JANUARY
Makugihon
FEBRUARY
Mahigugmaon
MARCH
Matinabangon
APRIL
Matinahuron
MAY
Mahapsay og Malimpyo
JUNE
Maabtik og Musunod sa Oksultong Oras
JULY
Maantigo og Maabilidad
AUGUST
Maginhunahunaon para sa Uban
SEPTEMBER
Madaginoton
OCTOBER
Matinud-anon
NOVEMBER
Masaligan
DECEMBER
Maalampuon

Republic of the Philippines
Department of Education
Regional Office IX, Zamboanga Peninsula

6

Zest for Progress
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MATHEMATICS

Quarter 2 – Module 6:

Order of Operations

Name of Learner: _____

Grade & Section: _____

Name of School: _____

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Alternative Delivery Mode
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What I Need to Know

This module was designed and written with you in mind. It is here to help you master the interpretation and explanation the grouping, exponent, multiplication, division, addition, subtraction (GEMDAS) rule and performs two or more different operations on whole numbers with or without exponents and grouping symbols. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. 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 textbook you are now using.

The module has two lessons, namely:

- Lesson 1 - Interpreting and explaining the grouping, exponent, multiplication, division, addition, subtraction (GEMDAS) rule.(M6NS-IIf148)
- Lesson 2- Performing two or more different operations on whole numbers with or without exponents and grouping symbols.(M6NS-IIf149)

After going through this module, you are expected to:

1. interpretand explains the grouping, exponent, multiplication, division, addition, subtraction (GEMDAS) rule.
2. perform two or more different operation on whole numbers with or without exponents and grouping symbols.

Lesson 1-2	**Interpreting & Explaining the Grouping, Exponents, Multiplication, Division, Addition, Subtraction (GEMDAS) rule. Performing two or more different operations on whole numbers with or without exponents and grouping symbols.**

In any numerical expression that has more than one operation, GEMDAS rule will be used to simplify or evaluate complicated numerical expressions easily. GEMDAS stands for ***grouping***, ***exponent, multiplication, division, addition*** and ***subtraction.*** Perform the operation inside each pair of grouping symbols first (parenthesis, brackets and braces). Then simplify the exponent and perform the multiplication and division working from left to right. Lastly, perform addition and subtraction working from left to right.

What's In

A. Perform the indicated operation.

1. (12 + 3) - 7 = N 2.14 ÷ 2 - 3 + 2 x 6 = N 3.32 ÷ 2 x 2^2 = N

B. Place parenthesis in the equation to make each statement true.

1. 16 - 7 + 8 = 17 2.3 x 5 - 4 = 3 3.12 ÷ 2^2 + 2 = 2

What's New

A teacher wrote the expression (4 + 2 x 5) ÷ 7 + 2^3 on the board and called two pupils to solve it.

Below are the solutions of two pupils.

Pupil 1

(4 + 2 x 5) ÷ 7 + 2^3
= (6 x 5) ÷ 7 + 2^3
= 30 ÷ 7 + 2^3
= 30 ÷ 7 +8
= 30 ÷ 15
= 2

Pupil 2

(4 + 2 x 5) ÷ 7 + 2^3
= (4+10) ÷ 7 + 2^3
= 14 ÷ 7 + 8
= 2 + 8
= 10

Whose solution do you think is correct? Why? _____

Read the Problem:

Luisa a dressmaker had 4 boxes having 15 beads each and 8 more. She lost 9 beads when she left the box open and accidentally spilled it. Her youngest daughter helped her look for the rest but failed to find them. Her husband who came from the office brought 25 beads for her. After a while she said, she had 108 beads. Is she right? Why?

Answer the following:

a. What to find in the problem?
_____
b. What are the given facts?
_____
c. What operation are to be used?
_____
d. What is the numerical expression that can best represent the problem?
_____
e. What is your answer to the problem? _____

What is It

The expression above can be solved by following the rules on order of operations. The GEMDAS rules.

Simple way to rememberGEMDAS rule :

G ----------> Grouping (Parentheses, Brackets, and Braces)

The three (3) pairs of grouping symbols are: ( ) parenthesis, [ ] brackets { } braces

E ----------> Exponents

M ----------> Multiplication

D ----------> Division

A ----------> Addition

S ----------> Subtraction

This acronyms GEMDAS helps you to remember the order to complete the multi-operation expression.

1. The 'G' in the acronym stands for the group of symbols (parentheses, brackets and braces) All operations within each pair of symbols get completed first.

2. The 'E' refers to any exponents; all exponents are calculated after the group or each pair of symbols.

3. The 'M' and 'D' are interchangeable as one completes the multiplication and division in the order that they appear from left to right.

4. The fourth and final step is to solve for the “A” addition and “S” subtraction in the order that they appear from left to right.

