

Excercise # 2.7

Solutions

Find number of digits in the Square Root of following perfect Square.

(i) Number of digits in Square Root 63504

$$\text{Number of digits in } 63504 = 5$$
$$n = 5 \quad (\text{odd number})$$

$$\text{no. of digits in square Root} = \frac{5+1}{2} = \frac{n+1}{2}$$
$$= \frac{6}{2} = 3$$

(ii) 66564

$$\text{no of digits} = 5 \quad (\text{odd number})$$

$$\text{no. of digits in square Root} = \frac{n+1}{2} = \frac{5+1}{2} = 3$$

(iii) 50625

$$\text{no of digits} = 5 \quad (\text{odd number})$$

$$\text{no of digits in square Root} = \frac{n+1}{2} = \frac{5+1}{2} = \frac{6}{2} = 3$$

(iv) 837225

no of digits = 6 (even no)

no of digits in $\sqrt{\quad}$ = $\frac{6}{2} = 3$

Square Root

(v) 839056

no of digits = 6 (even no)

no of digits in Square Root = $\frac{6}{2} = 3$

(vi) 1054729

no of digits = 7 (odd no)

no of digits in Square Root = $\frac{n+1}{2} = \frac{8}{2} = 4$

(vii) 2119936

no of digits = 7 (odd no)

no of digits in Square Root = $\frac{n+1}{2} = \frac{8}{2} = 4$

(viii) 3283344

no of digits = 7 (odd no)

no of digits in Square Root = $\frac{n+1}{2} = \frac{8}{2} = 4$

(ix) 614656

no of digits = 6

no of digits in Square Root = $\frac{n}{2}$
= 3

(x) 7778521

no of digits = 7

no of digits in Square Root = $\frac{n+1}{2} = \frac{7+1}{2}$
= $\frac{8}{2} = 4$

(xi) 12880921

no of digits = 8

no of digits in Square Root = $\frac{8}{2} = 4$



Exercise # 2.8

Data

(1)

Area = 14400 Sq. metre
length of one side = ?

$$\begin{array}{r|l} & 120 \\ 1 & 14400 \\ & 1111 \\ \hline 22 & 44 \\ & 44 \\ \hline & \end{array}$$

Length = 120 meter

(2)

Data

Area = 422500 Sq. meter
length of one side = ?

Boundary of field = ?

OR

Length of string = ?

$$\begin{array}{r|l} & 650 \\ 6 & 422500 \\ & -36 \\ \hline & 625 \\ 125 & -625 \\ \hline & 00 \end{array}$$

Length = 650

Boundary = $650 \times 4 = 2600$ meter

length of string = 2600 meter

Data

(5)

Area of Circular Region = 616

By applying formula

$$\pi r^2 = 616$$

$$\frac{22}{7} r^2 = 616$$

7

$$r^2 = \frac{7 \times 616}{22}$$

$$\sqrt{r^2} = \sqrt{196}$$

$$r = \sqrt{14^2}$$

$$r = 14$$

(6)

Data

Area = 28800 sq. m

According to condition

$$= \frac{28800}{2} = 14400 \text{ sq. m}$$

Side of square = ?

| | |
|----|---------|
| 1 | 14400 |
| | - 1 ↓ ↓ |
| 22 | 44 |
| | 44 |
| | 000 |

side of square = 120 m

width = 120 m

Length = 120 m

Data

(3) number of Trees = 12,2500

number of Trees in row = ?

$$\begin{array}{r} 3 \overline{) 122500} \\ \underline{-9} \\ 325 \\ \underline{-325} \\ 000 \end{array}$$

number of Trees = 350

(4) Data

Area of Rectangular field = 10092

According to condition

length is three times as long its width

$$\text{Area of each sq. field} = \frac{10092}{3}$$

$$= 3364 \text{ sq. m}$$

$$\text{Side of field} = \sqrt{3364} \text{ sq. m} \\ = 58 \text{ m}$$

$$\text{width} = 58$$

$$\text{length} = 58 \times 3 = 174 \text{ m}$$

$$\text{Perimeter} = 2(58 + 174)$$

$$= 2 \times 232 = 464 \text{ m}$$

(9) - Data

If cost is Rs 2 then area = 10 m^2

" " " " 2450 " " = $\frac{10}{2} \times 24500$
= 122500 m^2

$$\begin{array}{r|l} 350 & \\ \hline 3 & 122500 \\ & -9 \\ \hline 65 & 325 \\ & -325 \\ \hline & 0 \end{array}$$

Side of square field = 350m

(10) Data

Area of sq. lawn = 62500 Sq. m

side = ?

Side = 250 m

$P = 4 \times 250 = 1000 \text{ m}$

$$\begin{array}{r|l} 250 & \\ \hline 2 & 62500 \\ & 4 \\ \hline 45 & 225 \\ & -225 \\ \hline & 0 \end{array}$$

length of fence = 1000 m

Cost on 1 m = 50

" " 1000 m = 50×1000

= $50,000 \text{ m}$

$$\begin{array}{r}
 \\
 (7) \quad 3 \overline{) 109087} \\
 \underline{-9} \\
 63 \\
 \underline{-189} \\
 660 \\
 \underline{187}
 \end{array}$$

187 shall be subtracted from 109087 and remainder shall be a complete square.

