

**SECOND TERM
WEEKLY LESSON NOTES
WEEK 5**

Week Ending: 05-05-2023	DAY:	Subject: Mathematics
Duration: 60MINS		Strand: Number
Class: B8	Class Size:	Sub Strand: Addition, Subtraction Of Algebraic Expressions
Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	Indicator: B8.2.2.1.2 Perform addition, subtraction, multiplication and division of algebraic expressions including fractions	Lesson: 1 of 2
Performance Indicator: Learners can perform addition, subtraction, multiplication and division of algebraic expressions including fractions		Core Competencies: Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 115-116		
Phase/Duration	Learners Activities	Resources
PHASE 1: STARTER	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: NEW LEARNING	<p>Guide learners to solve addition, subtraction, multiplication and division of algebraic expression using the PEMDAS strategy.</p> <p>To use the PEMDAS strategy, follow these steps:</p> <ul style="list-style-type: none"> • Simplify any expressions inside parentheses first. • Evaluate any exponents next. • Perform multiplication and division, from left to right. • Perform addition and subtraction, from left to right. <p>Write an example on the board and task learners to work in pairs. Simplify $10x^2 + (6x-4x) - (5x - 2x)^2$</p> <p><u>Solution</u> To simplify the expression $10x^2 + (6x-4x) - (5x - 2x)^2$ using the PEMDAS strategy, we follow the order of operations as follows:</p> <p>Simplify any expressions inside parentheses first: $(6x - 4x) = 2x$ $(5x - 2x)^2 = (3x)^2 = 9x^2$.</p> <p>Now the expression becomes: $10x^2 + 2x - 9x^2$ $10x^2 - 9x^2 + 2x$ $= x^2 + 2x$.</p> <p>Therefore, the simplified expression is $x^2 + 2x$.</p> <p>Example 2: solve $(7y-5y)^2 - 2(10y-8y) + 4y$ $= (2y)^2 - 2(2y) + 4y$</p>	Counters, bundle and loose straws base ten cut square, Bundle of sticks

$$= 4y^2 - 4y + 4y // \text{ and } +4y - 4y \text{ cancels out}$$

$$= 4y^2$$

Therefore, the simplified form of the expression is $= 4y^2$

Assessment

1. $3(5x+2x) - (4-5x)$
2. $(t + k) + (5t \times 2)$
3. $(6m)^2 - 4(2m \times m) + 2m$
4. $2y-y(6y-2y) - (-2 \times 2y)$

Guide learners to solve problems based on multiplication and division of algebraic fractions.

To solve problems based on multiplication and division of algebraic fractions, follow these general steps:

1. Simplify each algebraic fraction by factoring out any common factors in the numerator and denominator.

2. To multiply algebraic fractions, multiply the numerators together and multiply the denominators together. Then, simplify the resulting fraction by factoring out any common factors.

3. To divide algebraic fractions, invert the second fraction and multiply it by the first. Then, simplify the resulting fraction by factoring out any common factors.

Example 1: Multiply $\frac{(2x^2 + 4x)}{(x+2)} \times \frac{(x + 1)}{(x^2 - 4x)}$

Solution:

First, simplify each fraction. We can factor out a 2x from the first fraction to get:

$$\frac{(2x^2 + 4x)}{(x+2)} = \frac{2x(x + 2)}{(x+2)} = 2x$$

For the second fraction, we can factor out an x from the denominator to get:

$$\frac{(x + 1)}{(x^2 - 4x)} = \frac{(x + 1)}{x(x-4)}$$

Now we can multiply the two fractions together:

$$2x * \frac{(x + 1)}{x(x-4)}$$

Multiplying the numerators gives us:

$$2x(x + 1) = 2x^2 + 2x$$

Multiplying the denominators gives us:

$$x(x - 4) = x^2 - 4x$$

So the final answer is:

$$= \frac{(2x^2 + 2x)}{(x^2 - 4x)}$$

We can simplify this by factoring out a $2x$ from the numerator and a x from the denominator:

$$= \frac{2x(x+2)}{x(x-4)} = \frac{2(x+2)}{x(x-4)}$$

Example 2: Divide $\frac{(3x^2 - 9x)}{(x^2 - 4)} \div \frac{(2x^2 + 8x)}{(x^2 - 2x)}$

