

Class -VII Mathematics (Ex. 13.1)

Answers

1. (i) $2^6 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$

(ii) $9^3 = 9 \times 9 \times 9 = 729$

(iii) $11^2 = 11 \times 11 = 121$

(iv) $5^4 = 5 \times 5 \times 5 \times 5 = 625$

2. (i) $6 \times 6 \times 6 \times 6 = 6^4$

(ii) $t \times t = t^2$

(iii) $b \times b \times b \times b = b^4$

(iv) $5 \times 5 \times 7 \times 7 \times 7 = 5^2 \times 7^3$

(v) $2 \times 2 \times a \times a = 2^2 \times a^2$

(vi) $a \times a \times a \times c \times c \times c \times c \times d = a^3 \times c^4 \times d$

3. (i) 512

$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 2^9$

2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

(ii) 343

$= 7 \times 7 \times 7 = 7^3$

7	343
7	49
7	7
	1

(iii) 729

$= 3 \times 3 \times 3 \times 3 \times 3 \times 3 = 3^6$

3	729
3	243
3	81
3	27
3	9
3	3
	1

(iv) 3125

5	3125
5	625
5	125
5	25
5	5
	1

4. (i) $4^3 = 4 \times 4 \times 4 = 64$
 $3^4 = 3 \times 3 \times 3 \times 3 = 81$
 Since $64 < 81$
 Thus, 3^4 is greater than 4^3 .

(ii) $5^3 = 5 \times 5 \times 5 = 125$
 $3^5 = 3 \times 3 \times 3 \times 3 \times 3 = 243$
 Since, $125 < 243$
 Thus, 3^4 is greater than 5^3 .

(iii) $2^8 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 256$
 $8^2 = 8 \times 8 = 64$
 Since, $256 > 64$
 Thus, 2^8 is greater than 8^2 .

(iv) $100^2 = 100 \times 100 = 10,000$
 $2^{100} = 2 \times 2 \times 2 \times 2 \times 2 \times \dots 14 \text{ times} \times \dots \times 2 = 16,384 \times \dots \times 2$
 Since, $10,000 < 16,384 \times \dots \times 2$
 Thus, 2^{100} is greater than 100^2 .

(v) $2^{10} = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 1,024$
 $10^2 = 10 \times 10 = 100$
 Since, $1,024 > 100$
 Thus, $2^{10} > 10^2$

5. (i) $648 = 2^3 \times 3^4$

2	648
2	324
2	162
3	81
3	27
3	9
3	3
	1

(ii) $405 = 5 \times 3^4$

5	405
3	81
3	27
3	9
3	3
	1

(iii) $540 = 2^2 \times 3^3 \times 5$

2	540
2	270
3	135
3	45
3	15
5	5
	1

(iv) $3,600 = 2^4 \times 3^2 \times 5^2$

2	3600
2	1800
2	900
2	450
3	225
3	75
5	25
5	5
	1

6. (i) $2 \times 10^3 = 2 \times 10 \times 10 \times 10 = 2,000$
(ii) $7^2 \times 2^2 = 7 \times 7 \times 2 \times 2 = 196$
(iii) $2^3 \times 5 = 2 \times 2 \times 2 \times 5 = 40$
(iv) $3 \times 4^4 = 3 \times 4 \times 4 \times 4 \times 4 = 768$
(v) $0 \times 10^2 = 0 \times 10 \times 10 = 0$
(vi) $5^3 \times 3^3 = 5 \times 5 \times 5 \times 3 \times 3 \times 3 = 675$
(vii) $2^4 \times 3^2 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 144$
(viii) $3^2 \times 10^4 = 3 \times 3 \times 10 \times 10 \times 10 \times 10 = 90,000$

7. (i) $(-4)^3 = (-4) \times (-4) \times (-4) = -64$
(ii) $(-3) \times (-2)^3 = (-3) \times (-2) \times (-2) \times (-2) = 24$
(iii) $(-3)^2 \times (-5)^2 = (-3) \times (-3) \times (-5) \times (-5) = 225$
(iv) $(-2)^3 \times (-10)^3 = (-2) \times (-2) \times (-2) \times (-10) \times (-10) \times (-10)$

8. (i) 2.7×10^{12} and 1.5×10^8
On comparing the exponents of base 10,
 $2.7 \times 10^{12} > 1.5 \times 10^8$

