Exercise 2.1

1. Express the following numbers in scientific notation:

(i) 2000000

$$2000000 = 2 \times 10^6$$

(ii) 48900

$$48900 = 4.98 \times 10^4$$

(iii) 0.0042

$$0.0042 = 4.2 \times 10^{-3}$$

(iv) 0.0000009

$$0.0000009 = 9 \times 10^{-7}$$

(v) 73×10^3

$$\begin{aligned} 73 \times 10^3 &= 7.3 \times 10^1 \times 10^3 \\ &= 7.3 \times 10^{1+3} \\ &= 7.3 \times 10^4 \end{aligned}$$

(vi) 0.65×10^2

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

2. Express the following numbers in ordinary notation:

(i) 8.04×10^2

$$8.04 \times 10^2 = 804$$

(ii) 3×10^5

$$3 \times 10^5 = 300000$$

(iii) 1.5×10^{-2}

$$1.5 \times 10^{-2} = 0.015$$

(iv) 1.77×10^7

$$1.77 \times 10^7 = 17700000$$

(v) 5.5×10^{-6}

$$5.5 \times 10^{-6} = 0.0000055$$

(vi) 4×10^{-5}

$$4 \times 10^{-5} = 0.00004$$

3. The speed of light is approximately 3×10^8 meters per second. Express it in standard form.

$$Speed\ of\ light = 3 \times 10^8\ ms^{-1}$$
$$In\ standard\ form = 300000000\ ms^{-1}$$

4. The circumference of the Earth at the equator is about $4007500\ meters$. Express this number in scientific notation.

$$Circumference\ of\ Earth = 40075000\ m$$
$$In\ scientific\ notation = 4.0075 \times 10^7\ m$$

5. The diameter of Mars is $6.779 \times 10^3\ km$. Express this number in standard form.

$$Diameter\ of\ Mars = 6.779 \times 10^3\ km$$
$$In\ standard\ form = 6779\ km$$

6. The diameter of Earth is about $1.2756 \times 10^4 km$. Express this number in standard form.

$$Diameter\ of\ Earth = 1.2756 \times 10^4\ km$$
$$In\ standard\ form = 12756\ km$$

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