

Exercise 2.1

Tuesday, January 6, 2026 6:58 PM

Scientific Notation:

A method used to express very large or very small numbers in a more manageable form is known as Scientific notation.

OR

A number in scientific notation is written as:

$a \times 10^n$, where $1 \leq a < 10$ and $n \in \mathbb{Z}$.

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Solution of Exercise

Question No.1: Express the following in scientific notation:

(i) 2000000

Solution:

$$\begin{aligned} 2000000 &= 2000000.0 \\ &= 2.0000000 \times 10^6 \\ &= 2 \times 10^6 \end{aligned}$$

(ii) 48900

Solution:

$$\begin{aligned} 48900 &= 48900.0 \\ &= 4.89000 \times 10^4 \\ &= 4.89 \times 10^4 \end{aligned}$$

(iii) 0.0042

Solution:

$$\begin{aligned} 0.0042 &= 0004.2 \times 10^{-3} \\ &= 4.2 \times 10^{-3} \end{aligned}$$

(iv) 0.0000009

Solution:

$$\begin{aligned} 0.0000009 &= 00000009.0 \times 10^{-7} \\ &= 9.0 \times 10^{-7} \\ &= 9 \times 10^{-7} \end{aligned}$$

(v) 73×10^3

Solution:

$$\begin{aligned} 73 \times 10^3 &= 73.0 \times 10^3 \\ &= 7.30 \times 10^1 \times 10^3 \\ &= 7.30 \times 10^{1+3} \end{aligned}$$

$$= 7.3 \times 10^4$$

(vi) 0.65×10^2

Solution:

$$\begin{aligned} 0.65 \times 10^2 &= 06.5 \times 10^{-1} \times 10^2 \\ &= 6.5 \times 10^{-1+2} \\ &= 6.5 \times 10^1 \end{aligned}$$

Question No.2: Express the following numbers in ordinary notation:

(i) 8.04×10^2

Solution:

$$\begin{aligned} 8.04 \times 10^2 &= 8.040 \times 10^2 \\ &= 804.0 \\ &= 804 \end{aligned}$$

(ii) 3×10^5

Solution:

$$\begin{aligned} 3 \times 10^5 &= 3.000000 \times 10^5 \\ &= 300000.0 \\ &= 300000 \end{aligned}$$

(iii) 1.5×10^{-2}

Solution:

$$\begin{aligned} 1.5 \times 10^{-2} &= 001.5 \times 10^{-2} \\ &= 0.015 \end{aligned}$$

(iv) 1.77×10^7

Solution:

$$\begin{aligned} 1.77 \times 10^7 &= 1.77000000 \times 10^7 \\ &= 17700000.0 \\ &= 17700000 \end{aligned}$$

(v) 5.5×10^{-6}

Solution:

$$\begin{aligned} 5.5 \times 10^{-6} &= 0000005.5 \times 10^{-6} \\ &= 0.0000055 \end{aligned}$$

(vi) 4×10^{-5}

Solution:

$$\begin{aligned} 4 \times 10^{-5} &= 4.0 \times 10^{-5} \\ &= 000004.0 \times 10^{-5} \\ &= 0.000040 \\ &= 0.00004 \end{aligned}$$

Question No.3: The speed of light is approximately 3×10^8 metres per second. Express it in standard form.

Solution:

$$\begin{aligned} 3 \times 10^8 &= 3.000000000 \times 10^8 \\ &= 300000000.0 \\ &= 300000000 \end{aligned}$$

Question No.4: The circumference of the Earth at the equator is about 40075000 metres. Express this number in scientific notation.

Solution:

$$\begin{aligned} 40075000 &= 40075000.0 \\ &= 4.00750000 \times 10^7 \\ &= 4.0075 \times 10^7 \end{aligned}$$

Question No.5: The diameter of Mars is 6.779×10^3 km. Express this number in standard form.

Solution:

$$\begin{aligned} 6.779 \times 10^3 &= 6.7790 \times 10^3 \\ &= 6779.0 \\ &= 6779 \text{ km} \end{aligned}$$

Question No.6: The diameter of Earth is about 1.2756×10^4 km. Express this number in standard form.

Solution:

$$\begin{aligned} 1.2756 \times 10^4 &= 1.27560 \times 10^4 \\ &= 12756.0 \\ &= 12756 \text{ Km} \end{aligned}$$