- (ii) 4×10^{14} and 3×10^{17}
On comparing the exponents of base 10,
 $4 \times 10^{14} < 3 \times 10^{17}$

Class -VII Mathematics (Ex. 13.1)

Questions

1. Find the value of:
(i) 2^6 (ii) 9^3 (iii) 11^2 (iv) 5^4
2. Express the following in exponential form:
(i) $6 \times 6 \times 6 \times 6$ (ii) $t \times t$
(iii) $b \times b \times b \times b$ (iv) $5 \times 5 \times 7 \times 7 \times 7$
(v) $2 \times 2 \times a \times a$ (vi) $a \times a \times a \times c \times c \times c \times c \times d$
3. Express each of the following numbers using exponential notation:
(i) 512 (ii) 343 (iii) 729 (iv) 3125
4. Identify the greater number, wherever possible, in each of the following:
(i) 4^3 and 3^4 (ii) 5^3 or 3^5
(iii) 2^8 or 8^2 (iv) 100^2 or 2^{100}
(v) 2^{10} or 10^2
5. Express each of the following as product of powers of their prime factors:
(i) 648 (ii) 405 (iii) 540 (iv) 3,600
6. Simplify:
(i) 2×10^3 (ii) $7^2 \times 2^2$
(iii) $2^3 \times 5$ (iv) 3×4^4
(v) 0×10^2 (vi) $5^2 \times 3^3$
(vii) $2^4 \times 3^2$ (viii) $3^2 \times 10^4$
7. Simplify:
(i) $(-4)^3$ (ii) $(-3) \times (-2)^3$
(iii) $(-3)^2 \times (-5)^2$ (iv) $(-2)^3 \times (-10)^3$
8. Compare the following numbers:
(i) 2.7×10^{12} ; 1.5×10^8 (ii) 4×10^{14} ; 3×10^{17}

Class -VII Mathematics (Ex. 13.2)

Answers

1. (i) $3^2 \times 3^4 \times 3^8 = 3^{(2+4+8)} = 3^{14}$ $\left[\because a^m \times a^n = a^{m+n} \right]$
- (ii) $6^{15} \div 6^{10} = 6^{15-10} = 6^5$ $\left[\because a^m \div a^n = a^{m-n} \right]$
- (iii) $a^3 \times a^2 = a^{3+2} = a^5$ $\left[\because a^m \times a^n = a^{m+n} \right]$
- (iv) $7^x \times 7^2 = 7^{x+2}$ $\left[\because a^m \times a^n = a^{m+n} \right]$
- (v) $(5^2)^3 \div 5^3 = 5^{2 \times 3} \div 5^3 = 5^6 \div 5^3$ $\left[\because (a^m)^n = a^{m \times n} \right]$
 $= 5^{6-3} = 5^3$ $\left[\because a^m \div a^n = a^{m-n} \right]$
- (vi) $2^5 \times 5^5 = (2 \times 5)^5 = 10^5$ $\left[\because a^m \times b^m = (a \times b)^m \right]$
- (vii) $a^4 \times b^4 = (a \times b)^4$ $\left[\because a^m \times b^m = (a \times b)^m \right]$
- (viii) $(3^4)^3 = 3^{4 \times 3} = 3^{12}$ $\left[\because (a^m)^n = a^{m \times n} \right]$
- (ix) $(2^{20} \div 2^{15}) \times 2^3 = (2^{20-15}) \times 2^3$ $\left[\because a^m \div a^n = a^{m-n} \right]$
 $= 2^5 \times 2^3 = 2^{5+3} = 2^8$ $\left[\because a^m \times a^n = a^{m+n} \right]$
- (x) $8^t \div 8^2 = 8^{t-2}$ $\left[\because a^m \div a^n = a^{m-n} \right]$