Example 1:

According to the GEMDAS rule, Pupils 2's solution is correct for the above presentation:

$(4 + 2 \times 5) \div 7 + 2^3$ Solve the operation inside the parenthesis

Multiply 2 and 5 first.

$= (4 + 10) \div 7 + 2^3$

Add 4 and 10

$= 14 \div 7 + 2^3$

Simplify the exponent.

$2 \times 2 \times 2 = 8$

$=14 \div 7 + 8$ 

Divide 14 by 7

$= 2 + 8$

Add 2 and 8.

= Answer is 10.

Example 2: Evaluate the expression $9 + (15 \div 3 \times 5) - 3^2 \times 4 \div 2$

Solution: $9 + (\mathbf{15 \div 3} \times 5) - 3^2 \times 4 \div 2$ (Evaluate first the number inside the parenthesis)

$=9 + (\mathbf{5 \times 5}) - 3^2 \times 4 \div 2$ (from left to right, we have division first, so we divide 15 by 3 then multiply by 5 (Grouping; Parenthesis)

$=9 + 25 - \mathbf{3^2} \times 4 \div 2$ (Simplify the exponent 3 x 3 = 9) (Exponent)

$=9 + 25 - \mathbf{9 \times 4} \div 2$ (multiply 9 and 4) (Multiplication)

$=9 + 25 - \mathbf{36 \div 2}$ (divide 36 by 2) (Division)

$=\mathbf{9 + 25} - 18$ (add 9 and 25) (Addition)

$=34 - 18$ (subtract 34-18) (Subtraction)

= Answer is 16.

What's More

A. Evaluate the expressions and give your answer.

1. $15 \div 3 \times 5 - 4^2$ = _____

2. $(93 + 15) \div (3 \times 4) - 4 + 8$ = _____

3. $6 + [(16 - 4) \div (2^2 + 2)] - 2$ = _____

B. Evaluate the expression if :

D = 3 , K = 4 , E = 2

1. $96 \div K \times 6 - D + 9$ = _____
2. $10^2 - (K \times E) + 16 \div 8$ = _____
3. $K \times [(15 \div D) - (K-2)] + 6 - K$ = _____

What I Have Learned

Following the GEMDAS rules is the way to perform numerical expression that has more than one operation. Perform the operation inside or within each pair of grouping symbols(parenthesis, brackets, and braces) first. Then perform the exponent, then the multiplication and division whichever comes first from left to right. Lastly, perform addition and subtraction working from left to right whichever comes first.

What I Can Do

Match column A to column B by writing the letter of the correct answer in the line before each number.

A.	B
_____1. 25 ÷ 5 + (14 -13) =	a. 2
_____2.(92 + 4^2) ÷ (3^2 x 4)	b.6
_____3. [2 x (6 + 1) -5 +3] ÷ 6	c. 67
_____4. (6 ÷ 3) x4 - 8 =	d.0
_____5. 12 x [24 ÷ (3 + 1)] -5	e. 3
_____6. 7+ (2+6) -18 ÷ 3^2	f. 13

Assessment

A. Simplify the following expression. Encircle the letter of the correct answer.

1. 27 - 9 ÷ 3 x (4 x 1)

   a. 18 b. 15 c. 24 d. 25

2. 4x (27 ÷ 3^2)

   a. 72 b. 12 c. 9 d. 15

3. [2 x (6 + 1) -5 +3]

   a. 21 b. 11 c.12 d. 8

4. 48 ÷ 2^2 + 12 x 3 =

   a. 48 b. 36 c. 72 d. 12

5. What operation would you perform first? 24 ÷ (4 + 2) -1 x 10

   a. 4 + 2 c. 1 x 10

   b. 24 ÷ 4 d. 2 – 1

6. 6^2 ÷ 3 x 2 + 5 - 1 = N

   a. 48 b. 38 c. 28 d. 18

7. 3 x [4 -2 x (10 - 8) + 12 ÷ 6 x 1] = N

a. 2 b. 4 c. 6 d. 8

8. 16 ÷ 4 x 5 - 7 + 8 =N

a. 21 b. 20 c. 19 d. 18

9. 1200 ÷ 200 x 4 -8 + 9 = N

a. 125 b. 25 c. 135 d. 35

10. (36 - 6) + [(3 x 42) + 7] = N

a. 140 b. 138 c. 150 d. 163

Answer Key

What's in

A. 1.)8
2.)16
3.) 64

B. 1.)(16 -7) + 8 = 17
2.) 3 x (5 - 4) = 3
3.) 12 ÷ (2^2 + 2) = 2

What's More

A. 1. 7
2. 13
3. 9

B. 1. 150
2. 100
3.16

What I can do

1.b 4. d
2.e 5.c
3. a 6.f

What's New

Pupil2, because you have to do multiplication first inside the parenthesis than addition.

