



MATATAG

Bansang Makabata



Batang Makabansa



BAGONG PILIPINAS

School
Logo

Name of School:		Quarter:	4 th Quarter
Grade Level & Section:	Grade 7	Week:	Week 8 Day 1
Subject:	MATHEMATICS	Date and Time:	
Topic:		Teacher:	

I. CONTENT, STANDARDS AND LEARNING COMPETENCIES		ANNOTATIONS
A. CONTENT STANDARDS	The learners should have knowledge and understanding of operations using scientific notation. (MG)	
B. PERFORMANCE STANDARDS	By the end of the quarter, the learners are able to write numbers in scientific notation and perform operations on numbers written in scientific notation.	
C. LEARNING COMPETENCIES	At the end of the lesson, the learners are expected to: 1. Write numbers in scientific notation to represent very large or very small numbers, and vice versa. 2. Perform operations on numbers expressed in scientific notation.	
I. CONTENT		
Writing numbers in scientific notations		
II. LEARNING RESOURCES		

A. REFERENCES	
B. OTHER LEARNING RESOURCES	<p>Dodds, C. (2012, February 6). Colin Dodds - Scientific Notation (Math Song) [Video]. YouTube. https://www.youtube.com/watch?v=AWof6knvQwE</p> <p>CK-12 Foundation. (n.d.). CK-12 Foundation. https://flexbooks.ck12.org/cbook/ck-12-conceptos-de-matem%C3%A1ticas-de-la-escuela-secundaria-grado-8-enespa%C3%B1ol/section/5.16/related/lesson/operations-with-numbers-in-scientific-notationmsm7/</p> <p>Operations with Scientific Notation (Addition, Multiplication, Subtraction of Numbers) - BYJUS. (2022, August 10). BYJU'S. https://byjus.com/us/math/operations-in-scientific-notation/</p>

III. TEACHING AND LEARNING PROCEDURE

BEFORE/PRE-LESSON PROPER

ACTIVATING PRIOR KNOWLEDGE	<p>Short Review Activity 1: Do You Remember?</p> <p>Instruction: Let the learners express the following into figures. After writing it, let them identify the number of significant figures in each item.</p> <ol style="list-style-type: none"> 1. Five hundred forty-five thousand 2. Eighty-seven ten-thousandths 3. One hundred fifty million 4. One millionth 5. Seven hundred twenty-five and four hundredths 	<p>Activity 1 is intended for learners to recall the proper way of writing words into figures including decimals and to recall the concept of significant figures.</p> <p>You may read each item to class, present each item using flashcards, or include this in your slide deck.</p> <p>Note: If necessary, present to the class the rules for significant digits.</p> <p>Answer Key:</p> <ol style="list-style-type: none"> 1. 545 000; 3 2. 0.0087; 2
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		3. 150 000 000; 2 4. 0.000001; 1 5. 725.04; 5										
LESSON PURPOSE/INTENTION	<p>Lesson Purpose Activity 2: Too Big, Too Small? Let the learners analyze the data in the table below. After that, let them answer the question that follows.</p> <table border="1"> <tr> <td>Distance from Earth to Sun</td><td>150 000 000 000 meters</td></tr> <tr> <td>Mass of average human cell</td><td>0.000000000001 kilograms</td></tr> <tr> <td>Diameter of the moon</td><td>3 474 000 meters</td></tr> <tr> <td>Temperature of the core of the sun</td><td>15 700 000 Kelvin</td></tr> <tr> <td>Diameter of an electron</td><td>0.0000000000000282 meters</td></tr> </table> <p>Guide Questions:</p> <ol style="list-style-type: none"> 1. What do you notice with the numbers in the second column? 2. Do you think there is a way to express each number in a shorter way? 	Distance from Earth to Sun	150 000 000 000 meters	Mass of average human cell	0.000000000001 kilograms	Diameter of the moon	3 474 000 meters	Temperature of the core of the sun	15 700 000 Kelvin	Diameter of an electron	0.0000000000000282 meters	<p>Activity 2 is intended to show real-life examples of numbers that are very big or very small. Give the learners a few minutes to analyze the table before asking them the guide questions. You may also add other questions, if necessary.</p> <p>Answer Key:</p> <ol style="list-style-type: none"> 1. The numbers are either very large or very small. 2. Yes.
Distance from Earth to Sun	150 000 000 000 meters											
Mass of average human cell	0.000000000001 kilograms											
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LESSON LANGUAGE PRACTICE	<p>Unlocking Content Vocabulary</p> <p>After accomplishing Activity 2, introduce the concept of scientific notation.</p> <p>Scientific Notation is a system of notation used to express very large or very small numbers conveniently. It uses exponents so as not to require the use of many zeros which can be confusing and lead to errors. It is written in the form $a \times 10^n$, where $1 \leq a < 10$ or the coefficient a is a number greater than or equal to 1 but less than 10 and the exponent n is a positive or negative integer. It is written as a number from 1 through a number less than 10 multiplied by 10 raised to a nonzero exponent.</p>											
DURING/LESSON PROPER												
READING THE KEY IDEA/STEM	<p>I. Introduction: Why Use Scientific Notation?</p> <p>Numbers can be very large (e.g., the distance between Earth and the Sun: 149,600,000 km) or very small (e.g., the size of a bacteria: 0.0000005 m). Writing these numbers in standard</p>											

form is inefficient, so we use **scientific notation** to express them concisely.

