Republic of the Philippines
Department of Education
Region I
Schools Division of Candon City
Patpata Elementary School
Patpata Primero, Candon City, Ilocos Sur

SELF-LEARNING MODULE IN MATHEMATICS 6

School Year 2026- 2027

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Grade and Section: _____

LEARNING COMPETENCY

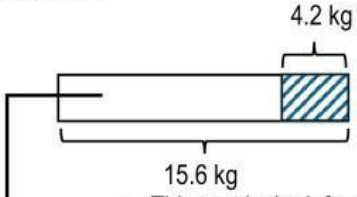
- Solve problems involving division of decimals that may or may not involve the other operations with decimals and/or whole numbers.

LESSON: MULTIPLICATION OF A DECIMAL BY A WHOLE NUMBER

Discussion:

A store has 15.6 kg of rice. It sells 4.2 kg and divides the remaining rice equally into 3 containers. How many kilograms of rice are placed in each container?

Illustration:



This part is the left portion of rice to be equally distributed into 3 containers.
This means that the left portion will be **divided by 3.**

Process:

15.6 – 4.2 = 11.4

```
     3.8
3/11.4
  -9
   24
  -24
    0
```

FINAL ANSWER: 3.8 kg
The decimal point in the dividend should be aligned with the answer.

Note: If the problem states to **distribute equally, divide equally and shared equally,** it means that you divide the problem.

LESSON: DIVISION BY A DECIMAL BY ANOTHER DECIMAL

Example: .05.|4.25. → 5|425 → move the decimal point first of the divisor. The number of movement in the divisor should be the same as the number of movement in the dividend. Then do same process as above.

```
     85
05./425.
   -40
     25
    -25
      0
```

ASSESSMENT:

1. A school bought **24.6 liters of juice**. The juice will be placed equally into **6 containers**. How many liters of juice will each container have?

2. A farmer harvested **35.5 kg of vegetables**. He sold **11.5 kg** and divided the remaining vegetables equally among **6 baskets**. How many kilograms are in each basket?

LIVEWORKSHEETS

LEARNING COMPETENCIES:

- Obtain products that result from multiplying different combinations of fractions, whole numbers, and mixed numbers.
- Solve multi-step problems involving multiplication that may or may not involve addition or subtraction of different combinations of fractions, whole numbers, and mixed numbers.

LESSON: MULTIPLICATION OF A SIMPLE FRACTION BY ANOTHER SIMPLE FRACTION

Example:

$$\frac{2}{3} \times \frac{\cancel{4}^{1}}{\cancel{8}^{2}} =$$

Step 1: Simplify the two fractions vertically.
$^2/_3$ is now in the lowest term/simplified form.
$^4/_8$ can still be simplified. So it turns ½.

How to simplify? *This is converting the given fraction using smaller numbers without changing the value of the fraction.*
To do it, find a number that exactly divides both the numerator and denominator.
In 4/8, both 4 and 8 can be exactly divided by 4. If you divide both, then it will be converted to ½.

$$\frac{{}^{1}\cancel{2}}{3} \times \frac{\cancel{4}^{1}}{\cancel{8}^{2\,1}} =$$

Step 2: Simplify the fractions diagonally.
2 and 2 can still be simplified to 1 and 1.
1 and 3 is now on the lowest term.

$$\frac{{}^{1}\cancel{2}}{3} \times \frac{\cancel{4}^{1}}{\cancel{8}^{2\,1}} = \frac{1}{3}$$

Step 3: Multiply both numerators and both denominators.

ASSESSMENT: Solve the following:

1. $\frac{4}{6} \times \frac{1}{2} =$
2. $\frac{2}{5} \times \frac{1}{4} =$
3. $\frac{4}{8} \times \frac{5}{6} =$
4. $\frac{1}{6} \times \frac{3}{9} =$

LESSON: MULTIPLICATION OF A SIMPLE FRACTION BY A WHOLE NUMBER

Example:

$$\frac{2}{3} \times 6 = \Rightarrow \frac{2}{3} \times \frac{6}{1} =$$

Step 1: Make the whole number over 1.
Step 2: Apply same step as above.

$$\frac{2}{{}^{1}\cancel{3}} \times \frac{\cancel{6}^{2}}{1} = \frac{4}{1} \text{ or } 4$$

ASSESSMENT: Solve the following:

1. $\frac{4}{6} \times 5 =$
2. $4 \times \frac{1}{4} =$
3. $2 \times \frac{5}{6} =$
4. $\frac{1}{6} \times 8 =$

LESSON: MULTIPLICATION OF A SIMPLE FRACTION BY A MIXED NUMBER

Example:

$$\frac{2}{3} \times 2\frac{4}{5} =$$

$$2\frac{{}^{+}4}{{}_{\times}5} = \frac{14}{5}$$

Step 1: Change the mixed number to improper fractions.
To change it, multiply the denominator by the whole number then add the answer to the numerator. That becomes the new numerator. Then copy the same denominator.

LIVEWORKSHEETS

$$\frac{2}{3} \times \frac{14}{5} = \frac{28}{15}$$

$$\begin{array}{r} 1 \\ 15\overline{)28} \\ -15 \\ \hline 13 \end{array} \quad 1\frac{13}{15}$$

Step 2: This becomes the new equation. Then apply again same process as above.

If you are instructed to change the answer to mixed number, simply divide the numerator by the denominator. The quotient becomes the whole number, the remainder becomes the numerator and copy same denominator.