Solution: First, simplify each fraction. We can factor out a $3x$ from the numerator of the first fraction and factor out a $2x$ from the numerator of the second fraction:

$$\frac{(3x^2 - 9x)}{(x^2 - 4)} = \frac{3x(x-3)}{(x-2)(x+2)}$$

$$\frac{(2x^2 + 8x)}{(x^2 - 2x)} = \frac{2x(x+4)}{x(x-2)}$$

Now we can invert the second fraction and multiply it by the first:

$$\frac{(3x^2 - 9x)}{(x^2 - 4)} \times \frac{x(x-2)}{2x(x+4)}$$

Multiplying the numerators gives us:

$$3x(x-3)(x-2)$$

Multiplying the denominators gives us:

$$2x(x+4)(x-2)(x+2)$$

So the final answer is:

$$\frac{3x(x-3)(x-2)}{2x(x+4)(x-2)(x+2)}$$

We can simplify this by cancelling out the $(x-2)$ factor in the numerator and denominator:

$$\frac{3x(x-3)}{2x(x+4)(x+2)}$$

Assessment

- 1) $\frac{a}{7} \times \frac{b}{8}$
- 2) $\frac{3x-3}{4x-4}$
- 3) $\frac{a}{7} \div \frac{1}{a}$
- 4) $\frac{ab}{8r} \times \frac{2}{5r}$

PHASE 3: REFLECTION

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.

Week Ending: 05-05-2023	DAY:	Subject: Mathematics
Duration: 60MINS		Strand: Number
Class: B8	Class Size:	Sub Strand: Algebraic Expressions
Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	Indicator: B8.2.2.1.3 Substitute values to evaluate algebraic expressions including fractions and use these to solve problems.	Lesson: 1 of 2
Performance Indicator: Learners can substitute values to evaluate algebraic expressions including fractions and use these to solve problems		Core Competencies: Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 119		
Phase/Duration	Learners Activities	Resources
PHASE 1: STARTER	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: NEW LEARNING	<p>Guide learners to substitute values to evaluate algebraic expressions including fractions and use these to solve problems.</p> <p>Take learners through the steps in substituting values into algebraic expressions.</p> <p>To substitute values to evaluate algebraic expressions including fractions:</p> <ol style="list-style-type: none"> 1. Identify the variables in the expression that you want to substitute values for. 2. Replace each variable with the corresponding value. 3. Simplify the expression by performing any necessary arithmetic operations, such as addition, subtraction, multiplication, and division. <p>Example, Evaluate the expression $(3x - 2)/(x + 1)$ when $x = 4$.</p> <ol style="list-style-type: none"> 1. The variable in this expression is x. 2. We replace x with the value 4: $(3x - 2)/(x + 1) = (3(4) - 2)/(4 + 1)$ 3. Simplify the expression by performing the arithmetic operations: $(3(4) - 2)/(4 + 1) = (10/5) = 2$ <p>Therefore, when $x = 4$, the value of the expression $(3x - 2)/(x + 1)$ is 2.</p> <p>Example 2: Evaluate the expression $\frac{(2x+3)}{(x-4)}$ when $x = 5$.</p> <ol style="list-style-type: none"> 1. Identify the variable in the expression: x. 2. Replace x with the value 5: 	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	<p>$\frac{(2x+3)}{(x-4)} = (2(5) + 3)/(5 - 4)$ 3. Simplify the expression by performing the arithmetic operations: $(2(5) + 3)/(5 - 4) = (13/1) = 13$</p> <p>Therefore, when $x = 5$, the value of the expression $(2x + 3)/(x - 4)$ is 13.</p> <p>Example 3: Evaluate the expression $(5y - 2)/(2y + 1)$ when $y = -3$.</p> <p>1. Identify the variable in the expression: y. 2. Replace y with the value -3: $(5y - 2)/(2y + 1) = (5(-3) - 2)/(2(-3) + 1)$ 3. Simplify the expression by performing the arithmetic operations: $(5(-3) - 2)/(2(-3) + 1) = (-17/-5) = 3.4$</p> <p>Therefore, when $y = -3$, the value of the expression $(5y - 2)/(2y + 1)$ is 3.4.</p> <p>Example 4: Evaluate the expression $(4a^2 - 3b)/(2a - b)$ when $a = 2$ and $b = 1$.</p> <p>1. Identify the variables in the expression: a and b. 2. Replace a with the value 2 and b with the value 1: $(4a^2 - 3b)/(2a - b) = (4(2)^2 - 3(1))/(2(2) - 1)$ 3. Simplify the expression by performing the arithmetic operations: $(4(2)^2 - 3(1))/(2(2) - 1) = (13/3)$</p> <p>Therefore, when $a = 2$ and $b = 1$, the value of the expression $(4a^2 - 3b)/(2a - b)$ is 13/3.</p>	
<p>PHASE 3: REFLECTION</p>	<p>Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.</p> <p>Take feedback from learners and summarize the lesson.</p>	