II. Understanding Scientific Notation

Scientific notation is a way of writing numbers as the product of two factors:

$$a \times 10^n$$

Where:

- "a" is a number greater than or equal to 1 but less than 10 ($1 \leq a < 10$).
- "n" is an integer (positive or negative) representing the number of places the decimal moves.

III. Converting a Large Number to Scientific Notation

Example 1: Write 5,600,000 in scientific notation.

1. Place the decimal after the first nonzero digit: **5.6**
2. Count how many places the decimal moved: **6 places**
3. Write in the form $a \times 10^n$: 5.6×10^6

$$5.6 \times 10^6$$

IV. Converting a Small Number to Scientific Notation

Example 2: Write 0.00042 in scientific notation.

1. Place the decimal after the first nonzero digit: **4.2**
2. Count how many places the decimal moved: **4 places to the right**
3. Use a negative exponent:

$$4.2 \times 10^{-4}$$

V. Converting Scientific Notation Back to Standard Form

- **For positive exponents:** Move the decimal right

$$3.1 \times 10^4 = 31,000$$

- **For negative exponents:** Move the decimal left

$$2.5 \times 10^{-3} = 0.0025$$

DEVELOPING and DEEPENING UNDERSTANDING OF THE KEY IDEA/STEM	<p>Activity</p> <p>Match the given numbers in Column A with their correct scientific notation in Column B.</p> <table border="1"> <thead> <tr> <th>Column A (Standard Form)</th><th>Column B (Scientific Notation)</th></tr> </thead> <tbody> <tr> <td>4,500,000</td><td></td></tr> <tr> <td>0.0023</td><td></td></tr> <tr> <td>67,000</td><td></td></tr> <tr> <td>0.000000078</td><td></td></tr> <tr> <td>3,450,000</td><td></td></tr> </tbody> </table>	Column A (Standard Form)	Column B (Scientific Notation)	4,500,000		0.0023		67,000		0.000000078		3,450,000		
Column A (Standard Form)	Column B (Scientific Notation)													
4,500,000														
0.0023														
67,000														
0.000000078														
3,450,000														
AFTER AFTER/POST-LESSON														
MAKING GENERALIZATIONS AND ABSTRACTION S	<p>Worksheet</p> <p>Synthesis/Extended</p> <p>What you have learned In a one sheet of paper write something you understand about the lesson we discussed today.</p>													
EVALUATING LEARNING	<p>Directions:</p> <p>Choose the letter of the correct answer.</p> <p>1. Which of the following is the correct scientific notation for 5,600,000?</p> <p>A) 56×10^5 B) 5.6×10^6 C) 0.56×10^7 D) 560×10^4</p> <p>2. What is 0.00042 written in scientific notation?</p> <p>A) 4.2×10^3 B) 4.2×10^{-4} C) 4.2×10^{-3} D) 4.2×10^{-5}</p> <p>3. Which number is equivalent to 6.1×10^4?</p>	<p>ANSWER</p> <p>1.B 2.D 3.B 4.B 5.C</p>												

	<p>A) 61,000 B) 6,100 C) 610,000 D) 610</p> <p>4. Convert 2.5×10^{-3} to standard form. A) 2500 B) 0.0025 C) 0.00025 D) 25</p> <p>5. Which of the following is NOT a correct scientific notation? A) 8.9×10^5 B) 3.45×10^{-2} C) 12×10^4 D) 6.7×10^3</p>	
<p>ADDITIONAL ACTIVITIES FOR APPLICATION OR REMEDIATION (IF APPLICABLE)</p>	<p>Directions: Answer the following questions by writing numbers in scientific notation or converting scientific notation into standard form. Show your solutions where applicable.</p> <p>Write the following numbers in scientific notation.</p> <ol style="list-style-type: none"> 1. 7,800,000 2. 0.000093 3. 125,000,000 4. 0.00000052 5. 43,500 <p>Write the following scientific notation numbers in standard form.</p> <ol style="list-style-type: none"> 6. 5.6×10^5 7. 3.9×10^{-3} 8. 2.45×10^7 9. 6.1×10^{-6} 10. 9.75×10^3 	
<p>REMARKS</p>		

REFLECTION		
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Prepared by:

*Subject Teacher
Teacher*

Reviewed by:

Master Teacher/Head