Exercise 3.1

Q. 1: Express each of the following numbers in scientific notation.

(i) $5700 = \frac{5700}{1000} \times 1000$
$= 5.7 \times 10^3$

(ii) $49800000 = \frac{49800000}{10000000} \times 10000000$
$= 4.98 \times 10^7$

(iii) $96000000 = \frac{96000000}{10000000} \times 10000000$
$= 9.6 \times 10^7$

(iv) $416.9 = \frac{4169}{10}$
$= \frac{4169}{1000\times10} \times 1000$
$= 4.169 \times 10^3 \times 10^{-1}$
$= 4.169 \times 10^2$

(v) $83000 = \frac{83000}{10000} \times 10000$
$= 8.3 \times 10^4$

(vi) $0.00643 = \frac{643}{100000}$
$= \frac{643}{100000\times100} \times 100$
$= 6.43 \times 10^2 \times 10^{-5}$
$= 6.43 \times 10^{-3}$

(vii) $0.0074 = \frac{74}{10000}$
$= \frac{74}{10000\times10} \times 10$
$= 7.4 \times 10^1 \times 10^{-4}$
$= 7.4 \times 10^{-3}$

(viii) $60{,}000{,}000 = \frac{60000000}{10000000} \times 10000000$
$= 6 \times 10^7$

(ix) $0.00000000395 = \frac{395}{1000000000}$
$= \frac{395}{1000000000\times100} \times 100$
$= 3.95 \times 10^2 \times 10^{-9}$
$= 3.95 \times 10^{-7}$

(x) $\frac{275000}{0.0025} = \frac{275000}{\frac{25}{10000}}$
$= \frac{\frac{275000}{100000}\times100000}{\frac{25}{10000\times10}\times10}$
$= \frac{2.75\times10^5}{2.5\times10^{-4}\times10}$
$= \frac{2.75\times10^5}{2.5\times10^{-3}}$

Q. 2: Express the following numbers in ordinary notation.

(i) 6×10^{-4}

$= \frac{6}{10^4}$

$= \frac{6}{10000}$

$= 0.0006$

(ii) 5.06×10^{10}

$= \frac{506}{100} \times 10^{10}$

$= 506 \times 100000000$

$= 50{,}600{,}000{,}000$

(iii) 9.018×10^{-6}

$= \frac{9018}{1000} \times 10^{-6}$

$= \frac{9018}{1000000000}$

$= 0.000009018$

(iv) 7.865×10^{8}

$= \frac{7865}{1000} \times 10^{8}$

$= 7865 \times 100000$

$= 786{,}500{,}000$