the rounding place. 6.**2**43 If the digit is less than 5, do not change the digit in the rounding place. 2 < 5 If the digit is 5 or greater, add 1 to the digit in the rounding place.	Drop all digits to the right of the rounding place. **6**

Therefore, the birdhouse is about **6** meters high.

Learning Task 1. Estimate the sum of the given situation by rounding the amount to highest peso value. Write your answer in your notebook.

Kenna bought these items at the grocery:

shampoo	₱24.75;	bath soap	₱7.19;
powder	₱8.28;	toothpaste	₱9.80.

About how much did she spend?

D

Adding and Subtracting decimals is similar to the process of adding and subtracting whole numbers. Decimals through ten thousandths have four digits after the decimal points. Here are the steps on how to add and subtract decimal numbers through ten thousandths.

Example 1. Add 0.25 + 0.03 + 0.0756

Step 1	Step 2	Step 3
Arrange the digits in columns and align the decimal points. 2.25 0.03 + 0.0756	Insert zeros in empty decimal place values (if needed) so that all of the numbers have the same number of decimals places. 2.25**00** ← 0.03**00** ← + 0.0756	Add or subtract as with whole numbers 2.2500 0.0300 + 0.0756 **2.3556**

Learning Task 2: Arrange in column and add the following decimal numbers. Write your answer in your notebook.

1. 0.008 + 0.02 + 0.0087 + 0.39 + 0.3661
2. 0.0053 + 0.71 + 0.09 + 0.015 + 0.173
3. 0.007 + 0.3531 - 0.126 + 0.15 - 0.08
4. 0.0785 + 0.0662

E

Learning Task 3. Solve the problems below. Write your answer in your notebook.

1. Three pails have different capacities. The small pail can hold 0.0062 liters of water. The bigger pail has a capacity of 0.3792 liters while the biggest pail holds 0.9914 liters. Find the total amount of water that can be stored in the pails.
2. A gasoline tank of a car has 4.2893 liters of gasoline. It is driven to a gasoline station and filled with 9.6782 liters. If the tank has 12.4894 after driving to the school and office. How many liters of gasoline were used?
3. Three sticks measuring 0.3265 meters, 0.2160 meters and 0. 4213 meters were put end to end. What was their total length?

Learning Task 4. Solve the problem. Estimate the total amount.

Mr. Cruz's monthly income is ₱ 75, 000.00. He divide his income to the following expenses:

Food: ₱ 22, 450.89 Recreation: ₱5, 676. 63

Clothes: ₱ 15,670.25 Transportation: ₱ 10,067.15

Other amount goes to savings. How much is the savings?

A

Learning Task 5: Solve the given problems. Write your answer in your notebook.

A. Round each number o the nearest ten thousandth.

1. 2.14672
2. 6.66666
3. 0.09257
4. 45. 12345
5. 17. 45628

B. Read and solve.

1. Mr. Carlos bought a T-shirt for ₱ 254.95. Round this off to the nearest peso.

A. The sale price of a set of cups and saucers is ₱ 117. 26. Round this off to the nearest tenths.

Problem Solving Involving Addition and Subtraction of Decimal Numbers

I

Lesson

After going through this lesson, you are expected to solve 1 or more steps routine and non-routine problems involving addition and/or subtraction of decimals and mixed decimals using appropriate problem solving strategies and tools.

In solving problems, you need to understand first the given problem and plan for which operation (s) to use. You may draw an illustration to help you visualize your plan. Then solve and check.

Learning Task 1. Refer to the table below of liquid and its weight. Answer the question that follows. Write your answer in your notebook.

Liquid	Pounds per Gallon
Seawater	8.58
Drinking water	8.33
Gasoline	5.664
Kerosene	6.664
Oil	7.497

1. How heavy is 4 gallons of kerosene?
2. How much more does a gallon of seawater weigh than a gallon of drinking water?
3. Which is heavier, 1 gallon of oil or 2 gallons of gasoline? How much heavier?

D

Learning Task 2. Solving word problems involving addition and / or subtraction of decimal and mixed decimal numbers with or without regrouping. (Use the 4 -step in solving word problems. Do these in your notebook.)

1. In a sale, a microwave costs ₱ 2,999.99. Its price has been reduced by ₱ 500.00. What was its price before the sale?
2. 2. Mr. Lagrazon has a 15 - hectare Banana plantation and a 12.8567 hectare sugarcane plantation. How much bigger is the Banana plantation than the sugarcane plantation?
3. Mang Juan has 5 hectares of land. He sold 2.0725 hectares to his neighbor. How many hectares of land does he own now?

E

Learning Task 3. Show the 4-steps in solving word problems (Understand-Plan-Solve-Check). Write your answer in your notebook.

1. Miss Apolinar had ₱11, 235.85 savings in the bank. She withdrew ₱850.00 on Tuesday and another ₱1035.00 on Friday. How much was her balance on her savings?

3. Tommy is buying materials for his school portfolio. The store is selling supplies such as clear book for ₱149.99, a pack of colored paper for ₱132.75, and accessories for ₱50.25.
   a. What would be the total if she buys 1 clear book, 2 packs of colored paper and accessories?
   b. How much would be her change if she pays ₱500.00 at the cashier?

A

Solving problems with decimals is like solving applied problems in the previous chapter. We need to understand first the given problem and plan for which operation (s) to use.

To solve word problems, use the 4 -Step in solving word problems; (1) Understand, (2) Plan, (3) Solve and (4) Check.

Learning Task 4. Choose the letter of the best answer. Write the chosen letter in your notebook.

