Grade 8

Topic: Exponents and Scientific Notation

Instructions

Solve the following problems carefully. Show your work and check your answers.

Practice Problems on Exponents

1. Simplify:

   (i) 3^4
   (ii) 2^5
   (iii) 10^3
   (iv) 5^0
   (v) $(-2)^3$
   (vi) 4^{-2}

2. Apply the exponent rules and simplify:

   (i) $2^3 \times 2^4$
   (ii) $\frac{5^6}{5^2}$
   (iii) $(3^2)^3$
   (iv) $(xy)^3$
   (v) $\frac{2^5 \cdot 3^2}{2^2 \cdot 3^1}$

Practice Problems on Scientific Notation

1. Write in scientific notation:

   (i) 5,600,000
   (ii) 0.00042
   (iii) 98,700

(iv) 0.0000071

2. Convert to standard form:

   (i) 3.5×10^6

   (ii) 4.2×10^{-4}

   (iii) 7.1×10^3

   (iv) 9.8×10^{-2}

3. Multiply or divide in scientific notation:

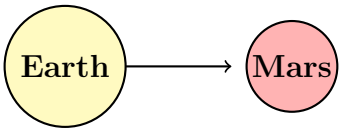
   (i) $(2 \times 10^3) \times (3 \times 10^4)$

   (ii) $\frac{6 \times 10^5}{2 \times 10^2}$

Word Problems

1. A population of bacteria is 3.2×10^5 and doubles every hour. What will the population be after 3 hours?

2. The distance from Earth to Mars is approximately 2.25×10^8 km. Express this in standard form.



Multiple-Choice Questions

1. $10^0 =$

   A. 0

   B. 1

   C. 10

   D. Undefined

2. Which number is written correctly in scientific notation?

   A. 0.45×10^3

   B. 4.5×10^3

   C. 45×10^3

   D. 450×10^3