المدرسة الوطنية الأرثوذكسية الشميساني

The National Orthodox School Shmaisani

Subject: Mathematics **Second Semester**

Name: Grade 6 (B, C, D, E, F)

Unit 2: Expressions. **Worksheet (1)**

Expressions.

When we combine numbers and variables in a valid way, using operations such as addition, subtraction, multiplication and division the resulting combination of mathematical symbols is called a *mathematical expression*.

Translating Words into Mathematical Expressions

Addition:

Phrase	Translates to:
sum of x and 12	$x + 12$
4 greater than b	$b + 4$
6 more than y	$y + 6$
44 plus r	$44 + r$
3 larger than z	$z + 3$

Subtraction:

Phrase	Translates to:
difference of x and 12	$x - 12$
4 less than b	$b - 4$
7 subtracted from y	$y - 7$
44 minus r	$44 - r$
3 smaller than z	$z - 3$

Multiplying:

Phrase	Translates to:
product of x and 12	$12x$
4 times b	$4b$
twice r	$2r$

Dividing:

Phrase	Translates to:
quotient of x and 12	$x/12$
4 divided by b	$4/b$

Exercises (1):

Answer the following questions.

a) Write an expression for the total cost of k pens at \$3 per pen and p pencils at \$1 per pencil.

b) Write an expression for the cost of hiring a taxi to travel K kilometers if there is a fixed cost of \$2 plus \$0.5 per kilometer.

c) x chocolates are shared equally between 5 people.

Write an expression for the number of chocolates that each person receives.

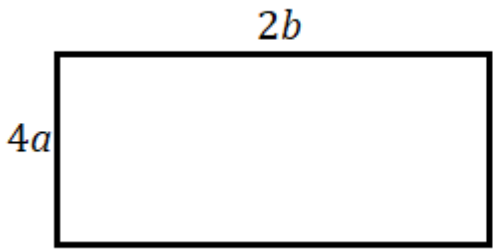
d) Carla buys a book costing \$$b$. She pays with a \$20 note.

Write an expression for the amount of change that she receives in dollars.

Exercises (2):

Write an expression for the following shapes.

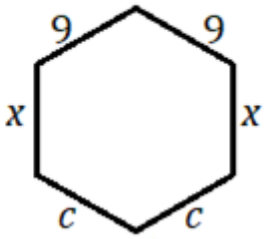
1)



Area = _____

Perimeter = _____

2)



Perimeter = _____

Simplifying algebraic expressions.

Please remember:

In **adding** and **subtracting** negative numbers:

- **Same** signs ⟹ **add** the numbers and put the **common** sign.
- **Different** signs ⟹ **subtract** the numbers and the **sign** of the **answer** according to the **sign** of the **bigger** number.
- When you have two negative signs (- -) ⟹ turn the sign to positive (+).

In **multiplying** and **dividing** negative numbers:

- if you have **same signs** (+ +) or (- -) ⟹ The sign of the answer is **positive** (+)
- If you have **different** signs (+ -) ⟹ The sign of the answer is **negative** (-)

Now:

✓ To simplify an expression, you have to collect the **like terms.**

✓ Like terms are terms that have **the same letter and same power (index).**

Expanding brackets:

You have to multiply the number outside the brackets by **all** the terms inside the brackets and pay attention for the **signs.**

Example:

$2 \times (3a + 4) = 2 \times 3a + 2 \times 4$

$= \mathbf{6a + 8}$

Exercise (3): Simplify.

1) $10x - 8x + 2 + 10$

2) $3a + 7 + 2(3 + a)$

3) $3(m - 5) + m$

4) $2s + 10 - 7s - 8 + 3s - 7$

5) $8c - 4 - 2c + 5$

6) $-4 + 7z + 3 - 2z$

7) $15 + 4(5y - 10)$

8) $2d + 17 - 3 - 2d + 4d$

9) $4\,(y + 5) + 3\,(2r - 4)$

10) $7 - 2\,(a + 4) - 10a$

11) $-2\,(4t + 2u) - 5\,(6t - 6u)$

12) $6(u - 5v) + 10v - 5u$

13) $7 + 8y - 2\text{x}7t - 10y + 20t$

14) $4r - (7y + 4) - 10r - 20y$

15) $2(3x - 1) + 4(2x - 3)$

16) $4(3y + 2x) - 3(2y - 5x)$

17) $10a^2 + 2b^2 + 19 - a^2 - b^2 + 3 - b^3$

18) $3m + 2n + 5m + 6 + n + 2m + 3$

Simplify!

$2(yx - 4x) - 5x - 2y + 2(xy + 3y) - 10 + 3(yx - xy) - (2x + 3y) + 5(3y - x) + 20$