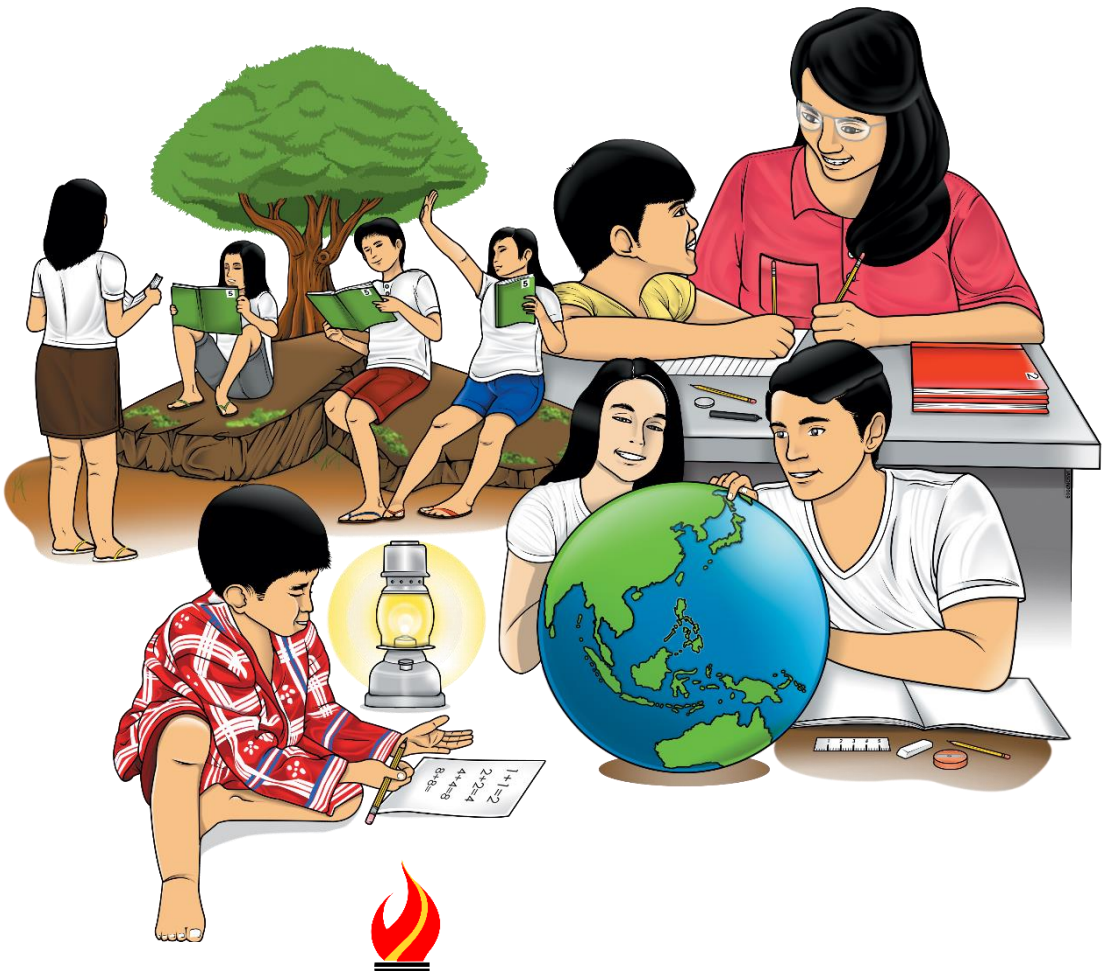
3

DepED
DEPARTMENT OF EDUCATION

Mathematics

Quarter 2 – Module 3:
Properties of Multiplication



ALTERNATIVE DELIVERY MODE
ADM

Mathematics – Grade 3
Alternative Delivery Mode
Quarter 2 – Module 3: Properties of Multiplication
First Edition, 2020

Published by the Department of Education
Secretary: Leonor Magtolis Briones
Undersecretary: Diosdado M. San Antonio