1. When you add the decimal numbers 0.25, 0.033 and 1.78 the result is ___? A. 0.263 B. 0.0263 C. 2.063 D. 2.2063
2. What is the difference when 43.67 is subtracted from 125.5?
   A. 81.83 B. 81.17 C. 81.87 D. 81.57
3. Nathan, Leanne and Aby went to school clinic to find out their weights. Nathan's weight is 28.58 kilograms, Leanne's weight is 30.55 kilograms and Abby's weight is 25.48 kilograms. What is the total weight of the three pupils?
   A. 84.61 kilograms B. 84.16 kilograms
   C. 59.13 kilograms D. 54.06 kilograms
4. Neil spent ₱24.85 for sandwich and ₱11.20 for juice. How much change did he receive if he gave the vendor ₱100?
   A. ₱ 63.05 B. ₱ 63.95 C. ₱ 73.05 D. ₱ 73.95
5. At 6:00 in the morning, the temperature was 23.8 °C. At 12:00 noon, the temperature rose by 5.7 °C. What was the temperature at 12:00 noon?
   A. 29.5 °C B. 18.1 °C C. 33.5 °C D. 35.5 °C

WEEK 5

Multiplication of Numbers with Two Decimal Place Factors

Lesson

I

After going through this module, you are expected to multiply decimals and mixed decimals up to 2 decimal places.

In multiplying a decimals by another decimal, you can multiply them as if they are whole numbers. In placing the decimal point in the product, get the sum of the number of decimal places in each factor.

Example: Sophia spent 0.58 hours sewing an apron and 0.03 times as much to put the finishing touches on it. How long did it take her to do the finishing touches?

Step 1	Step 2	Step 3	Step 4
Multiply by the hun-dredths 0.58 x 0.03 174	Multiply by the tenths **0.58** x 0.03 174 000	Multiply by the ones. **0.58** x **0**.03 174 000 **000**	Add the partial products. 0.58 ← 2 decimal places x 0.03 ← 2 decimal places **174** **000** **+ 000** **0.0174** ← **4** decimal places

It took Sophia 0.0174 hour to do the finishing touches on the apron.

Learning Task 1. Put the decimal point in the correct place. Add zero if needed. Write your answer in your notebook.

1.
```
  1.52
x 2.05
  760
 000
+304
 31160
```

2.
```
  6.22
x 2.11
  622
 622
+1244
131242
```

3.
```
  2.28
x 1.56
 1368
1140
+228
35568
```

4.
```
  1.60
x 0.25
 1800
 320
+000
04000
```

5.
```
  6.34
x 0.61
  634
3804
+000
38674
```

D

To multiply decimals: (1) Ignore the decimal points and multiply as if they are whole numbers. (2) Place the decimal point in the product based on the total number of decimal places in the factors. (3) In multiplying a decimal by a whole number, the number of decimal places in the product is the same as that in the decimal factor. Note: Count the number of decimal places from the right.

Learning Task 2. Find the product. Write your answer in your notebook.

1. 3.53 x 1.25

2. 2.32 x 2.31

3. 2.42 x 1.56

4. 0.85 x 0.54

5. 0.15 x 0.55

E

Learning Task 3. Find the product. Write your answer in your notebook.

1. 3.25 x 8

2. 3.71 x 9

3. 4.00 x 13

4. 8.30 x 25

5. 3.24 x 36

A

Learning Task 4.

A. Answer the following.

1. How many decimal place(s) is the product of 0.345 and 0.6?
2. The product of 2 decimal numbers is 20.062. 0ne of the factors has 2 decimal places, how many decimal places (s) has the other factor?

B. Solve the given problems. Write your answer in your notebook.

1. A beach house rents for ₱ 1,550.50 a day, How much will Mr. Sebastian pay if his family stays for 5 days?
2. A group of players had lunch at the restaurant. An average of ₱ 138.25 per person, how much did the party spend for lunch?
3. A jeweler had 0.65 gram of gold. He used 0.06 of this for a pair of earrings. How much gold did he used if he made 3 pairs of earrings?

Multiplies Decimals Numbers Mentally by Powers of 10

Lesson

I

After going through this lesson, you are expected to multiply mentally decimals up to 2 decimals places by 0.1, 0.01,10, and 100.

Multiplying decimals by power of 10 tell us how many places it is moved when multiplying by 10 to the first power. In this lesson, you will learn multiplying decimals mentally up to 2 decimals places by 0.1, 0.01, 10 and 100 and estimate the products of decimals with reasonable answer.

Learning Task 1. Multiply the following. Write your answer in your notebook.

1. 5.045×0.79

2. 0.978×0.68

3. 2.804×26

4. 0.073×0.05

5. 0.36×0.9

D

Multiplying by power of 10 can be solved mentally. It is just by moving the decimal point to the left and right based on the number of decimal places.

We can also solve mentally and find estimated products by rounding each number to the highest place value.

The following examples involves multiplying by 10, 100 and 1000 and multiplying by 0.1, 0.01 and 0.001.

Consider the following examples.

Example 1. A plane travels at the rate of 0.15 kilometer per second. How far does it travel in 10 seconds? 100 seconds? 1000 seconds?

Multiply:

$10 \times 0.15 = 1.5$ move the decimal point **one** step to the right

$100 \times 0.15 = 15$ move the decimal point **two** steps to the right

$1000 \times 0.15 = 150$ move the decimal point **three** steps to the right then add zeros if needed.

$10 \times 0.15 = 1.5$ or $10^1 \times 0.15 = 1.5$

$100 \times 0.15 = 15$ or $10^2 \times 0.15 = 15$

$1000 \times 0.15 = 150$ or $10^3 \times 0.15 = 150$

The exponent of 10 indicates the number of times you have to move the decimal point to the right

In multiplying decimals by 0.1, 0.01 or 0.001,we count the numbers of zeros in 0.1, 0.01 or 0.001 then move the decimal point to the left based on the number of decimal places.

Multiply:

15 x 0.1 = 1.5 or 15×10^{-1}

15 x 0.01 = 0.15 15×10^{-2}

15 x 0.001 = 0.015 15×10^{-3}

The negative exponent indicates the number of times you are going to move the decimal point to the left.

Learning Task 2: Multiply the given decimal numbers . Write your answer in your notebook.

