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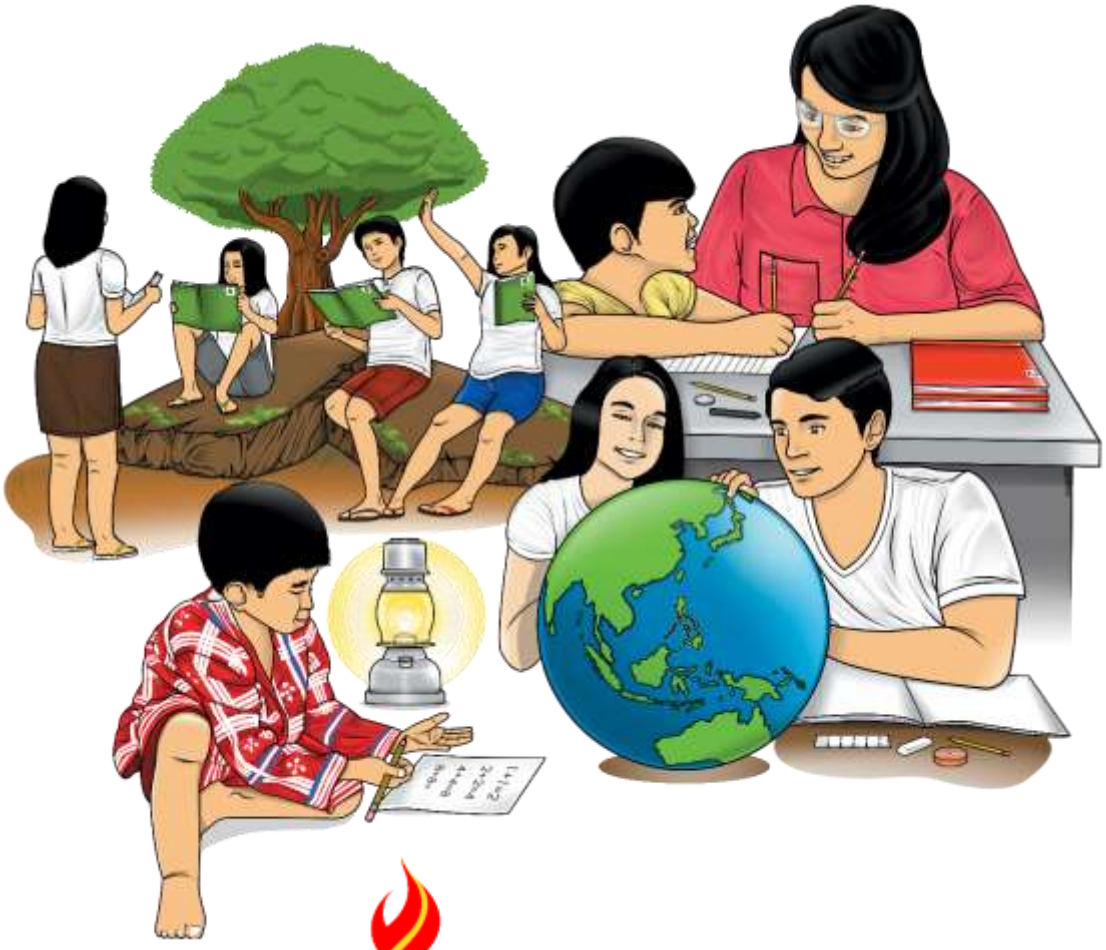
Mathematics

Quarter 1 – Module 16: Dividing Simple Fractions and Whole Numbers



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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 SLMS 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 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.

What I Need to Know

In this module, you are going to gain an understanding on dividing whole number by a fraction and vice versa and simple fractions by another fraction. Learning division of fractions is important simply because we always encounter daily real-life problems involving fractions**. M5NS-Ii-96.1**

After going through this module, you are expected to divide whole numbers by a fraction and vice versa and simple fractions by another fraction.

What I Know

Below are test items on division of fractions, which surely you already have an idea about. Find out if you still remember!

Directions: Choose the letter of the correct answer. Use your activity notebook.

1) What is the quotient of $\frac{2}{3} \div \frac{1}{3}$?

A. $\frac{1}{2}$ B. $\frac{2}{6}$ C. 2 D. $2\frac{1}{3}$

2) Find the quotient of $\frac{8}{5} \div \frac{1}{5}$?

A. 7 B. 8 C. 9 D. $9\frac{1}{25}$

3) Divide 9 by $\frac{1}{6}$.

A. 55 B. 54 C. 53 D. $54\frac{1}{6}$

4) Find the quotient of $8 \div \frac{1}{3}$?