Development Team of the Module

Writers: Ma. Loida Embalsado, Marichu C. Tumawis, Marie Cris B. Plaza
Editors: Arnel S. Zaragosa, Jeremias C. Ceniza, Gina G. Silvestre
Elma C. Prudente, Annie Fel Lingatong, Edgardo Dondon S. Lorenzo,
Ailyn Verula-Ponce
Reviewers: Helen C. Ugay, Angeline A. Dayaganon, Evelyn P. Lucas,
Divilyn M. Rodriguez, Eduardo Jr. A. Eroy, Edgardo D. Pamugas III,
Alemer O. Veloso, Menard M. Arenas
Illustrators: Dennis Macaubos, Alfie Valenteros, Christian Loyd Alfuerto,
Pit Ybanez
Layout Artist: Elizalde L. Piol
Management Team: Allan G. Farnazo, Alona C. Uy, Mary Jeanne B. Aldeguer, Maria Gina F. Flores, Analiza C. Almazan, Arnel S. Zaragosa, Ma. Cielo D. Estrada, Illuminado T. Boiser, Maria Liza I. Berandoy, Jeremias C. Ceniza

Printed in the Philippines by _____

Department of Education – Region XI

Office Address : F. Torres St., Davao City

Telefax : (082) 291-1665; (082) 221-6147

E-mail Address : region11@deped.gov.ph * lrms.regionxi@deped.gov.ph

3

Mathematics

Quarter 2 – Module 3:
Properties of Multiplication

DepED
DEPARTMENT OF EDUCATION

Introductory Message

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

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

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

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

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

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

Thank you.

What I Need to Know

This module was designed and written with you in mind. It is here to help you master on describing one's drawing about the narratives listened to through composition. The scope of this module permits it to be used in many different learning situations. The language used recognizes your diverse vocabulary backgrounds. The lessons are arranged to follow the standard sequence of the course but the order in which you read them can be changed to correspond with the Mathematics Grade 3 learning materials you are using.

After going through this module, you are expected to:

- illustrate the properties of multiplication in relevant situations (commutative property, distributive property or associative property).

Enjoy your journey. Good luck!

What I Know

Choose the letter of the correct answer. Write your answers on a separate sheet of paper.

1. What is the missing factor in 7 x 8 = ___ x 7?
   a. 10 c. 8
   b. 7 d. 6

2. What property of multiplication is illustrated in 9 x 7 = 7 x 9?
   a. Identity Property
   b. Commutative Property
   c. Distributive Property
   d. Associative Property

3. What is the missing factor in 2 x (10 + 8) = (2 x __) + (2 x 8)?
   a. 10 c. 8
   b. 7 d. 2

4. What property of multiplication is being illustrated:
   3 x (9 x 2) = (3 x 9) x 2?
   a. Identity Property
   b. Commutative Property
   c. Distributive Property
   d. Associative Property

5. Which of the following illustrates Distributive Property?
   a. 3 x (4 + 7) = (3 x 4) + (3 x 7)
   b. 3 x 4 = 4 x 3
   c. (3 x 4) x 7 = 3 x (4 x 7)
   d. 3 x (4 x 7) = 3 x (4 + 7)

Lesson 1 Illustrates the Properties of Multiplication in Relevant Situations

Illustrating the properties of multiplication is one way of using our mathematical skills in problem solving. You will encounter numbers in which your reasoning and thinking skills will be challenged. As a Grade 3 learner, you will learn to illustrate numbers by using the properties of multiplication in some relevant situations. It will help develop creative thinking skills to make real-life situations easier for you to handle.

In this lesson, you will know the properties of multiplication that will help make math problems easier to solve. These are Commutative, Associative, and Distributive properties.

So take a look and let's learn more about this topic.

What's In

You will recall the basic facts in multiplication by answering the following which you have learned in your previous lesson.

Direction: Choose the letter of the correct answer.

1.) 5 x _____ = 50

2.) 3 x 9 = _____

3.) 6 x _____ = 30

4.) 8 x _____ = 64

5.) 10 x 8 = _____

6) 9 x _____ =45

7.) 7 x 7 = _____

8.) 4 x _____ = 36

9.) 2 x _____ = 18

10.) 10 x _____ = 90

What's New

Read the problem below.