1. Multiply 456 by a. 0.1, b. 0.01, and c. 0.001.
2. Multiply 5.67 by a. 0.1 b. 0.001, c. 0.0001, d. 0.0001

E

Learning Task 3. Complete the table. Multiply each number as indicated in each column. Write your answer in your notebook.

Number	x 10^1	x 10^2	x 10^3
1. 4.86			
2. 55.105			
3. 37.248			
4. 8.0003			
5. 5.4813			

A

Learning Task 4. Read and Solve. Write your answer in your notebook.

1. A microbe in a test tube weighs 0.001 g. What is the total weight of microbes in 456 test tubes ?
2. A crate weighs 32.5 kg 100 kilograms. How much 100 crates weigh?
3. Lito stays fit by doing 53 push-ups a day. About how many push-ups can he do in 10 days?
4. A shot put metal ball has a minimum weight of 5.727 kilogram. About how many kilograms will 100 metal balls weigh?

Problem Solving Involving Decimal Numbers

Lesson

I

After going through this lesson, you are expected to solve routine and non-routine problems involving multiplication of decimals and mixed decimals including money using appropriate problem solving strategies.

Knowing the basic concepts and procedures in multiplying decimals in different ways, we can now solve real life problems.

Learning Task 1. The chart shows a list of activities and the approximate amount of energy required for the average adult. Answer the given questions in your notebook.

Activity	Calorie per minute
Lying at rest	1.08
Standing	1.20
Playing volleyball	2.5
Washing dishes	2.55
Running /mile	10.5

1. How many calories are used by an adult who plays volleyball for 15 minutes?
2. How many calories are used in standing for 1 hour and washing the dishes for 10 minutes?
3. About how many calories used in running 20 miles 16.5 minute ?

D

In solving routine problems, you can use at least one of the four mathematical operations. And to help you clearly understand the problems there are steps that you should follow. First, understand the problem and determine the given data or facts. Second, know what is being asked. Third, Make the number sentence and solve. Fourth, check if your answer will satisfy the problem.

Learning Task 2. Solve the given problems. Write your answer in your notebook.

1. How many centavos are there in ₱ 125.75?
2. From a roll of cotton containing 24.75 meters, a seller sold 9.85 meter at ₱22.25 meter. How many meters were left?
3. Sam can ride his bicycle a kilometer in 6.2 minutes. At this rate, how long will it take him to ride 4 km?

E

Learning Task 3. Solving word problems involving multiplication of decimal and mixed decimal numbers with or without regrouping. (Use the 4 -step in solving word problems. Do these in your notebook.).

1. A clerk is paid ₱ 45.25 per hour for 40 hours a week, 1.50 times the regular rate for overtime and double the rate for a holiday. How much does the clerk get if he works overtime for 5 hours and 2 hours on holiday?
2. A computer programmer earns a regular hourly rate of ₱50.00. If he worked 42.75 hours in a week, how much did he earn?
3. Arthur earns ₱ 1350.00 a day. He sets aside 0.10 of this for savings. How much does he save in a month?
4. Mr. Fernandez has a monthly pay of ₱ 5,450. The tax deducted from his monthly salary is 543.00. What is the actual pay he receives in a year?
5. Dianne works 2.5 hours a day from Monday to Friday and 3.75 hours on Saturday. If he is paid ₱25.00 per hour, how much does he earn in a week?

A

When you master how to solve routine and non-routine problems, you can also make and create your own problems by providing needed facts or data to complete a simple taught or problem.

When you are creating word problems, make sure that the information needed is given to be able to solve the problem.

Learning Task 4. Create you own problem using the following data. Solve your problems in your notebook.

a. ₱ 256.25 per day; Earnings in a month?
b. ₱ 15.00 per piece; 24 apples . How much in all?

WEEK 6

Multi-step Problem Solving Involving Whole Numbers and Decimals

I

Lesson

After going through this lesson, you are expected to solve multi-step problems involving multiplication and addition or subtraction of decimals, mixed decimals and whole numbers including money using appropriate problem solving strategies and tools

Learning Task 1. Enumerate the 4- steps in solving simple problems. Write the hidden questions for every step.

Step 1. _____ Step 3._____

Step 2. _____ Step.4. _____

D

Multi-step word problems are combination of fundamental operations which includes hidden questions.

Here, you will be able to think deeply and improve your higher order thinking skills to solve the problems.

Learning Task 2. Solve the given problems. Use the 4-steps inn solving word problems. A hidden questions should be incorporated in your answer. Write your solution in your notebook.

1. Mr. Fernandez earns ₱ 28.50 per hour as an office clerk. He earns 1.75 times as his regular rate for overtime. His regular work is 40 hours per week. He gets overtime pay if he works more than 40 hours. How much is his total earning if he works 45 hours in one week?
2. Lucy earns ₱ 1,525.00 a week. She sets aside 15% of this for savings. How much does she save in a year? (Hint: 1 year = 52 weeks).
3. Mrs. Briones has a monthly pay of 50,000.00. The withholding tax deducted from her monthly salary is ₱ 5,275.75. What is the actual pay she receives in a year?

E

Learning Task 3. Solve the given problems using the 4-steps in solving word problems. Write your complete solutions in your notebook.

1. A clerk is paid ₱ 45.50 per hour for 40 hours per week, 1.50 times the regular rate for overtime and double the regular for a holiday. How much does the clerk get if he works overtime for 3 hours and 5 hours on a holiday?
2. Sarah works 8.5 hours a day from Monday to Friday and 6.75 hours on Saturday. If she is paid ₱ 55.25 per hour, how much does she earn in a week?

3. Mr. Paron sells fruits in the market. Banana costs 25 pesos per kilogram and grapes costs 180 pesos per kilogram. A customer bought 5.25 kilos of banana and 3.75 kilograms of grapes. How much will the customer pay?

A

When the time that you have mastered on how to solve problems and can be able to analyze it. You can answers problems as fast as you can without using the steps. If you can solve problems critically, we can also create our own problem.