2. (i) $\frac{2^3 \times 3^4 \times 4}{3 \times 32} = \frac{2^3 \times 3^4 \times 2^2}{3 \times 2^5} = \frac{2^{3+2} \times 3^4}{3 \times 2^5}$ $\left[\because a^m \times a^n = a^{m+n} \right]$
 $= \frac{2^5 \times 3^4}{3 \times 2^5} = 2^{5-5} \times 3^{4-3}$ $\left[\because a^m \div a^n = a^{m-n} \right]$
 $= 2^0 \times 3^3 = 1 \times 3^3 = 3^3$
- (ii) $\left[(5^2)^3 \times 5^4 \right] \div 5^7 = \left[5^6 \times 5^4 \right] \div 5^7$ $\left[\because (a^m)^n = a^{m \times n} \right]$
 $= \left[5^{6+4} \right] \div 5^7 = 5^{10} \div 5^7$ $\left[\because a^m \times a^n = a^{m+n} \right]$
 $= 5^{10-7} = 5^3$ $\left[\because a^m \div a^n = a^{m-n} \right]$
- (iii) $25^4 \div 5^3 = (5^2)^4 \div 5^3 = 5^8 \div 5^3$ $\left[\because a^m \div a^n = a^{m-n} \right]$
 $= 5^{8-3} = 5^5$ $\left[\because a^m \div a^n = a^{m-n} \right]$
- (iv) $\frac{3 \times 7^2 \times 11^8}{21 \times 11^3} = \frac{3 \times 7^2 \times 11^8}{3 \times 7 \times 11^3} = 3^{1-1} \times 7^{2-1} \times 11^{8-3}$ $\left[\because a^m \div a^n = a^{m-n} \right]$
 $= 3^0 \times 7^1 \times 11^5 = 7 \times 11^5$
- (v) $\frac{3^7}{3^4 \times 3^3} = \frac{3^7}{3^{4+3}} = \frac{3^7}{3^7}$ $\left[\because a^m \times a^n = a^{m+n} \right]$

$$\begin{aligned}
&= 3^{7-7} = 3^0 = 1 & \left[\because a^m \div a^n = a^{m-n} \right] \\
\text{(vi)} \quad &2^0 + 3^0 + 4^0 = 1 + 1 + 1 = 3 & \left[\because a^0 = 1 \right] \\
\text{(vii)} \quad &2^0 \times 3^0 \times 4^0 = 1 \times 1 \times 1 = 1 & \left[\because a^0 = 1 \right] \\
\text{(viii)} \quad &(3^0 + 2^0) \times 5^0 = (1 + 1) \times 1 = 2 \times 1 = 2 & \left[\because a^0 = 1 \right] \\
\text{(ix)} \quad &\frac{2^8 \times a^5}{4^3 \times a^3} = \frac{2^8 \times a^5}{(2^2)^3 \times a^3} = \frac{2^8 \times a^5}{2^6 \times a^3} & \left[\because (a^m)^n = a^{m \times n} \right] \\
&= 2^{8-6} \times a^{5-3} = 2^2 \times a^2 & \left[\because a^m \div a^n = a^{m-n} \right] \\
&= (2a)^2 & \left[\because a^m \times b^m = (a \times b)^m \right] \\
\text{(x)} \quad &\left(\frac{a^5}{a^3} \right) \times a^8 = (a^{5-3}) \times a^8 = a^2 \times a^8 & \left[\because a^m \div a^n = a^{m-n} \right] \\
&= a^{2+8} = a^{10} & \left[\because a^m \times a^n = a^{m+n} \right] \\
\text{(xi)} \quad &\frac{4^5 \times a^8 b^3}{4^5 \times a^5 b^2} = 4^{5-5} \times a^{8-5} \times b^{3-2} = 4^0 \times a^3 \times b & \left[\because a^m \div a^n = a^{m-n} \right] \\
&= 1 \times a^3 \times b = a^3 b & \left[\because a^0 = 1 \right] \\
\text{(xii)} \quad &(2^3 \times 2)^2 = (2^{3+1})^2 = (2^4)^2 & \left[\because a^m \times a^n = a^{m+n} \right] \\
&= 2^{4 \times 2} = 2^8 & \left[\because (a^m)^n = a^{m \times n} \right]
\end{aligned}$$

3. (i) $10 \times 10^{11} = 100^{11}$
L.H.S. $10^{1+11} = 10^{12}$ and R.H.S. $(10^2)^{11} = 10^{22}$

Since, L.H.S. $\neq$ R.H.S.

Therefore, it is false.

(ii) $2^3 > 5^2$
L.H.S. $2^3 = 8$ and R.H.S. $5^2 = 25$

Since, L.H.S. is not greater than R.H.S.

Therefore, it is false.

(iii) $2^3 \times 3^2 = 6^5$
L.H.S. $2^3 \times 3^2 = 8 \times 9 = 72$ and R.H.S. $6^5 = 7,776$

Since, L.H.S. $\neq$ R.H.S.

Therefore, it is false.

(iv) $3^0 = (1000)^0$
L.H.S. $3^0 = 1$ and R.H.S. $(1000)^0 = 1$

Since, L.H.S. = R.H.S.