Problem: a. Is Luisa is right that she lost 108 beads?

b. 4 boxes having 15 beads, additional of 8 beads lost 9 beads, 25 beads brought by his husband

c. multiplication, addition and subtraction

d. 4 x 15 + 8 - 9 + 2

e. No, because she only had 88 beads left.

Assessment

1. b 6. c
2. b 7. c
3.c 8. a
4.a 9. b
5.a 10. d

What's More

A.1. 9
2. 13
3. 6

B 1. 150
2. 94
3.14

What I Can Do

1. b 4. d
2. e 5. c
3. a 6. f

I AM A FILIPINO

by Carlos P. Romulo

I am a Filipino – inheritor of a glorious past, hostage to the uncertain future. As such, I must prove equal to a two-fold task – the task of meeting my responsibility to the past, and the task of performing my obligation to the future.

I am sprung from a hardy race – child many generations removed of ancient Malayan pioneers. Across the centuries, the memory comes rushing back to me: of brown-skinned men putting out to sea in ships that were as frail as their hearts were stout. Over the sea I see them come, borne upon the billowing wave and the whistling wind, carried upon the mighty swell of hope – hope in the free abundance of the new land that was to be their home and their children's forever.

This is the land they sought and found. Every inch of shore that their eyes first set upon, every hill and mountain that beckoned to them with a green and purple invitation, every mile of rolling plain that their view encompassed, every river and lake that promised a plentiful living and the fruitfulness of commerce, is a hollowed spot to me.

By the strength of their hearts and hands, by every right of law, human and divine, this land and all the appurtenances thereof – the black and fertile soil, the seas and lakes and rivers teeming with fish, the forests with their inexhaustible wealth in wild and timber, the mountains with their bowels swollen with minerals – the whole of this rich and happy land has been for centuries without number, the land of my fathers. This land I received in trust from them, and in trust will pass it to my children, and so on until the world is no more.

I am a Filipino. In my blood runs the immortal seed of heroes – seed that flowered down the centuries in deeds of courage and defiance. In my veins yet pulses the same hot blood that sent Lapulapu to battle against the alien foe, that drove Diego Silang and Dagohoy into rebellion against the foreign oppressor.

That seed is immortal. It is the self-same seed that flowered in the heart of Jose Rizal that morning in Bagumbayan when a volley of shots put an end to all that was mortal of him and made his spirit deathless forever; the same that flowered in the hearts of Bonifacio in Balintawak, of Gregorio del Pilar at Tirad Pass, of Antonio Luna at Calumpit, that bloomed in flowers of frustration in the sad heart of Emilio Aguinaldo at Palanan, and yet burst forth royally again in the proud heart of Manuel L. Quezon when he stood at last on the threshold of ancient Malacanang Palace, in the symbolic act of possession and racial vindication. The seed I bear within me is an immortal seed.

It is the mark of my manhood, the symbol of my dignity as a human being. Like the seeds that were once buried in the tomb of Tutankhamen many thousands of years ago, it shall grow and flower and bear fruit again. It is the insigne of my race, and my generation is but a stage in the unending search of my people for freedom and happiness.

I am a Filipino, child of the marriage of the East and the West. The East, with its languor and mysticism, its passivity and endurance, was my mother, and my sire was the West that came thundering across the seas with the Cross and Sword and the Machine. I am of the East, an eager participant in its struggles for liberation from the imperialist yoke. But I know also that the East must awake from its centuried sleep, shake off the lethargy that has bound its limbs, and start moving where destiny awaits.

For I, too, am of the West, and the vigorous peoples of the West have destroyed forever the peace and quiet that once were ours. I can no longer live, a being apart from those whose world now trembles to the roar of bomb and cannon shot. For no man and no nation is an island, but a part of the main, and there is no longer any East and West – only individuals and nations making those momentous choices that are the hinges upon which history revolves. At the vanguard of progress in this part of the world I stand – a forlorn figure in the eyes of some, but not one defeated and lost. For through the thick, interlacing branches of habit and custom above me I have seen the light of the sun, and I know that it is good. I have seen the light of justice and equality and freedom, my heart has been lifted by the vision of democracy, and I shall not rest until my land and my people shall have been blessed by these, beyond the power of any man or nation to subvert or destroy.

I am a Filipino, and this is my inheritance. What pledge shall I give that I may prove worthy of my inheritance? I shall give the pledge that has come ringing down the corridors of the centuries, and it shall be compounded of the joyous cries of my Malayan forebears when first they saw the contours of this land loom before their eyes, of the battle cries that have resounded in every field of combat from Mactan to Tirad Pass, of the voices of my people when they sing:

"I am a Filipino born to freedom, and I shall not rest until freedom shall have been added unto my inheritance—for myself and my children and my children's children—forever."