Learning Task 4. Create a simple problem using the given data. Solve and write your answer in your notebook.

1. 80 pineapples at ₱ 15.25 each, 3 pineapple got rotten, sold the rest at ₱ 20.00 each amount of gain.
2. Adult ticket costs ₱ 25.75; student ticket costs ₱ 15.75.
   Costs of 3 adult tickets and 4 student tickets.
3. ₱ 45.55 per hour in a regular day; 2.5 times of regular rate for overtime; 8 hours per regular day and 4 hours of overtime;
   Total amount of pay receive.
4. 8.75 kilometers per day; 6 round trips each day; total kilometers.
5. Mila - 0.75 hour; Carol 0.25 times faster; how long will it take carol to clean the kitchen?

WEEK 7

Division of Whole Numbers and Decimal Numbers

I

Lesson

After going through this module, you are expected to divide whole numbers by decimals up to 2 decimal places and vice versa and mixed decimals up o 2 decimal places. **(MELC 13 PIVOT 4A)**

The word decimal comes from the Latin word decima, meaning tenth part. Although we are using different notation, we are still considering the nonnegative rational numbers. Division of decimals, just like multiplication, can be done using either the fraction method or the decimal method.

Example: Divide 49 by 0.7

STEP 1	STEP 2	STEP 3
Always make the divisor a whole number. Since it is one decimal place multiply the divisor to 10 at the same time multiply the dividend by 10. $0.7\overline{)49} \rightarrow 7\overline{)490}$	Divide the numbers: $7\overline{)490}$ = 70 −49 0 0 0 Therefore 49 divided by 0.7 is 70.	Check: Multiply 70 by 0.7 $\begin{array}{r} 70 \\ \times\ 0.7 \\ \hline 49.0 \end{array}$ The product ha one decimal place since there is only one decimal place.

Learning Task 1. Find the quotient and check. Write your answer in your notebook.

1. $0.8\overline{)208}$ 2. $0.5\overline{)355}$ 3. $0.6\overline{)312}$

D

How is division done with decimals? How do we divide decimals/ mixed decimals by decimals? These are the steps in order to divide mixed decimals by decimals.

Example: $0.5\overline{)0.25}$

STEP 1	STEP 2	STEP 3	STEP 4
$0.5\overline{)0.25}$ Make the divisor a whole number by multiplying it by 10 or just move the decimal point one (1) decimal place to the right to make the divisor a whole number.	$0.5\overline{)0.25}$ Multiply 0.25 by 10 also or move the decimal point in the dividend as many places as in the divisor. Note: What we do with the divisor, we do the same to the dividend.	0.5 $5\overline{)2.5}$ - 0 25 - 25 0 Divide just like whole numbers. Put the decimal point of the quotient just above the decimal point of the dividend.	Check: **0.5** **x 5** **2.5** Multiply the quotient and the divisor like multiplying whole number. Put the decimal point in the product as same number of decimal places in the quotient.

In dividing decimal/mixed decimal by decimals, we have o use the following steps. First, change the divisor to a whole number by moving the decimal point to the rightmost place or multiply it by 10 if only one decimal place or 100 if 2 decimal places. Second, move the decimal point in the dividend to as many places as the decimal point in the divisor is moved or multiply it also by 10 or 100. Note: What we do with the divisor, we do the same to the dividend. Third, insert zeros to the dividend when needed.

Learning Task 2. Divide the following and check. Write your answer in your notebook.

1. $0.09\overline{)0.81}$
2. $0.03\overline{)0.72}$
3. $0.12\overline{)0.96}$
4. $0.16\overline{)0.96}$
5. $0.21\overline{)0.63}$
6. $0.07\overline{)0.49}$

E

Learning Task 3. Solve the problem carefully by answering the questions below. Use the 4-Step in solving word problems. Write your answer in your notebook.

1. In Science class, Ms. Alkhaldi had 30.6 pounds of igneous rocks. She divided equally by weight into 9 different containers. How many pounds of rocks will be in each container?
2. A fisherman caught 15.45 kilograms of fish. He distributed the fish equally among his 5 family members. How many kilograms did each family member get?
3. Marie would like to pour 3.5 liters of fresh milk equally into 7 bottles. How many liters of fresh milk each bottle contains?

A

Learning Task 4. Choose the letter of the best answer. Write the chosen letter in your notebook.

1. What is the quotient when 294.45 is divided by one-tenths?
   A. 2 94.45 B. 2 944.5 C. 29 445 D. 294 450
2. What is 59.39 divided by 0.001 equal to?
   A. 593 900 B. 59 390 C. 5 939 D. 593.9
3. How many times greater is 6.45 than 0.01?
   A. 0.645 B. 6.45 C. 64.5 D. 645
4. What will be the answer if we divide 0.819 by one-hundredths?
   A. 0.819 B. 8.19 C. 81.9 D. 819
5. What is the quotient if we divide 0.54 by 0.1?
   A. 5.4 B. 54 C. 540 D. 5400

WEEK 7

Divide Decimal Numbers by Powers of 10

I Lesson

After going through this lesson, you are expected to divide decimals up to 4 decimal places by 0.1, 0.01, and 0.001 and up to 2 decimal places by 10, 100, and 1 000 mentally.

Probably you are wondering about the steps in dividing numbers by 0.1, 0.01, 0.001, and 0.0001. Notice that it is the same as multiplying by 10, 100, 1 000, and 10, 000.

Example: Let us divide 0. 5 by 0.1, 0.01, and 0.001.

0.1	0.01	0.001
Division of a number or decimal by 0.1 is actually the movement of 1 decimal place to the right of the dividend and divisor.	Division of a number or decimal by 0.01 is actually the movement of 2 decimal places to the right of the dividend and divisor.	Division of a number or decimal by 0.001 is actually the movement of 3 decimal places to the right of the dividend and divisor.
$0.1\overline{)0.5} \rightarrow 1\overline{)5}$ (5)	$0.01\overline{)0.5} \rightarrow 1\overline{)50}$ (50)	$0.001\overline{)0.5} \rightarrow 1\overline{)500}$ (500)

Learning Task 1. Divide and check. Write your answer in your notebook.

