FIRST TERM
WEEKLY LESSON NOTES
WEEK 9

Week Ending: 10-03-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Number	
Class: B8	**Class Size:**	**Sub Strand:** Indices	
Content Standard: B8.1.2.3 Demonstrate understanding and the use of the laws of indices in solving problems involving powers of natural numbers	**Indicator:** B8.1.2.3.2 Apply the laws of indices to simplify and evaluate numbers involving powers of numbers. (PEDMAS)	**Lesson:** 1 of 2	
Performance Indicator: Learners can solve story problems involving decimals on the four basic operations.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 98			

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**	The laws of indices are a set of rules that govern how we can manipulate expressions involving powers of numbers. These rules are: 1. Product rule: $a^m * a^n = a^{(m+n)}$ This rule tells us that when we multiply two numbers with the same base, we can add their exponents to get the exponent of the result. Example: $2^3 \times 2^4 = 2^{(3+4)} = 2^7 = 128$ 2. Quotient rule: $a^m / a^n = a^{(m-n)}$ This rule tells us that when we divide two numbers with the same base, we can subtract their exponents to get the exponent of the result. Example: $5^8 / 5^3 = 5^{(8-3)} = 5^5 = 3125$ 3. Power rule: $(a^m)^n = a^{(m*n)}$ This rule tells us that when we raise a number to a power and then raise the result to another power, we can multiply the exponents to get the exponent of the final result. Example: $(3^4)^2 = 3^{(4*2)} = 3^8 = 6561$ 4. Negative exponent rule: $a^{(-m)} = 1/a^m$ This rule tells us that when we have a negative exponent, we can flip the base and make the exponent positive to get the reciprocal of the result. Example: $2^{-5} = 1/2^5 = 1/32$ 5. Zero exponent rule: $a^0 = 1$ This rule tells us that any number raised to the power of zero is equal to one. Example: $7^0 = 1$	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	Using these rules, have learners simplify and evaluate expressions involving powers of numbers. Here are a few examples: Example 1: Simplify $4^3 * 4^5$ Using the product rule, we can add the exponents: $4^3 * 4^5 = 4^{(3+5)} = 4^8 = 65536$ <u>Assessment</u> 1. Using the power rule, Evaluate $(2^4)^3$ 2. Using the quotient rule, Simplify $3^5 / 3^2$ 3. Using the negative exponent rule, Simplify $5^{(-2)}$ 4. Using the zero exponent rule, Simplify 2^0	
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.	

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Content Standard: B8.1.2.3 Demonstrate understanding and the use of the laws of indices in solving problems involving powers of natural numbers	**Indicator:** B8.1.2.3.3-4 Solve exponential equations and Solve real life problems involving powers of natural numbers	**Lesson:** 2 of 2

Performance Indicator: Learners can solve exponential equations and solve real life problems involving powers of natural numbers	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 101

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**	Guide learners to solve exponential equations and Solve real life problems involving powers of natural numbers 1. A person has a piece of land that is 50 meters long and 30 meters wide. How many square meters is the land? Solution: The area of the land is given by the product of its length and width, so we have: Area = 50 m x 30 m = 1500 m^2 Therefore, the land has an area of 1500 square meters. 2. A car travels at a speed of 60 km/h for 3 hours. How far does the car travel? Solution: The distance travelled by the car is given by the product of its speed and time, so we have: Distance = Speed x Time = 60 km/h x 3 h = 180 km Therefore, the car travels 180 kilometers. 3. A building has 10 floors, each with a height of 3 meters. How high is the building? Solution: The total height of the building is given by the product of the height of each floor and the number of floors, so we have: Height = 10 x 3 m = 30 m Therefore, the building is 30 meters high. 4. A recipe calls for 2 cups of flour, 1/2 cup of sugar, and 1/4 cup of butter. If you want to make twice the recipe, how much flour do you need? Solution: If we want to make twice the recipe, we need to double the amount of each ingredient. So we have: Flour = 2 cups x 2 = 4 cups Sugar = 1/2 cup x 2 = 1 cup Butter = 1/4 cup x 2 = 1/2 cup Therefore, we need 4 cups of flour to make twice the recipe. 5. A container of juice contains 1 liter of juice. If we pour 1/4 of the juice into a glass, how much juice is left in the container?	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	Solution: If we pour 1/4 of the juice into a glass, we are left with 3/4 of the juice in the container. So we have: Juice left in container = 1 L x 3/4 = 0.75 L Therefore, there is 0.75 liters of juice left in the container	
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.	