ASSESSMENT: Solve the following:

1. $\frac{4}{6} \times 5\frac{1}{2} =$ 2. $4\frac{3}{5} \times \frac{1}{4} =$ 3. $2\frac{1}{3} \times \frac{5}{6} =$ 4. $\frac{1}{6} \times 8\frac{4}{5} =$

Special Idea: In word problems, the word "of" means to multiply.
Example: Gemma has 2/3 slice of cake. One-half of it will be shared to his cousin. How much part of the cake will be shared to his cousin?

On the second statement, "one-half of it" means one-half of 2/3. This means ½ x 2/3. Then do the process.

LEARNING COMPETENCIES

- Divide different combinations of fractions, whole numbers, and mixed numbers.
- Solve multi-step problems involving division of different combinations of fractions, whole numbers, and mixed numbers that may or may not involve any of the other operations of fractions.

DIVIDING A SIMPLE FRACTION BY ANOTHER SIMPLE FRACTION

$$\frac{2}{3} \div \frac{3}{5} =$$

In **division of fractions**, the first step is to **flip the divisor (second fraction)**
Then, <u>change division sign to multiplication</u>.
Then, apply the process of **multiplying fractions**.

$$\frac{2}{3} \times \frac{5}{3} = \frac{10}{9} \text{ or } 1\frac{1}{9}$$

ASSESSMENT: Solve the following:

1. $\frac{4}{6} \div \frac{1}{2} =$ 2. $\frac{2}{5} \div \frac{1}{4} =$ 3. $\frac{4}{8} \div \frac{5}{6} =$ 4. $\frac{1}{6} \div \frac{3}{9} =$

DIVIDING A SIMPLE FRACTION BY A WHOLE NUMBER

$$\frac{2}{3} \div 5 =$$

To divide simple fractions by a whole number, place **<u>1</u>** to the whole number as the numerator to form its reciprocal (*kabaliktaran*). Then, change division sign to multiplication. Then do same process as above.

$$\frac{2}{3} \times \frac{1}{5} = \frac{2}{15}$$

Another example

$$8 \div \frac{1}{5} =$$

$$\frac{8}{1} \times \frac{5}{1} = \frac{40}{1} \text{ or } 40$$

In this example, make the whole number over 1. Then flip the second fraction then do same process.

ASSESSMENT: Solve the following:

1. $\frac{4}{6} \div 6 =$ 2. $3 \div \frac{1}{4} =$ 3. $\frac{4}{8} \div 10 =$ 4. $8 \div \frac{3}{9} =$

LIVEWORKSHEETS

DIVIDING A SIMPLE FRACTION BY A MIXED NUMBER

Example:

$$\frac{5}{6} \div 1\frac{2}{3} =$$

To divide a simple fraction by a mixed number, change the mixed number first to improper fractions. Then, apply same process as "**Dividing Simple a Fraction by a Simple Fraction**".

$$\frac{5}{6} \div \frac{5}{3} = \Rightarrow \frac{5}{6} \times \frac{3}{5} = \Rightarrow \frac{{}^{1}\cancel{5}}{{}_{2}\cancel{6}} \times \frac{\cancel{3}^{1}}{\cancel{5}_{1}} = \Rightarrow \frac{{}^{1}\cancel{5}}{{}_{2}\cancel{6}} \times \frac{\cancel{3}^{1}}{\cancel{5}_{1}} = \frac{1}{2}$$

WORD PROBLEM APPLICATION

1. Maria has $\frac{3}{4}$ liter of juice. She pours the juice into glasses that each hold $\frac{1}{4}$ liter. How many glasses can she fill?

   $$\frac{3}{4} \div \frac{1}{4} = \frac{3}{4} \times \frac{4}{1}$$ ***continue answering...***

2. Ana has $\frac{2}{3}$ meter of ribbon. She cuts it into pieces that are each $\frac{1}{6}$ meter long. How many pieces can she make?

LEARNING COMPETENCY

- Describe the relationship between quantities using ratio for:
  a. part-whole relationships
  b. part-part relationships."

DISCUSSION

There are 7 boys and 8 girls in a room.

What is the ratio of boys to girls? 7:8 Why not 8:7? Because in the question, boys stated first.

- This example is a **part-part relationship** wherein <u>one part of the number of children is compared to another part of children.</u>

What is the ratio of boys to the number of children? 7:15

- This example shows **part-whole relationship** because the one part is compared to the whole number of children.

Ratio is a comparison of two or more quantities (number of members).

LEARNING COMPETENCY

- Express one number as a fraction of another given their ratio, and vice versa.

DISCUSSION

Ratios can be expressed in fraction form. To do it, change the colon (:) to fraction bar.

Example: *There are 7 boys and 8 girls in a room.*

What is the ratio of girls to boys? The answer is 8:7. In fraction form, change the colon to fraction bar. That is: $\frac{8}{7}$

LEARNING COMPETENCIES

- Identify and write equivalent ratios.
- Solve problems involving ratio.

DISCUSSION

Equivalent Ratios are comparison of ratios with the same value. How do you know if ratios are equivalent?

2 : 8 1 : 4 Outer numbers (2 and 4) are called **extremes**.

Inner numbers (8 and 1) are called **means**.

Ratios are equivalent if the product of the means and the product of the extremes are equal.

2 x 4 = 8; 8 x 1 = 8 The products are the same means the ratios are equivalent.

If the ratios are expressed in **fractions**, do cross multiplication. If the cross products are the same, then the ratios are **equivalent**.

$$\frac{2}{8} \times \frac{1}{4} \qquad 2x4 = \mathbf{8}; 8x1 = \mathbf{8}$$

LIVEWORKSHEETS