1. $0.1\overline{)0.5}$
2. $0.01\overline{)0.96}$
3. $0.001\overline{)5.1}$
4. $0.01\overline{)6.25}$
5. $0.1\overline{)37.2}$

D

How do we divide decimals by 10, 100 or 1 000 mentally? To what direction do we move the decimal point?

10, 100 ,and 1000
If you are dividing decimal by 10, then move the decimal point one decimal place to the left, the same number of zeros in the divisor. Same with 100, move two decimal point to left. In 1 000, you are going to move the decimal point three decimal places to the left.

$10\overline{)78.46} = 7.846$ $\quad 100\overline{)78.46} = 0.7846$ $\quad 1000\overline{)78.46} = 0.07846$

Learning Task 2. Divide and check. Write your answer in your notebook. Ask your parents to use stop watch o record your progress in answering the given task.

1. $100\overline{)810.2}$
2. $10\overline{)72.09}$
3. $1000\overline{)0.960}$
4. $100\overline{)6.903}$
5. $10\overline{)2.63}$
6. $1000\overline{)4.943}$

E

Learning Task 3. Solve the problem carefully by answering the questions below. Use the 4-Step in solving word problems. Write your answer in your notebook.

1. Mrs. Andres has ₱ 35 345.85, she wants to give it to the victims of Mt. Taal eruptions in Batangas, Philippines. How much will each family receive if she decides to give it to 10 families?
2. What if Mrs. Andres decides to divide it to 100 families, how much will each family receive? What good deeds did she has shown?
3. Jimmy has 50¢ in his pocket amounting ₱ 90.00. His 10¢ coins amounting to ₱ 12.00. How many more 50¢ coins than 10¢ coins does Jimmy have?

A

Dividing whole number by 0.1, 0.01 and 0.001 is the same as multiplying numbers by 10, 100 or 1 000. On the other hand, dividing 10, 100 or 1 000 is by moving the decimal places to the left the same number of zeros in the divisor.

Learning Task 4. Choose the letter of the correct answer. Write your answer in your notebook.

1. What is the quotient when 845.45 is divided by 10?
   A. 0.84545 B. 8.4545 C. 84.545 D. 845.45
2. What is 36.79 divided by 100 equal to?
   A. 0.3679 B. 3.679 C. 36.79 D. 367.9
3. How many times greater is 78.43 than 10?
   A. 7.843 B. 0.7843 C. 0.07843 D. 0.007843
4. What will be the answer if we divide 713.9 by 1 000?
   A. 713.9 B. 71.39 C. 7.319 D. 0.7139
5. What is the quotient if we divide 67.54 by 100?
   A. 67.54 B. 6.754 C. 0.6754 D. 0.06754

WEEK 8

Types of Decimal Numbers

Lesson

I

After going through this lesson, you are expected to differentiate terminating from repeating, non-terminating decimal quotients.

A rational number is a number that when written as decimal, either stops or repeats in a pattern. All rational numbers can be written as fractions or decimals. It can be all integers, positive and negative. It can also be 0.

Examples are: -3, -2, -1, 0, ½, 1, 1.111, 2, 3.333...

An irrational number is a number that when written as a decimal does not end and never repeats. It can never be written as a fraction and it cannot be written as a quotient of two integers.

The decimal form of an irrational number either terminates or repeats.

The square roots of numbers that are NOT perfect squares are called irrational numbers.

Examples are: -√2, -√3, √2, √3,

Learning Task 1. Classify each number as a rational number and an irrational number. Write **R** for rational number and **IR** for irrational number in your notebook.

1. -6 2. √7 3. 6.48 4. Π 5. 3/9

D

The word "terminate" means "end" or "stop". A decimal that end is a terminating decimal.

A **terminating decimal** have a **finite number of digits** or **numbers which come to an end** after the decimal point. It is any rational number.

When you divide the numerator by the denominator and you end up with a **remainder of 0**, then you have a terminating decimal.

A **repeating or nonterminating decimals** have an **infinite number of digits.** It is a **decimal number** that **continues endlessly**, with **no group of digits repeated**.

When you divide the numerator by the denominator with the **remainder that begin to repeat after some point**, then you have a repeating or nonterminating decimal. It can be converted into fraction.

Learning Task 2. Solve and identify if the decimal quotient is a terminating or repeating/nonterminating decimal. Write your answer in your notebook.

1. 3 ÷ 20 2. 9 ÷ 40 3. 2 ÷ 11 4. 6 ÷ 13 5. 5 ÷ 16

E

Learning Task 3. Write the given fractions in decimal numbers or vice versa. Write your answer in your notebook.

1. $\frac{5}{9}$ 2. $\frac{3}{20}$ 3. $2\frac{3}{4}$ 4. 0.25 5. 0. 333

A

Vinculum. A horizontal line placed over an expression to show that everything below the line is one group. For example in a decimal number $0.\overline{333}$, this means that 333 which is under the bar is repeated in the same pattern. This is a repeating non terminating decimals

Learning Task 4. Identify what kind of decimal number are the following. Choose the letter of the correct answer. Write your answer in your notebook.

1. 0.375
   A. Nonrepeating Decimals
   B. Repeating or Nonterminating Decimals
   C. Terminating Decimals

2. . 0.2380952380952
   A. Nonrepeating
   B. Repeating/Nonterminating
   C. Terminating

3. $7.6\overline{89689}$
   A. Nonrepeating Decimals
   B. Repeating or Nonterminating Decimals
   C. Terminating Decimals

4. 0.15
   A. Nonrepeating
   B. Repeating/Nonterminating
   C. Terminating

5. $5.\ 6\overline{45345}$
   A. Nonrepeating
   B. Repeating/Nonterminating
   C. Terminating

Problem Soving Involving Division of Decimal Numbers and Money

I

Lesson

After going through this lesson, you are expected to solve routine and non-routine problems involving division of decimals, mixed decimals, and whole numbers including money using appropriate problem solving strategies and tools.