A. 22 B. 23 C. 24 D. $24\frac{1}{3}$

5) What is the quotient of $\frac{3}{8} \div \frac{2}{8}$?

A. $\frac{6}{64}$ B. $\frac{4}{3}$ C. $\frac{3}{2}$ D. $\frac{6}{64}$

6) Divide 25 by $\frac{1}{5}$.

A. 125 B. 5 C. 126 D. $125\frac{1}{5}$

7) What is the quotient of $\frac{1}{9} \div 9$?

A. 81 B. $\frac{1}{81}$ C. 18 D. $81\frac{1}{9}$

8) Find the quotient of $\frac{7}{8} \div \frac{2}{5}$.

A. $2\frac{1}{6}$ B. $2\frac{3}{8}$ C. $2\frac{3}{16}$ D. $\frac{14}{40}$

9) 40 is the quotient of what division fraction?

A. $24 \div \frac{3}{5}$ B. $15 \div \frac{3}{7}$ C. $12 \div \frac{1}{5}$ D. $\frac{8}{2} \div \frac{5}{3}$

10) $8\frac{4}{7}$ is the quotient of the division fraction_____?

A. $\frac{2}{9} \div 6$ B. $\frac{5}{12} \div \frac{4}{5}$ C. $\frac{15}{14} \div \frac{1}{8}$ D. $\frac{2}{3} \div \frac{9}{5}$

Lesson 1 Dividing Simple Fractions and Whole Numbers

What's In

In the previous module, you have learned the reciprocal of a number and the multiplicative inverse of each other. To find the reciprocal of a fraction, interchange the numerator and denominator. Let us have a review of the previous lesson;

Let us take $\frac{\mathbf{2}}{\mathbf{3}}$. The reciprocal of $\frac{\mathbf{2}}{\mathbf{3}}$ is $\frac{\mathbf{3}}{\mathbf{2}}$.

Multiplying the number and its reciprocal, we have $\frac{2}{3} \times \frac{3}{2} = \frac{6}{6} = 1.$

So, $\frac{\mathbf{2}}{\mathbf{3}}$ and $\frac{3}{2}$ are reciprocals or the multiplicative inverse of each other.

Let us study the example below:

If $\frac{1}{2} \times \frac{\square}{\square} = 1$, what is the missing factor?

If $\frac{36}{5} \times 7\frac{1}{5} = 1,\ why\ ?\ Explain.$

Remember,
If the product of two numbers is 1, then they are reciprocals of one another.

What's New

Lesson 1A : Dividing Whole Number by a Fraction and Vice Versa

Lesson 1B: Dividing Simple Fractions by another Fraction

Study the examples below on dividing whole number by a fraction and vice versa.

Lesson 1*A* $4 \div \frac{3}{5} = \frac{4}{1} x \frac{5}{3} = \frac{20}{3} or 6\frac{2}{3}$

Lesson 1B $\frac{4}{7} \div \frac{2}{3} = \frac{4}{7} x \frac{3}{2} = \frac{12}{14} or \frac{6}{7}$

Solve these problems in your activity notebook. Then, compare your answer with the solution presented on the next page.

Lesson 1A Jose has 2 hectares of farmland. He wants to subdivide it into $\frac{2}{3}$ hectares to plant different crops. Into how many parts can he divide his farmland?

Lesson 1B A $\frac{5}{6}$ meter rope is to be cut into pieces that are $\frac{1}{12}$ meter long. How many pieces can be cut from the rope?

What Is It

Looking back at the problems above we should write first the number sentence to identify the dividend and the divisor.

Lesson 1A Jose has 2 hectares of farmland. He wants to subdivide it into $\frac{2}{3}$ hectares to plant different crops. Into how many parts can he divide his farmland?

In your number sentence change the whole number into a fraction by writing the denominator which is 1. To divide fractions, change the divisor to its reciprocal and change the operation to multiplication. Then multiply both the numerator then the denominator.

The number sentence is : $2 \div \frac{2}{3} = N$

For example: To divide $2 \div \frac{2}{3} = N$;

$2 \div \frac{2}{3} = N \longrightarrow$ *Change the whole number to a fraction with a denominator of 1.*

$\frac{2}{1} \times \frac{3}{2} = N \longrightarrow$ *Find the reciprocal of the denominator and change the operation sign to multiplication*

$\frac{6}{2} = N \longrightarrow$ *multiply the fractions*

$3 = N$ or $N = 3 \longrightarrow$ *reduce the answer to the lowest term.*

Just follow the steps on how to divide whole number by a fraction.

To divide the whole number by a fraction:

a) Change the whole number to a fraction with a denominator of 1.
b) Change the divisor to its reciprocal and also the operation to multiplication.
c) Multiply both the numerator and denominator.
d) Reduce the answer to the lowest term, if necessary.

Lesson 1B A $\frac{5}{6}$ meter rope is to be cut into pieces that are $\frac{1}{12}$ meter long. How many pieces can be cut from the rope?

The number sentence is $\frac{5}{6} \div \frac{1}{12} = N$

In your number sentence, change the divisor to its reciprocal and change the operation to multiplication. Then multiply both the numerator then the denominator.

Solution: $\frac{5}{6} \div \frac{1}{12} = \frac{5}{6} \times \frac{12}{1}$

$$= \frac{5 \, x \, 12}{6 \, x \, 1} = \frac{60}{6} = 10$$

So 10 pieces, each $\frac{1}{12}$ meter long, can be cut from a $\frac{5}{6}$ meter rope.

Another example:

Divide: $\frac{3}{8} \div \frac{3}{5}$

Solution:

$\frac{3}{8} \div \frac{3}{5} = \frac{3}{8} \times \frac{5}{3}$

$\frac{3}{8} \times \frac{5}{3} = \frac{15}{24}$ or $\frac{5}{8}$

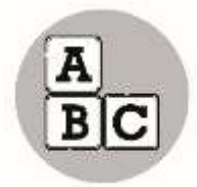
Always change the answer to lowest term or simplify the answer.

Independent Activity 1

For mastery and deeper understanding, perform the activity below.

Remember these steps on how to divide simple fractions:

a. to divide simple fractions, change the divisor to its reciprocal;
b. change the division sign to multiplication sign;
c. multiply the numerators then multiply the denominators; and
d. express the answer in the lowest term, if necessary.



What's More

Directions: Solve each problem and write the letter that corresponds to your answer on the blank below.

V $\frac{4}{5} \div \frac{1}{7}$

E $\frac{11}{12} \div \frac{2}{5}$

N $\frac{3}{9} \div \frac{2}{9}$

D $7 \div \frac{5}{11}$

I $\frac{9}{15} \div 5$

$15\frac{2}{5}$	$\frac{3}{25}$	$5\frac{3}{5}$	$\frac{3}{25}$	$15\frac{2}{5}$	$2\frac{7}{24}$	$1\frac{1}{2}$	$15\frac{2}{5}$

Independent Activity 2

Test your skills again. Find the missing number that will complete the expressions.

Directions: Divide the following fractions. Fill each box with the correct number.

1) $\frac{2}{8} \div \frac{1}{3} = \frac{2}{8} \times \frac{\square}{1} = \frac{6}{\square}$

2) $\frac{7}{11} \div \frac{3}{7} = \frac{7}{11} \times \frac{7}{\square} = \frac{49}{\square}$

3) $4 \div \frac{3}{4} = \frac{4}{\square} \times \frac{4}{3} = \frac{\square}{3}$

4) $3\frac{3}{5} \div \frac{1}{5} = \frac{18}{5} \times \frac{5}{\square} = \frac{\square}{5}$

5) $\frac{12}{17} \div 5 = \frac{12}{17} \times \frac{1}{\square} = \frac{12}{\square}$

What I Have Learned

Let us check how far you have understood the two lessons.

A. Apply what you have learned to the given expressions: $2 \div \frac{2}{9} = ?$

1) The whole number 2 will be changed to: _____
2) The reciprocal of $\frac{2}{9}$ is : _____
3) The quotient is: _____

B. If the given fraction form is : $\frac{5}{8} \div \frac{2}{7}$, what is the quotient?

1) Which fraction will be changed to its reciprocal form? _____
2) Give the product of the numerator: _____
3) Give the product of the denominator: _____
4) Finally, what is the quotient of the given expression? _____

What I Can Do

Do you still need more practice? Here is another. I know you can do it!

Directions: Find the quotient, and reduce the answer to the lowest term.

1) $\frac{1}{7} \div 4 =$ _____
2) $6 \div \frac{2}{7} =$ _____
3) $\frac{3}{5} \div 5 =$ _____
4) $\frac{7}{9} \div \frac{5}{6} =$ _____
5) $\frac{10}{12} \div \frac{3}{4} =$ _____
6) $8 \div \frac{5}{8} =$ _____
7) $3 \div \frac{1}{6} =$ _____
8) $\frac{3}{4} \div \frac{2}{5} =$ _____
9) $\frac{10}{9} \div \frac{1}{3} =$ _____
10) $\frac{1}{3} \div 3 =$ _____

Assessment

Are you confident now to take the test? Very well! Now enjoy answering!

Test I. **Directions:** Choose the letter of the correct answer.

1) Find the quotient of $\frac{11}{12} \div \frac{3}{4}$.

A. $1\frac{2}{9}$ B. $\frac{33}{48}$ C. $1\frac{33}{48}$ D. $1\ \frac{1}{9}$

2) What is the quotient of $\frac{5}{12} \div \frac{4}{5}$?

A. $\frac{20}{60}$ B. $\frac{25}{48}$ C. $\frac{9}{7}$ D. $\frac{15}{24}$

3) Divide 12 by $\frac{1}{5}$.

A. 55 B. 50 C. 60 D. 40

4) Divide 15 by $\frac{3}{7}$.

A. 34 B. 35 C. 36 D. 37

5) Find the missing dividend to complete this number sentence: $\frac{2}{9} \div \square = \frac{1}{27}$.

A. 7 B. 6 C. 3 D. 5

Test II. **Directions**: Match the items in Column A with their corresponding answers in Column B. Write the letter of the correct answer on a separate sheet of paper.

Column A	Column B
1) $\frac{2}{5} \div 4$	A. $\frac{3}{6}$
2) $7 \div \frac{5}{7}$	B. $\frac{1}{10}$
3) $\frac{4}{9} \div \frac{2}{3}$	C. $9\frac{4}{5}$
4) $\frac{5}{6} \div \frac{1}{8}$	D. $7\frac{1}{2}$
5) $6 \div \frac{4}{5}$	E. $6\frac{2}{3}$
	F. $\frac{2}{3}$

Additional Activities

Directions: Supply the missing number to complete the number sentence correctly. Write your answer on the box.

1) $\frac{7}{9} \div \frac{7}{3} = \frac{\square}{\square}$

2) $\frac{2}{8} \div \frac{\square}{\square} = \frac{1}{2}$

3) $2 \div \frac{1}{8} = \square$

4) $\square \div \frac{2}{3} = 9$

5) $\frac{3}{5} \div \square = \frac{3}{20}$

6) $\frac{4}{5} \div \frac{2}{3} = \frac{\square}{\square}$

7) $\frac{4}{9} \div \frac{2}{7} = \frac{\square}{\square}$

8) $5 \div \frac{2}{3} = \square$

9) $\square \div \frac{2}{4} = 10$

10) $\frac{2}{8} \div \square = \frac{2}{16}$ or $\frac{1}{8}$

Answer Key

What I have Learned

A. $2 \div \frac{2}{9} = ?$

1. $\frac{2}{1}$
2. $\frac{9}{2}$
3. $\frac{2}{1} \times \frac{9}{2} = \frac{18}{2} = 9$

B. $\frac{5}{8} \div \frac{2}{7} = ?$

1. $\frac{2}{7}$
2. Numerator= 35
3. Denominator= 16
4. $\frac{5}{8} \times \frac{7}{2} = \frac{35}{16}$ or $2\frac{3}{16}$

What I Can Do

1) $\frac{1}{28}$ 6) $12\frac{4}{5}$

2) $\frac{42}{2}$ or 21 7) 18

3) $\frac{3}{25}$ 8) $1\frac{7}{8}$

4) $\frac{42}{45}$ or $\frac{14}{15}$ 9) $3\frac{1}{3}$

5) $\frac{40}{36}$ or $1\frac{4}{36}$ or $1\frac{1}{9}$ 10) $\frac{1}{9}$

Independent Activity 1

D I V I D E N D

Independent Activity 2

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

2. $\frac{7}{11} \div \frac{3}{7} = \frac{7}{11} \times \frac{7}{3} = \frac{49}{33}$

3. $4 \div \frac{3}{4} = \frac{4}{1} \times \frac{4}{3} = \frac{16}{3}$

4. $3\frac{3}{5} \div \frac{1}{5} = \frac{18}{5} \times \frac{5}{1} = \frac{90}{5}$

5. $\frac{12}{17} \div 5 = \frac{12}{17} \times \frac{1}{5} = \frac{12}{85}$

What I Know

1. C
2. B
3. B
4. C
5. C
6. A
7. B
8. C
9. A
10. C

Assessment

Test I

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

Test II

1. B
2. C
3. F
4. E

Additional Activities

1) $\frac{1}{3}$

2) $\frac{1}{2}$

3) 16

4) 6

5) 4

6.) $1\frac{1}{5}$

7) $1\frac{5}{9}$

8) $7\frac{1}{2}$

9) 5

10) 2

References

Yusuf. 2020. "Multiplying And Dividing Fraction". Slideshare.Net. https://www.slideshare.net/yusufedu/multiplying-and-dividing-fraction-151731422.

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