Therefore, it is true.

4. (i) 108×192
 $= (2^2 \times 3^3) \times (2^6 \times 3)$
 $= 2^{2+6} \times 3^{3+1}$
 $= 2^8 \times 3^4$

2	108
2	54
3	27
3	9
3	3
	1

2	192
2	96
2	48
2	24
2	12
2	6
3	3
	1

(ii) 270
 $= 2 \times 3^5 \times 5$

2	270
3	135
3	45
3	15
5	5
	1

(iii) 729×64
 $= 3^6 \times 2^6$

3	729
3	243
3	81
3	27
3	9
3	3
	1

2	64
2	32
2	16
2	8
2	4
2	2
	1

(iv) 768
 $= 2^8 \times 3$

2	768
2	384
2	192
2	96
2	48
2	24
2	12
2	6
3	3
	1

$$\begin{aligned}
 5. \quad (i) \quad \frac{(2^5)^2 \times 7^3}{8^3 \times 7} &= \frac{2^{5 \times 2} \times 7^3}{(2^3)^3 \times 7} \\
 &= \frac{2^{10} \times 7^3}{2^9 \times 7} \\
 &= 2^{10-9} \times 7^{3-1} = 2 \times 7^2 \\
 &= 2 \times 49 \\
 &= 98
 \end{aligned}$$

$$\begin{aligned}
 (ii) \quad \frac{25 \times 5^2 \times t^8}{10^3 \times t^4} &= \frac{5^2 \times 5^2 \times t^8}{(5 \times 2)^3 \times t^4} \\
 &= \frac{5^{2+2} \times t^{8-4}}{2^3 \times 3^3} \\
 &= \frac{5^4 \times t^4}{2^3 \times 5^3} \\
 &= \frac{5^{4-3} \times t^4}{2^3} \\
 &= \frac{5t^4}{8}
 \end{aligned}$$

$$\begin{aligned}
 (iii) \quad \frac{3^5 \times 10^5 \times 25}{5^7 \times 6^5} &= \frac{3^5 \times (2 \times 5)^5 \times 5^2}{5^7 \times (2 \times 3)^5} \\
 &= \frac{3^5 \times 2^5 \times 5^5 \times 5^2}{5^7 \times 2^5 \times 3^5} \\
 &= \frac{3^5 \times 2^5 \times 5^{5+2}}{5^7 \times 2^5 \times 3^5} \\
 &= \frac{3^5 \times 2^5 \times 5^7}{5^7 \times 2^5 \times 3^5} \\
 &= 2^{5-5} \times 3^{5-5} \times 5^{5-5} \\
 &= 2^0 \times 3^0 \times 5^0 \\
 &= 1 \times 1 \times 1 \\
 &= 1
 \end{aligned}$$

Class –VII Mathematics (Ex. 13.2)

Questions

1. Using laws of exponents, simplify and write the answer in exponential form:

(i) $3^2 \times 3^4 \times 3^8$

(ii) $6^{15} \div 6^{10}$

(iii) $a^3 \times a^2$

(iv) $7^x \times 7^2$

(v) $(5^2)^2 \div 5^3$

(vi) $2^5 \times 5^5$

(vii) $a^4 \times b^4$

(viii) $(3^4)^3$

(ix) $(2^{20} \div 2^{15}) \times 2^3$

(x) $8^7 \div 8^2$

2. Simplify and express each of the following in exponential form:

(i) $\frac{2^3 \times 3^4 \times 4}{3 \times 32}$

(ii) $\left[(5^2)^3 \times 5^4 \right] \div 5^7$

(iii) $25^4 \div 5^3$

(iv) $\frac{3 \times 7^2 \times 11^8}{21 \times 11}$

(v) $\frac{3^7}{3^4 \times 3^3}$

(vi) $2^0 + 3^0 + 4^0$

(vii) $2^0 \times 3^0 \times 4^0$

(viii) $(3^0 + 2^0) \times 5^0$

(ix) $\frac{2^8 \times a^5}{4^3 \times a^3}$

(x) $\left(\frac{a^5}{a^3} \right) \times a^8$

(xi) $\frac{4^5 \times a^8 b^3}{4^5 \times a^5 b^2}$

(xii) $(2^3 \times 2)^2$

3. Say true or false and justify your answer:

(i) $10 \times 10^{11} = 100^{11}$

(ii) $2^3 > 5^2$

(iii) $2^3 \times 3^2 = 6^5$

(iv) $3^0 = (1000)^0$

4. Express each of the following as a product of prime factors only in exponential form:

(i) 108×192

(ii) 270

(iii) 729×64

(iv) 768

5. Simplify:

(i) $\frac{(2^5)^2 \times 7^3}{8^3 \times 7}$

(ii) $\frac{25 \times 5^2 \times t^8}{10^3 \times t^4}$

(iii) $\frac{3^5 \times 10^5 \times 25}{5^7 \times 6^5}$

Class –VII Mathematics (Ex. 13.3)