Again, one thing that you have to consider in solving routine and non-routine problems, are the different steps in solving it. If you failed to solve it for the first time, don't worry. There is always a second time. Your life won't stop there if you failed to do most of it.

Learning Task 1: Read and analyze the given problem. Answer the given questions in your notebook.

Salima bought 6 T-shirts and 4 pairs of pants for ₱ 5 000.00. If the T-shirts cost ₱ 250.00 each, find the cost of each pair of pants.

1. What is asked?
2. What are the given?
3. What operation will be used?
4. What is the number sentence?
5. What is the answer to the problem

D

In solving routine and non routine problems follow the following steps: 1) Understand and analyze the problem. 2) Determine the given data/ facts. 3) Identify the operations to be used to solve the problem. 4) Write the number sentence and solve. 5) Check your answer. Review and look back f the answer satisfies the problem.

Learning Task 2: Solve the following problem. Write your answer in your notebook.

1. Mang Symon has 1 548 eggs to be delivered to the sari-sari store. If the eggs are to be placed in small trays with 12 eggs each, how many trays will be needed?
2. Mang Carlos has 10.5 hectares of land. He wants to divide it into 1.5 hectares each for his sons. How many sons does Mang Carlos have?
3. Aimee bought 9.8 meters of Geena satin cloth. One-fifth of the cloth was damaged by rats and the rest was used to make 7 similar blouses.
   A. How much cloth did she use for each blouse?
   B. If she sold each blouse for ₱ 178.25, how much money would she receive in all?

E

Learning Task 3: Solve the following. Problems. Write your answer in your notebook.

1. Every Sunday, JB carries water for fish vendors at ₱ 22.50 per pail. How many pails of water did he carry if he earned ₱ 382.50 on a Sunday?
2. Rey has 21.25 kgs. of coffee. He wants to put 0.25 kg of coffee per bag. How many bags does he need?
3. Gwen has 4 times as much money as her sister. If Gwen has ₱ 604.80, how much money does her sister have?
4. 4. Joy is planning to buy a new cellphone worth ₱ 14 552.75. She tries to save ₱ 582.11 a week from her allowance. How many weeks will it take her to save the amount enough to buy the cellphone?
5. Yesterday, Sallie took a trip to visit some family. She covered a total of 135.75 miles without making any stops along the way, and it took her exactly 1.25 hours to arrive at her destination. At what average speed did she arrive?

A

Learning Task 4. Identify the following word problems below as **A. Routine B. Non-routine C. Multi-step Routine D. Multi-step Non-routine**. Write the letter in your notebook.

1. Jenny saves ₱ 107.65 a week. How long will it take her to save ₱1,614.75?
2. The product of two numbers is 132. If one factor is 6, what is the other factor?
3. I am thinking of a number. Thrice my number minus 4 equals 44. What is my number?
4. There are 20 girls and 19 boys who will equally share the expenses for a bus trip that costs ₱ 4 504.50. How much will each pay?
5. Lei has a necklace 8.3 grams, a ring 6.5 grams, a bracelet 10grams and an earring 5.5 grams. If she sold these to an amount of ₱15,300.00, how much does each gram cost?

Problem Solving Involving Multiplication of Decimal Numbers and Money

I

Lesson

After going through this lesson, you are expected to solve multi-step routine and non-routine problems involving division and any of the other operations of decimals, mixed decimals, and whole numbers including money using appropriate problem solving strategies and tools.

The different steps that you have learned in the previous lessons on how to solve problems , will help you to go through with the different ypes of multi-step routine and non-routine problems.

Learning Task 1. Complete the given questions. Write your answer in your notebook.

Laurence is a businessman. Every **last** week of November, he depo sits ₱ 82 920.50 for the Christmas bonus of his employees. Each employee receives ₱ 6 378.50. How many employees are there?

1. What is asked?
2. What are the given?
3. What operation will be used?
4. Write the number sentence
5. Solve and find the correct answer.

D

To create a word problem, analyze the way you would solve it yourself. Use the given data stated in forming a question and decide on the best method or solution to use to get an answer.

Example: Create problem using the data given.

12 528 guavas harvested; 24 guavas in a basket;
total number of baskets used

Answer: There are 12 528 guavas harvested. Each basket has 24 guavas. What is the total number of baskets used?

Learning Task 2. Create problem using the data given. Write your answer in your notebook.

1. ₱ 1 275.00 - total sales in selling newspaper
   ₱ 25.00 - cost of a newspaper

2. 13 children 117 apples
   apples are divided equally

E

Learning Task 3. Solve the given problems. Write your complete solutions in your notebook.

1. Loren has 60 pens stored in boxes. If there are 5 boxes, how many pens must go in each box?
2. Aurum is inviting 16 friends to a party. He has 64 cakes. How many cakes will each friend get?
3. Art's rectangular garden is 25.5 m long and 18.5 m wide. If his fence needs posts that are 2m apart, how many posts does he need?
4. The gross sales in selling sweet potato is ₱ 2 450.00. Each kilo of sweet potato cost ₱ 12.50. How many kilos of sweet potato were sold?
5. Mr. Abner buys 12 gallons of pale green paint to do up the exteriors of his home. He is billed a total of ₱ 7 199.40 for his purchase. How much each gallons cost?

A

A multi-step routine problem solving involves using two or more arithmetic operations to solve problems that are practical in nature.

A multi-step non-routine problem is any complex problem that requires some degree of creativity or originality to solve. It is typically do not have an immediately apparent strategy for solving the problems because it can be solved in multiple ways and it requires HOTS questions.

Learning Task 4. Choose the letter of the correct answer. Write your answer in your notebook.