Andy and Loida work in a bakery shop. Andy has to prepare for a customer an order of 6 boxes with 5 loaves of bread per box. On the other hand, Loida has accepted from another customer an order of 5 boxes with 6 loaves of bread per box. Who has more bread to prepare?

1. What order does Andy have to prepare?

Answer: ___ boxes of ___ loaves of bread per box.

2. What order does Loida have to prepare?

Answer: ___ boxes of ___ loaves of bread per box.

What is the multiplication sentence for Andy's work?

Answer: ____ x ____ = n

What is the multiplication sentence for Loida's work? 5.

Answer: ____ x ____ = n

What is the product?

Andy: (multiplication sentence) ____ x ____ = ____

(repeated addition) ___+___+___+___+___ +___ = _____

Loida: (multiplication sentence) ____ x ____ = ____

(repeated addition) ____+____+____+____+____ = _____

Answer to the problem question: Who has more loaves of bread to prepare?

_____

_____

What is It

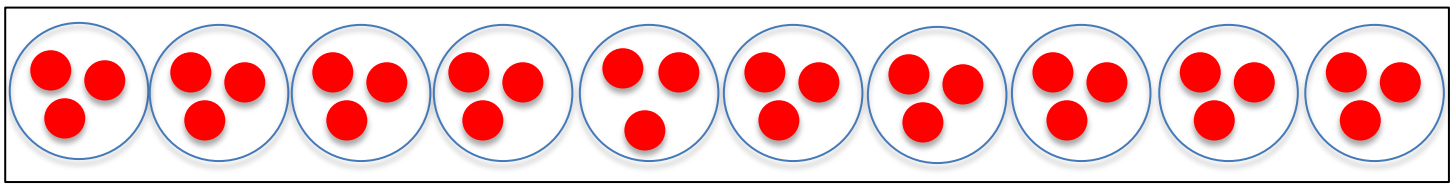
In Activity 1, if you answered that Andy and Loida have the same number of loaves of bread to prepare then you are correct!

The multiplication phrases "5 x 6" and "6 x 5" are both equal to 30. This illustrates the Commutative Property of Multiplication.

In this lesson we will discuss the three Properties of Multiplication:

A. Commutative Property

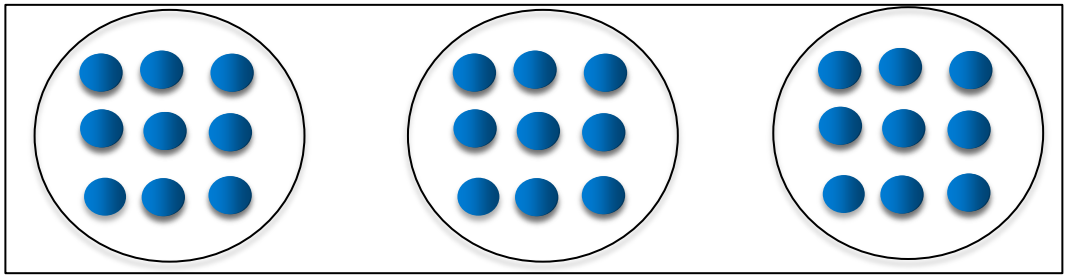
Study the given data. Write the multiplication sentence for each set of object.



9 x 3

Multiplication sentence:

_____



3 x 9

Multiplication sentence:

_____

If you are to put a relation symbol in between the two number sentence, what would that be: >, < or =? Why?

How did you determine the pairs of multiplication facts?

Why did you say that the numbers are in pair?

What are these pairs of numbers?

Let's study another example:

3 x 4 is equal to 4 x 3

12 12

Therefore: 3 x 4 = 4 x 3

12 = 12

What did you notice about the factors?

How about the product?

The position of the factors changes but the product is the same.

This property of multiplication is called Commutative Property.

What are the three 1 - digit numbers?

What did you do on the first circle?

What did you do on the second circle?

What did we use to group the factors?

Did we use the same numbers?

What can you say about the answer?