Answers

1. (i) $2,79,404 = 2,00,000 + 70,000 + 9,000 + 400 + 00 + 4$
 $= 2 \times 100000 + 7 \times 10000 + 9 \times 1000 + 4 \times 100 + 0 \times 10 + 4 \times 1$
 $= 2 \times 10^5 + 7 \times 10^4 + 9 \times 10^3 + 4 \times 10^2 + 0 \times 10^1 + 4 \times 10^0$
- (ii) $30,06,194 = 30,00,000 + 0 + 0 + 6,000 + 100 + 90 + 4$
 $= 3 \times 1000000 + 0 \times 100000 + 0 \times 10000 + 6 \times 1000 + 1 \times 100 + 9 \times 10 + 4 \times 1$
 $= 3 \times 10^6 + 0 \times 10^5 + 0 \times 10^4 + 6 \times 10^3 + 1 \times 10^2 + 9 \times 10 + 4 \times 10^0$
- (iii) $28,06,196 = 20,00,000 + 8,00,000 + 0 + 6,000 + 100 + 90 + 6$
 $= 2 \times 1000000 + 8 \times 100000 + 0 \times 10000 + 6 \times 1000 + 1 \times 100 + 9 \times 10 + 6 \times 1$
 $= 2 \times 10^6 + 8 \times 10^5 + 0 \times 10^4 + 6 \times 10^3 + 1 \times 10^2 + 9 \times 10 + 6 \times 10^0$
- (iv) $1,20,719 = 1,00,000 + 20,000 + 0 + 700 + 10 + 9$
 $= 1 \times 100000 + 2 \times 10000 + 0 \times 1000 + 7 \times 100 + 1 \times 10 + 9 \times 1$
 $= 1 \times 10^5 + 2 \times 10^4 + 0 \times 10^3 + 7 \times 10^2 + 1 \times 10^1 + 9 \times 10^0$
- (v) $20,068 = 20,000 + 00 + 00 + 60 + 8$
 $= 2 \times 10000 + 0 \times 1000 + 0 \times 100 + 6 \times 10 + 8 \times 1$
 $= 2 \times 10^4 + 0 \times 10^3 + 0 \times 10^2 + 6 \times 10^1 + 8 \times 10^0$
2. (a) $8 \times 10^4 + 6 \times 10^3 + 0 \times 10^2 + 4 \times 10^1 + 5 \times 10^0$
 $= 8 \times 10000 + 6 \times 1000 + 0 \times 100 + 4 \times 10 + 5 \times 1$
 $= 80000 + 6000 + 0 + 40 + 5$
 $= 86,045$
- (b) $4 \times 10^5 + 5 \times 10^3 + 3 \times 10^2 + 2 \times 10^0$
 $= 4 \times 100000 + 0 \times 10000 + 5 \times 1000 + 3 \times 100 + 0 \times 10 + 2 \times 1$
 $= 400000 + 0 + 5000 + 3000 + 0 + 2$
 $= 4,05,302$
- (c) $3 \times 10^4 + 7 \times 10^2 + 5 \times 10^0$
 $= 3 \times 10000 + 0 \times 1000 + 7 \times 100 + 0 \times 10 + 5 \times 1$
 $= 30000 + 0 + 700 + 0 + 5$
 $= 30,705$
- (d) $9 \times 10^5 + 2 \times 10^2 + 3 \times 10^1$
 $= 9 \times 100000 + 0 \times 10000 + 0 \times 1000 + 2 \times 100 + 3 \times 10 + 0 \times 1$
 $= 900000 + 0 + 0 + 200 + 30 + 0$
 $= 9,00,230$
3. (i) $5,00,00,000 = 5 \times 1,00,00,000 = 5 \times 10^7$
- (ii) $70,00,000 = 7 \times 10,00,000 = 7 \times 10^6$
- (iii) $3,18,65,00,000 = 31865 \times 100000 = 3.1865 \times 10000 \times 100000 = 3.1865 \times 10^9$
- (iv) $3,90,878 = 3.90878 \times 100000 = 3.90878 \times 10^5$
- (v) $39087.8 = 3.90878 \times 10000 = 3.90878 \times 10^4$