1. I am thinking of a number. Thrice my number minus 8 equals 88. What is my number?
   A. 26 B. 28 C. 30 D. 32
2. The mass of a plastic container together with 24 baseball is 19.25 kgs. If the mass of the container is 15 770 g, what is the mass of each baseball in kilogram?
   A. 0.145 kg B. 0.151 kg C. 0.158 kg D. 0.166 kg
3. Mang Cedrick brought 2 bags of garlic to market. One bag weighed 8 kgs. and the other bag weighed 6.5 kgs. He repacked the garlic in plastic bags of 0.25 kilogram per pack and sold each pack for ₱ 43.75. How much will he get if all the packs were sold?
   A. ₱ 2 237.50 B. ₱ 2 337.50 C. ₱ 2 437.50 D. ₱ 2 537.50
4. Five mangoes and one apple cost ₱ 77.50. One mango and 5 apples cost ₱ 111.50. How much does each mango cost?
   A. ₱ 10.50 B. ₱ 11.50 C. ₱ 12.50 D. ₱ 13.50
5. Samuel caught 3 big fish weighing 20.5 kgs., 15.25 kgs., and 18.75 kgs. He kept 13.25 kgs. for his family and delivered the rest equally in five markets in Lucena City. How many kgs. was delivered to each market?
   A. 13.75 kgs. B. 10.50 kgs. C. 8.25 kgs. D. 6.875 kgs.

Answer Key

WEEK 5
Lesson 1
Learning Task 1
1. 3.1160
2. 13.1242
3. 3.5568
4. 0.4000
5. 3.8674
Learning Task 2
1. 4.4125
2. 5.3592
3.3.7752
4.0.459
5. 0.0825
Learning Task3
1. 26 4. 207.50
2. 33.39 5. 116.64
3. 52
Learning Task 4
A. 1. 4 2. 1
B. 1. 7752.50
2. 1382.50
3. 0.18

WEEK 4
Learning Task 1
1. 26.656 gal
2. 0.25 gal
3. Oil is 1.833 heavier than gaso-line
Learning Task 2
1. 2,499.99 pesos
2. 2.1433 ha.
3. 2.9275 ha.
Learning Task 3
1. 9,350.85
3a. 465.74
3b. 34.26
Learning Task 4
1. C 4. B
2. A 5. A

WEEK 2
Lesson 2
Learning Task 1
1. $3($ $)-\frac{1}{2}=?$
2. $\left(\frac{1}{2}\right)\left(\frac{1}{2}\right)$
3. $\left(\frac{2}{4}\right)\left(\frac{1}{2}+4\right)$
4. $5-\left(\frac{2}{3}\right)\left(\frac{1}{6}\right)$
5. $8\left(\frac{2}{4}\right)\left(\frac{4}{3}\right)$
Learning Task 2
1. $\left(\frac{2}{4}\right)\left(\frac{12}{11}\right)=\frac{4}{7}$
2. $\left(5\frac{2}{9}\right)\left(\frac{27}{56}\right)=2\frac{11}{14}$
3. $\left(4\frac{2}{3}\right)\left(7\frac{1}{3}\right)=32\frac{4}{15}$
4. $2\left(\frac{8}{12}\right)\left(2\frac{4}{7}\right)=1\frac{12}{28}$
Learning Task 3
1. $45\frac{1}{2}$ m^2
2. $643\frac{1}{2}$

WEEK 3
Lesson 1
Learning Task 1
1. $1\frac{1}{6}$ 3. 25
$2.1\frac{2}{5}$ 4. $14\frac{2}{5}$
Learning Task 2
1. $4\frac{1}{2}$ 5. $2\frac{1}{4}$
2. $7\frac{2}{12}$ 6. $3\frac{20}{91}$
3. $45\frac{12}{15}$ 7. $2\frac{2}{21}$
4. $3\frac{22}{27}$ 8. $6\frac{2}{5}$
Learning Task 3
1. 11 2. $\frac{1}{24}$
3. $28\frac{4}{5}$
Learning Task 4

WEEK 1
Lesson 2
Learning Task 1
1. $7+(\frac{4}{5}+\frac{6}{7})$
2. $11-2\frac{2}{4}=8\frac{1}{4}$
3. $8\frac{4}{7}+\frac{11}{14}$
4. $6\frac{2}{8}-2\frac{2}{5}$
5. $14+14\frac{5}{7}$
Learning Task 2
1. $16\frac{7}{20}$ 3. $8\frac{11}{20}$
2. $7\frac{1}{4}$
Learning Task 3
Answers may vary
Learning Task 4

WEEK 1
Lesson 2
Learning Task 1
1. $7+(\frac{4}{5}+\frac{6}{7})$
2. $11-2\frac{2}{4}=8\frac{1}{4}$
3. $8\frac{4}{7}+\frac{11}{14}$
4. $6\frac{2}{8}-2\frac{2}{5}$
5. $14+14\frac{5}{7}$
Learning Task 2
1. $16\frac{7}{20}$ 3. $8\frac{11}{20}$
2. $7\frac{1}{4}$
Learning Task 3
Answers may vary
Learning Task 4

WEEK 1
Lesson 1
Learning Task 1
1. S 3. D 5. D
2. S 4. D
Learning Task 2
1. $\frac{2}{7}$ 6. $1\frac{2}{7}$
2. $1\frac{1}{5}$ 7. $\frac{2}{5}$
3. $\frac{1}{2}$ 8. $1\frac{2}{12}$
4. $\frac{42}{42}$ 9. $1\frac{20}{25}$
5. $\frac{7}{11}$ 10. $\frac{20}{29}$
Learning Task 3
1. $3\frac{8}{12}$ 4. $8\frac{11}{20}$
2. $8\frac{1}{20}$ 5. $10\frac{22}{120}$
3. $6\frac{17}{105}$

WEEK 3
Lesson 2
Learning Task 1
1. $9\frac{2}{8}\div\frac{2}{8}$ 4. 3
$\frac{1}{5}\div2\frac{1}{2}$
2. $15\frac{1}{2}\div\frac{22}{12}$ 5. 6
$\left(3\frac{1}{2}\right)\div2$
3. $12\frac{1}{2}\div4$
Learning Task 2
1. 96 pcs 3. 2 $\frac{11}{12}$
2. 22 cakes 4. 17 $\frac{1}{2}$
Learning Task 3

WEEK 5
Lesson 2
Learning Task 1
1. 3.98555 4. 0.00365
2. 0.66504 5. 0.324
3. 72.904
Learning Task 2
1. a. 45.6 b. 4.56 c. 0.456
2. a. 0.567 b. 0.0567
c. 0.00567 d. 0. 000567
Learning Task 3

10^1	10^2	10^3
48.6	486	4860
551.05	5510.5	55105
372.48	3724.8	37248
80.003	800.03	8000.3
54.813	548.13	5481.3

Learning Task 4
1. 0.456 3. 530
2. 3250 4. 572.7

Lesson 2
Learning Task 1
1. 37.5 2. 26.7 3. 330
Learning Task 2
1. 3.75 pesos 3. 24.8

WEEK 6
Learning Task 1
1. Understand and determine the given data or facts.
2. Know what is being asked in the problem
3. Make the number sentence and solve
4. Check, if the answer satisfy the problem.

Learning Task 2
1. 1, 382.25 pesos
2. 11, 895.00 pesos
3. 536,691.00 pesos

Learning Task 3
1. 2,366.00 pesos
2. 842.56 pesos
3. 806.25

Learning Task 4
Answer may vary

WEEK 7
Lesson 1
Learning Task 1
1. 260 2. 710 3. 520

Learning Task 2
1. 9 3. 8 5. 3
2. 24 4. 6 6. 7

Learning Task 3
1. 3.4 2. 3.09 3. 0.5

Learning Task 4
1. B 3. D 5. A
2. 59390 4. 81.9

Lesson 2
Learning Task 1
1, 5 3. 5,100 5. 372
2. 96 4. 625

Learning Task 2
1. 8.102 4. 0.06903
2.7.209 5. 0.263
3. 0.00096 6. 0.004943
Learning Task 3
1. 3,534.59 3. 60
2. 353.46
Learning Task 4
1.C 3. A 5. C
2. A 4. D

WEEK 8
Lesson 1
Learning Task 1
1. R 2. IR 3. R 4. IR 5. IR
Learning Task 2
1. Terminating 4. Non terminating
2. Terminating 5. Terminating
3. Non terminating
Learning task 3

1. 0.555 3. 2.75 5. $\frac{1}{2}$

WEEK 8
Lesson 2
Learning Task 1
1. Cost of each pair of pants
2. Cost of 6 T-shirts and 4 pairs of pants which is 5000.
Cost of T-shirt per piece is 250.00.
3. Addition , Subtraction and Division

4.[5000 - 6(250)] $\div 4 = N$
5. 875.00 pesos
Learning task 2

1. 129 2. 7
3a.1.12 b. 1,247.15
Learning Task 3
1. 17 pails 4. 25 weeks
2. 85kg 5. 108.6mi/hr
3. 151.20 pesos

WEEK 8
Lesson 3
Learning Task 1
1. Number of Employees
2. 82.920.50 deposited amount
3. 6,378.60 bonus of each employee

4. 82,920.50 $\div 6378.50 = N$
5. 13 employees
Learning Task 2
Answer may vary
Learning Task 3
1. 12 4. 196
2. 4 5. 599.95
3. 22

Learning Task 4
1. D 2. A 3. D 4. B 5. C

Reference

Abracia, Norma M. Ed.D; Acuña, Adoracion M. and Coronel, Carmelita C. *Mathematics for a Changing World 6.* Vibal Publishing House Inc. 2001

Agtarap, Myrna S. et al. Phoenix *Math for the 21st Century Learners Grade 6 K to 12*. Phoenix Publishing House, Inc. 2016

Banao, Magdalena M. *Enjoying Mathematics 6.* Merryland Publishing Corporation 2001.

Burgos, Jaime R., Perez, Marjoseph H, and Placer, Donnel P. *21st Century Mathletes 6 Textbook for Grade 6*. Vibal Group, Inc. 2016

Camitan, Alicia A. *Number Smart Quest for Excellence Worktext in Mathematics for Grade 5.* Rex Book Store. 2009

Castro, Isabel V., Coronel, Carmelita C., and Gallardo, Luz O. *Mathematics for Everyday Use 6 Textbook in Mathematics*. Dane Publishing House, Inc. 1999

De Guzman, Felipe V., Lopez, Amelia F., and Madrang, Dahlia D. *Math Connections 5*. The Library Publishing House Co. 2003

Del Fierro, Jong, *Power in Math 6.* Saint Mary's Publishing Corporation 2006.
Dela Cruz, Eduardo O. Jr. Ed.D. *Soaring 21st Century Mathematics 4*. Phoenix Publshing House, Inc. 2004

Licardo, Teresita L. Santos, Lilia T. and Patricio Yolanda L. *Mathematics Skillbook 6.* Cultural Publisher 2002

Perez, Marjoseph H, Placer, Donnel P., Burgos, Jaime R. and Dimaranan, Arsenio S. *21st Century MATHletes 6.* Vibal Group, Inc. 2016.

Riel, Teodora A. et al. *Number Smart Worktext in Mathematics 6*. Rex Book Store, Inc. 2009

Ursua, Alvin C. and Lumbre, Angelina P. *21st Century Mathletes 5 Textbook for Grade 5*. VIbal Group, Inc. 2016

Wright, Amella-Wright and Villamayor, Adela C. *Math for Life Worktext in Mathematics 4*. Rex Book Store. 2012

Wright, Amella-Wright and Villamayor, Adela C. *Math for Life Worktext in Mathematics 6.* Rex Book Store. 2012

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