Another example:

Multiply, 2 x 4 x 6

Step 1: Enclose the two factors to be multiplied first

(2 x 4) x 6 or 2 x (4 x 6)

Step 2: Multiply first the factors enclosed in parenthesis

(2 x 4) x 6 2 x (4 x 6)

8 x 6 2 x 24

Step 3: Multiply the remaining factors.

8 x 6 = 48 2 x 24 = 48

When three numbers are multiplied, the product is the same regardless of the grouping of the factors.

B. Distributive Property

Read the situation:

I have2 sets of 59 ribbons. How many ribbons do I have in all?

How can we get the answer to this problem?

Study the answer of 2 x 59 using repeated addition.

59 + 59

Another way is by using the expanded form.

Multiply 50 by 2 and 9 by 2. Write the partial products.

Add the partial products to get the final product.

$$\begin{array}{rcrcr} 59 & = & 50 & + & 9 \\ \times\ 2 & = & \times\ 2 & + & \times\ 2 \\ \hline & & 100 & & 18 \end{array}$$

So, 100 + 18 = **118**

Let's study another example:

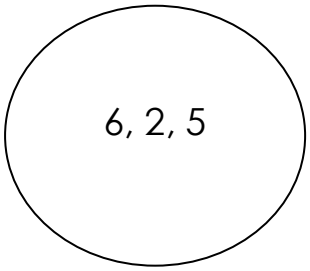
$$\begin{array}{rcrcr} 1.)\ 12 & = & 10 + 2 & \Rightarrow & 12 = 10 + 2 \\ \times\ 4 & & \times\ 4 & & \times\ 4 \quad \times\ 4 + \times\ 4 \\ \hline 48 & & & & 48 \quad 40 \quad 8 \end{array}$$

C. Associative Property

We have three 1- digit number. The numbers are 6, 2, 5.

Study the illustration

Form two (2) circles on a piece of paper.

1. 

Multiply the first and second numbers.

6 x 2

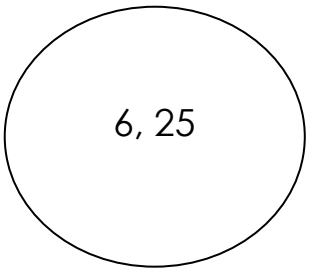
Then, multiply your answer to the third number.

(6 x 2) x 5 =

What is the answer?

(6 X 2) x 5

12 x 5 = 60

1. 

Multiply the second digit and third digit.

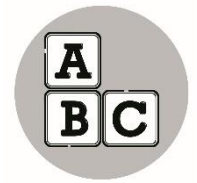
6 x (2 x 5)

Then, multiply their product with the first digit.

What is the answer?

6 x (2x5) =

6 x 10 = 60



What's More

Match the properties found in the box to each item below that illustrates its meaning.

A. Commutative Property
B. Distributive Property
C. Associative Property

____1. 5 x (6 x 7) = (5 x 6) x 7
____2. 8 x 2 = 2 x 8
____3. (10 + 8) x 7 = (10 x 7) + (8 x 7)

____4. (2 x 5) + (2 x 7) = (5 + 7) x 2
____5. 28 x 30 = 30 x 28
____6. 2 groups of 10 is equal to 10 groups of 2
____7. 15 x 9 = (10 + 5) x 9 = (10 x 9) + (5 x 9)
____8. (5 x 20) x 2 = 5 x (20 x 2)
____9. 3 x (4 x 5) = (3 x 4) x 5
____10. 6 x (7 x 3) = 6 x 21

What I Have Learned

What are the three Properties of Multiplication?

There are three properties involving multiplication that will help make problems easier to solve. They are Commutative, Associative and Distributive Properties.

_____ states that the product of three or more numbers remains the same regardless of how the numbers are grouped.

_____ is multiplying the sum of two or more addends by a number will give the same result as multiplying each addend individually by the number and then adding the product together.

