Worksheet (3) | Lower Secondary Stage (6-8)

1st Semester | 2023-2024

Subject: Math   **Class:** Grade 7

Name:……………………………………

Objectives:
- **Evaluating algebraic expressions.**
- **Simplify linear expressions with integer coefficients.**   **Teacher's name: Rita Beqaeen**

How to evaluate algebraic expressions??

1 **Identify the variable and its value.** This information should be given to you. Usually you will be told to evaluate the expression "when" or "where" the variable is equal to a certain value. If you are not given the variable's value, you cannot evaluate the expression.[4]

Exercise 1 :

Complete this table .

– **Evaluate a Variable Expression** – write the expression, substitute a number for each variable, and simplify the result.

The expressions	$x = 2$	$x = -2$
$3x - 10$		
$x^3 + 7x^2 - x$		
$\dfrac{3x^3 - 5x}{7}$		

Exercise 2 :

Tick (✔) which expressions have the same value when : $x = 3$, $y = -2$

$2x + y^2$	$4xy$	$y + x^2$	$4y^2 - x^2 + x$

Simplifying algebraic expressions is when we use a variety of techniques to make algebraic expressions more efficient and compact – in their simplest form.

✏ Example Simplify $8x + 4 + 3(2x - 3)$

1 Expand the brackets $8x + 4 + 3(2x - 3) = 8x + 4 + 6x - 9$

2 Collect like terms $8x + 4 + 6x - 9 = 14x - 5$

The simplified expression is $14x - 5$

Example 1 : Simplify the following:

$x^2 + x + y^2 + 2x$

Commutative Properties

Addition: $a + b = b + a$

Multiplication: $a \cdot b = b \cdot a$

(a) $5x + y^2$ (b) $4x^2 + y^2$

(c) $x^2 + 3x + y^2$ (d) $4xy^2$

Exercise3 :
Simplify :

1) $x + 3x$

2) $3t + 7 + 8t$

3) $9y + 6 - 7y - 3$

4) $2x + 3y - 4x + 1$

Distributive Property of Multiplication
$$a(b+c) = ab + ac$$
$$a(b-c) = ab - ac$$

5) $2(3x + 5) + 3(2x + 6)$

6) $2(x+4) + 3(x - 5) - 2y$

7) $-(y+1) + 3y - 12$

8) $-7(x-1) + 5(2x+3)$

9) $3(4x + 1) - (5x + 7)$

10) $(10x)(8) - 6(x - 3)$

Exercise 4:

Solve each problem and circle your answer.

#	Question	Answer 1	Answer 2	Answer 3
1	$4(x + 3)$	$x + 12$ Purple	$4x + 7$ Yellow	$4x + 12$ Red
2	$8(2x - 5)$	$16x - 40$ Yellow	$10x - 13$ Green	$16x - 13$ Dark Blue
3	$7x + 2 + 3 + 4x$	$11x + 5$ Purple	$11x + 6$ Orange	$10x + 5$ Red
4	$9 - 5x + 2x - 8$	$-3x + 17$ Pink	$-3x + 1$ Green	$7x - 1$ Light Blue
5	$2(3x - 1) + x$	$7x - 2$ Light Blue	$7x + 2$ Yellow	$6x - 2$ Pink
6	$8 + 3(x - 5)$	$3x + 7$ Green	$3x + 22$ Red	$3x - 7$ Dark Blue
7	$7(4x - 2) + 8x + 9$	$19x - 5$ Red	$36x - 5$ Pink	$36x + 23$ Yellow
8	$4 + 5(3x + 2) - 2x$	$13x + 10$ Purple	$13x + 14$ Red	$17x + 10$ Dark Blue
9	$-4(x - 9) - 3 + 7x$	$3x + 33$ Light Blue	$3x - 39$ Red	$3x - 36$ Pink
10	$9(2x + 3) + 4(x - 10)$	$22x + 13$ Yellow	$22x + 67$ Purple	$22x - 13$ Red
11	$6(x - 7) - 2(x + 5)$	$4x - 52$ Green	$8x - 32$ Dark Blue	$4x - 32$ Purple