- (vi) $3908.78 = 3.90878 \times 1000 = 3.90878 \times 10^3$
4. (a) The distance between Earth and Moon = $384,000,000 \text{ m}$
 $= 384 \times 1000000 \text{ m} = 3.84 \times 100 \times 1000000$
 $= 3.84 \times 10^8 \text{ m}$
- (b) Speed of light in vacuum = $300,000,000 \text{ m/s}$
 $= 3 \times 100000000 \text{ m/s}$
 $= 3 \times 10^8 \text{ m/s}$
- (c) Diameter of the Earth = $1,27,56,000 \text{ m}$
 $= 12756 \times 1000 \text{ m} = 1.2756 \times 10000 \times 1000 \text{ m}$
 $= 1.2756 \times 10^7 \text{ m}$
- (d) Diameter of the Sun = $1,400,000,000 \text{ m}$
 $= 14 \times 100,000,000 \text{ m} = 1.4 \times 10 \times 100,000,000 \text{ m}$
 $= 1.4 \times 10^9 \text{ m}$
- (e) Average of Stars = $100,000,000,000$
 $= 1 \times 100,000,000,000$
 $= 1 \times 10^{11}$
- (f) Years of Universe = $12,000,000,000 \text{ years}$
 $= 12 \times 1000,000,000 \text{ years}$
 $= 1.2 \times 10 \times 1000,000,000 \text{ years}$
 $= 1.2 \times 10^{10} \text{ years}$
- (g) Distance of the Sun from the centre of the Milky Way Galaxy = $300,000,000,000,000,000,000 \text{ m}$
 $= 3 \times 100,000,000,000,000,000,000 \text{ m}$
 $= 3 \times 10^{20} \text{ m}$
- (h) Number of molecules in a drop of water weighing 1.8 gm = $60,230,000,000,000,000,000,000$
 $= 6023 \times 10,000,000,000,000,000,000$
 $= 6.023 \times 1000 \times 10,000,000,000,000,000,000$
 $= 6.023 \times 10^{22}$
- (i) The Earth has Sea water = $1,353,000,000 \text{ km}^3$
 $= 1,353 \times 1000000 \text{ km}^3$
 $= 1.353 \times 1000 \times 1000,000 \text{ km}^3$
 $= 1.353 \times 10^9 \text{ km}^3$
- (j) The population of India = $1,027,000,000$
 $= 1027 \times 1000000$
 $= 1.027 \times 1000 \times 1000000$
 $= 1.027 \times 10^9$

- Write the following numbers in the expanded form:
279404, 3006194, 2806196, 120719, 20068
- Find the number from each of the following expanded forms:
(a) $8 \times 10^4 + 6 \times 10^3 + 0 \times 10^2 + 4 \times 10^1 + 5 \times 10^0$
(b) $4 \times 10^5 + 5 \times 10^3 + 3 \times 10^2 + 2 \times 10^0$
(c) $3 \times 10^4 + 7 \times 10^2 + 5 \times 10^0$
(d) $9 \times 10^5 + 2 \times 10^2 + 3 \times 10^1$
- Express the following numbers in standard form:
(i) 5,00,00,000 (ii) 70,00,000
(iii) 3,18,65,00,000 (iv) 3,90,878
(v) 39087.8 (vi) 3908.78
- Express the number appearing in the following statements in standard form:
(a) The distance between Earth and Moon is 384,000,000 m.
(b) Speed of light in vacuum is 300,000,000 m/s.
(c) Diameter of Earth is 1,27,56,000 m.
(d) Diameter of the Sun is 1,400,000,000 m.
(e) In a galaxy there are on an average 100,000,000,000 stars.
(f) The universe is estimated to be about 12,000,000,000 years old.
(g) The distance of the Sun from the centre of the Milky Way Galaxy is estimated to be 300,000,000,000,000,000 m.
(h) 60,230,000,000,000,000,000 molecules are contained in a drop of water weighing 1.8 gm.
(i) The Earth has 1,353,000,000 cubic km of sea water.
(j) The population of India was about 1,027,000,000 in march, 2001.