_____ This property indicates that changing the order of factors do not change or affect the product.

What I Can Do

A. Write the missing factor.

1.) 7 x 4 = _____ x 7
2.) 2 x _____ = 5 x 2
3.) 6 x 3 = 3 x _____
4.) 8 x _____ = 4 x 8
5.) _____ x 9 = 9 x 7

B. Rewrite the 2-digit number in its expanded form and give the product.

1.) 25 x 2

2.) 39 x 5

3.) 41 x 8

4.) 57 x 3

5.) 33 x 2

Draw a ◯ if the number sentence is correct and △ if it is wrong.

1. (3x4) x 2 = 3 x (4x2)
2. 2 x (8x3) = (3x7) x 2
3. 4 x (5x2) = 4 x (7x3)
4. 8 x (6x2) = (8x6) x 2
5. 10 x (2x3)= (10x2) x

Assessment

Choose the letter of the correct answer. Write your answers on a separate sheet of paper.

1. Using Commutative Property, complete the equation:

   9 x 10 = _____?

   a. 10 + 9 c. 9 x (9 + 1)

   b. 9 + 10 d. 10 x 9

2. What property of multiplication is illustrated in 9 x 7 = 7 x 9?

   a. Identity Property b. Commutative Property

   c. Distributive Property d. Associative Property

2. Using Distributive Property, which of the following completes the multiplication sentence:

   2 x (10 + 8) = _____?

   a. (2 x 10) + (10 x 8) b. (2 x 10) + (10 x 2)

   c. (2 x 10) + (2 x 8) d. (2 + 10) x (2 + 8)

4. What property of multiplication is being illustrated:

   3 x (9 x 2) = (3 x 9) x 2?

   a. Identity Property b. Commutative Property

   c. Distributive Property d. Associative Property

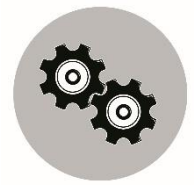
6. Which of the following illustrates Distributive Property?

a. 6 x (7 + 8) = (6 x 7) + (6 x 8)

b. 2 x 4 = 4 x 2

c. (5 x 4) x 7 = 5 x (4 x 7)

d. 3 x (4 + 7) = 3 + (4 x 7)



Additional Activities

Write the possible factors of the given product applying the properties of multiplication then state the property applied.

a. 20 = _____ x ____ = _____ x _____

Property Used: _____

b. 25 = (_____ + _____) x ____

= (_____ x _____) + (_____ x _____)

= _____ + _____ = _____

Property Used: _____

c. 50 = _____ x _____ x _____

= (_____x _____)x _____

= _____ x _____ = _____

Property Used: _____

Answer Key

What I Can Do

A.

4

5

6

4

7

What I Have Learned

Associative Property

Distributive Property

Commutative Property

What I Know

C

B

A

D

A

What's In

10

27

10

8

80

5

49

What's More

C

A

B

B

A

A

B

Assessment

D

B

C

D

C

Additional Activities

Open-Answer

3. Open-Answer

Commutative Property Associative Property

B.

What I Can Do

25 20 + 5 4. 57 50 + 7

x 2 x 2 x 2 x 3 x 3 x 3

50 40 + 10 171 150 + 21

39 30 + 9 5. 33 30 + 3

X 5 x 5 x 5 x 2 x 2 x 2

195 150 + 45 66 60 + 6

41 40 + 1

x 8 x 8 x 8

328 320 + 8

Answer Key

What's New

6 boxes of 5 halves of bread

5 boxes of 6 loaves of bread

5 x 6 = n

6 x 5 = n

Andy: 5 x 6= 30

5 + 5 + 5 + 5 + 5 + 5 = 30

Loida : 6 x 5 = 30'

6 + 6 + 6 + 6 + 6 = 30

Andy and Loida have to prepare the same number of loaves of bread which is 30

References

Lesson Guide in Elementary Mathematics Grade 3.202-203.(s.l.): (s.n.).
Mathematics Teacher's Guide Grade 3. 131-134.(s.l.): (s.n.).
Mathematics Kagamitan ng Mag-aaral: Sinugbuanong Binisaya. 122-124.(s.l.): (s.n.).

"Lesson 27". Mathematics: Teacher's Guide. 134-137.(s.l.): (s.n.).
Mathematics: Learner's Guide.125-127.(s.l.): (s.n.)

For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph