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Republic of the Philippines
Department of Education
NATIONAL CAPITAL REGION
Misamis Street, Bago-Bantay, Quezon City

UNIFIED SUPPLEMENTARY LEARNING MATERIALS
(USLeM)

MATHEMATICS 6

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LESSON: REPRESENTING QUANTITIES IN REAL-LIFE SITUATIONS USING ALGEBRAIC EXPRESSIONS AND EQUATIONS

EXPECTATION:

At the end of the lesson, you are expected to represent quantities in real-life situations using algebraic expressions and equations.

PRETEST

Directions: Represent each as algebraic equation or algebraic expression. Encircle the letter of your answer.

1. Archie is x years old now. His son's age is 5 more than one-fourth his age. Write an algebraic expression for his son's age.
   A. x + 5
   B. $\frac{x}{4} + 5$
   C. 4x + 5
   D. 4x - 5

2. Twice my meal allowance will be increased by ₱150.00, it would become ₱ 750.00
   A. 2m + ₱150 = ₱ 750
   B. 2m - ₱150 = ₱ 750
   C. 2m (₱150) = ₱ 750
   D. $\frac{2m}{₱150}$ **= ₱ 750**

3. Minda paid 250 more than her internet bill last month. Represent this into algebraic expression.
   A. h + 250
   B. h – 250
   C. h (250)
   D. $\frac{h}{250}$

4. Rowelo is ***y*** cm tall. His brother's height is 3 cm more than twice his height. Find his brother's height if Rowelo is 152 cm tall.
   A. y + 3***y*** + 3 = 152
   B. y + 3***y*** – 3 = 152
   C. $\frac{2y}{3}$ **+ *y* =** 152
   D. ***y*** + 2***y*** **+ *3*** = 152

5. Sixteen added to four times the number of Mandunong Kits is 450. How many Mandunong Kits are there?
   A. 16 + 4 = 450
   B. 16 - 4 = 450
   C. 4m + 16 = 450
   D. 4m – 16 = 450

LOOKING BACK TO YOUR LESSON

Directions: Write an algebraic expression for each word expression.

1. 10 less than a number x
2. a number ***n*** diminished by 12
3. twice a number ***y*** added to 9
4. the product of ***x*** and ***y*** less than 10
5. the quotient of ***d*** and 10 times 4

BRIEF INTRODUCTION

When variables and numbers are combined with other variables or numbers, by adding, subtracting, multiplying and/or dividing, the outcome is an **algebraic expression.** An **algebraic equation** can be described as a mathematical sentence composed of two equal expressions.

Study these different word phrases written as algebraic expressions and equations.

Operation	Word Phrase	Algebraic Expression/Equation
Addition	the sum of ***m*** and 9 9 added to ***m*** 9 more than ***m***	m + 9
	m increased by 9 is 20	m + 9 = 20

Subtraction	the difference of 12 and ***n*** 12 decreased by ***n*** 12 diminished by ***n*** ***n*** subtracted from 12 ***n*** less than 12 is equal to 7	12 - n 12 – n = 7
Multiplication	the product of 3 and ***s*** ***s*** multiplied by 3 thrice ***s*** 3 times ***s*** is 36	3s 3s = 36
Division	the quotient of ***z*** divided by 4 ***z*** divided 4 one-fourth of ***z*** is equal to 25	$\frac{z}{4}$ $\frac{1}{4}z = 25$

Examples:

1. An athlete weighed x kilograms. Express algebraically its weight after he lost 1.5 kilograms.

Represent: weighed x kilograms | lost 1.5 kilograms

x - 1.5

Answer: x – 1.5 ⟸ Algebraic expression

2. Jannah sells the same number of sampaguita each day. Write an expression to represent the total number of sampaguita Jannah sells in a week.

Represent: sells in a week | same number each day

7 ***r***

Answer: ***7r*** ⟸ Algebraic expression

3. Rona's savings were increased by 3 times her savings and her total savings would be ₱ 2 000.00. How much has she saved?

Represent:

her savings increased by 3 times	is	₱2 000.00
x + 3x	=	₱2 000.00

Answer: **x + 3x = 2 000** ⟸ Algebraic Equation

4. Jon bought a correction pen and a marker. A marker cost ₱12.00 less than a correction pen. Represent an algebraic equation showing the total cost of correction pen and marker bought is ₱68.00.

Represent:

correction pen	12 less than correction pen	is	₱68.00
x	x - 12	=	₱68.00

Answer: x + x – 12 = 68 ⟸ Algebraic Equation

ACTIVITY NO 1

Directions: Translate each expression into words.

1. $8k - 15$ _____
2. $\frac{36}{z} + 5$ _____
3. $4 + j$ _____
4. $8\ (a + b)$ _____
5. $18 + 12$ _____

ACTIVITY NO 2

Directions: Translate each equation into words.

1. 3x + 5 = 20 _____
2. 8y – 35 = 13 _____
3. $\frac{45}{m} = 3$ _____
4. 40 + 12 = 52 _____
5. 6 (10 – 8) = 12 _____

ACTIVITY NO 3

Directions: Use algebraic symbols to represent each word expression. Encircle the letter of your answer.

1. Sonia's monthly allowance ***m*** increased by ₱200.00
   A. m + ₱200
   B. m – ₱200
   C. m (₱200)
   D. $\frac{m}{₱200}$

2. The difference of the number of coins on Mike's piggy bank ***t*** and 500
   A. 500 + ***t***
   B. 500 - ***t***
   C. ***t*** + 500
   D. ***t*** – 500

3. Two-thirds of the students ***p*** attended their Google Classroom in Mathematics
   A. $\frac{2}{3p}$
   B. $\frac{2p}{3}$
   C. $\frac{2}{3}\,p$
   D. $\frac{2}{3} - p$

4. The sum of thrice a number ***w*** and 12
   A. 3***w*** + 12
   B. 3***w*** – 12
   C. 12 – 3***w***
   D. 12 + 3***w***

5. Fifteen diminished by two times Marco's score ***s*** in a game
   A. 15 – 2***s***
   B. 2***s*** – 15
   C. 15 + 2***s***
   D. 2***s*** + 15

CHECKING YOUR UNDERSTANDING

Directions: Represent each word sentence into an algebraic equation.

1. Erick's father is 5 more than twice as old as he. If Eric is 15 years old, what number represents his father's age?
   A. 2(15) + 15 = ***f***
   B. 2(15) - 5 = ***f***
   C. 2(15) + 5 = ***f***
   D. 2(15) – 15 = ***f***

2. The sum of the ages of Josie and Julie is 40. Josie is 4 years younger than Julie. How old is Josie?
   A. x + 4 = 40
   B. x + (x – 4) = 40
   C. 2x + 4 = 40
   D. 2x – 4 = 40

3. In a library hub, there are 4 times as many Math modules than English modules. There are 500 English modules. How many Math modules are in the library hub?
   A. n + 4 = 500
   B. n – 4 = 500
   C. n + 4n = 500
   D. n - 4n = 500

4. During the school Sportsfest, Rolly scored fourth of his team points. The team scored 60 points total. How many points did Rolly score?
   A. $\frac{60}{4} = n$
   B. 4n = 60
   C. 4 + n = 60
   D. 4 – n = 60
5. Ten less than 5 times the number of facemasks is 500. How many facemasks are there?
   A. 5d + 10 = 500
   B. 5d – 10 = 500
   C. 10 (5d) = 500
   D. $\frac{10}{5d}$ = 500

POST TEST

Directions: Represent each as algebraic equation or algebraic expression. Encirlce the letter of your answer.

1. Minerva is ***y*** years old now. Her son's age is 3 more than one-third of her age. Write an algebraic expression for her son's age.
   A. **y** + 3
   B. $\boldsymbol{y + \frac{y}{3} + 3}$
   C. $\frac{\boldsymbol{y}}{\boldsymbol{3}}$ - 3
   D. 3y - $\frac{\boldsymbol{1}}{\boldsymbol{3}}$
2. Three times my travel allowance will be increased by ₱ 100.00, it would become ₱ 700.00.
   A. m + 3m - 100 = 700
   B. 3m + 100 = 700
   C. m + 3m + 100 = 700
   D. $\frac{3m}{100}$ **= 700**

3. Lindsay paid ₱300 less than her electric bill last month. Represent this into algebraic expression.
   A. b - 300
   B. b + 300
   C. b (300)
   D. $\frac{b}{300}$

4. Bella is ***x*** kilograms. Her sister's weight is 4 cm less than twice her weight. Find her sister's weight if Bella is 40 kilograms.
   A. 2***x*** + 4 = 140
   B. 2x – 4 = 40
   C. $\frac{x}{4}$ **+ 23 = 40**
   D. x + 2***x*** - 4 = 40

5. Forty is added to three times the number of tablets is 220. How many tablets are there?
   A. 3x + 40 = 220
   B. 3x – 40 = 220
   C. 40 - 3x = 220
   D. 16x – 4 = 450

REFERENCES

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ANSWER KEY

ASSESSMENT

PRETEST

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

POSTTEST

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

LOOKING BACK TO YOUR LESSONS:

1. **x – 10**
2. **n – 12**
3. **2y + 9**
4. **xy + 1**
5. **d ÷ 10(4)**

ACTIVITY 1

1. The product of eight and k minus fifteen
2. The quotient of thirty-six and ***z*** increased by five
3. Five more than ***i***
4. The product of eight and ***a*** plus ***b***
5. Eighteen increased by twelve

ACTIVITY 2

1. Five added to three times a number is twenty.
2. The product of eight and y less thirty-five.
3. The quotient of forty-five and m is equal to three.
4. The sum of forty and twelve is fifty-two.
5. Six multiplied by the difference of ten and eight.

ACTIVITY 3

1. **A**
2. **D**
3. **C**
4. **A**
5. **A**

CHECK YOUR UNDERSTANDING.

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