8) Data

$$\text{Cost of leveling} = 2/\text{sqm}$$

$$\text{if cost of leveling} = \frac{1}{2} \times 4928$$

is 4928 then area

$$= 2464 \text{ sqm}$$

$$\pi r^2 = 2464$$

$$\frac{22}{7} r^2 = 2464$$

7

$$r^2 = \frac{7 + 2464}{22}$$

22

$$\sqrt{r^2} = \sqrt{784}$$

$$r = \sqrt{28 \times 28}$$

$$= \sqrt{7 \times 4 \times 7 \times 4}$$

$$= \sqrt{4^2 \times 7^2}$$

$$= 4 \times 7$$

$$r = 28$$

(8) Find Cube Root

(i) 729

$$729 = 3 \times 3 \times 3 \times 3 \times 3 \times 3$$

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

$$729 = 9^3$$

$$\sqrt[3]{729} = \sqrt[3]{9^3}$$

$$\sqrt[3]{729} = (3^3)^3 = 3$$

| | |
|---|-----|
| 3 | 729 |
| 3 | 243 |
| 3 | 81 |
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
| | 1 |

(ii) 15625

$$15625 = 5 \times 5 \times 5 \times 5 \times 5 \times 5$$

$$= 5^3 \times 5^3$$

$$= 25^3$$

$$\sqrt[3]{15625} = \sqrt[3]{25^3}$$

$$= 25^{3 \times \frac{1}{3}}$$

$$= 25$$

| | |
|---|-------|
| 5 | 15625 |
| 5 | 3125 |
| 5 | 625 |
| 5 | 125 |
| 5 | 25 |
| 5 | 5 |
| | 1 |

(iii) 13824

$$= 6^3 \times 2^3 \times 2^3$$

$$= 24^3$$

$$= 24^3$$

$$\sqrt[3]{13824} = (24^3)^{\frac{1}{3}} = 24$$

| | | |
|---|-------|-----|
| 6 | 13824 | 214 |
| 3 | 2304 | 212 |
| 3 | 768 | |
| 2 | 256 | |
| 2 | 128 | |
| 2 | 64 | |
| 2 | 32 | |
| 2 | 16 | |
| 2 | 8 | |
| | 4 | |

Exercise #2.9

(1) which are perfect cube?

(i) 512

$$\begin{array}{r|l} 8 & 512 \\ \hline 8 & 64 \\ \hline 8 & 8 \\ \hline & 1 \end{array}$$

$$512 = 8 \times 8 \times 8$$

$$512 = 8^3$$

Answer = Yes

(ii) 1100

$$\begin{array}{r|l} 2 & 1100 \\ \hline 2 & 550 \\ \hline 5 & 275 \\ \hline 5 & 55 \\ \hline & 11 \end{array}$$

Answer = No

(iii) 729

$$= 9 \times 9 \times 9$$

$$= 9^3$$

Yes

$$\begin{array}{r|l} 3 & 729 \\ \hline 3 & 243 \\ \hline 3 & 81 \\ \hline 3 & 27 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

(iv) $\frac{1000}{125}$

$$= \frac{10 \times 10 \times 10}{5 \times 5 \times 5}$$

$$= \frac{10^3}{5^3}$$

Yes.

$$\sqrt[3]{\frac{27}{216}} = \sqrt[3]{\frac{3^3}{6^3}} = \frac{3^{3 \times \frac{1}{3}}}{6^{3 \times \frac{1}{3}}} = \frac{3^1}{6^1} = \frac{3}{6} = \frac{1}{2}$$

(ii) 35937

$$= 11 \times 3 \times 11 \times 3 \times 11 \times 3$$

$$= 33 \times 33 \times 33$$

$$= 33^3$$

| | |
|----|-------|
| 3 | 35937 |
| 3 | 11979 |
| 3 | 3993 |
| 3 | 1331 |
| 11 | 121 |
| 11 | 11 |
| | 1 |

$$\sqrt[3]{35937} = \sqrt[3]{33^3}$$

$$= 33^{3 \times \frac{1}{3}}$$

$$= 33$$

(iii) 3375

$$3375 = 3 \times 5 + 3 \times 5 + 3 \times 5$$

$$= 15 \times 15 \times 15$$

$$\sqrt[3]{3375} = \sqrt[3]{15^3}$$

$$= 15^{3 \times \frac{1}{3}}$$

$$\sqrt[3]{3375} = 15$$

| | |
|---|------|
| 3 | 3375 |
| 3 | 1125 |
| 3 | 375 |
| 5 | 125 |
| 5 | 25 |
| 5 | 5 |
| | 1 |

(3. Find the cube of following

$$(i) = 1.4$$

Taking cube

$$= 1.4 \times 1.4 \times 1.4$$

$$= 1.4^3$$

$$= 2.744$$

$$(ii) = 0.4$$

$$= 0.4 \times 0.4 \times 0.4$$

$$= 0.4^3$$

$$= 0.064$$

$$(iii) = 0.8$$

$$= 0.8 \times 0.8 \times 0.8$$

$$= 0.8^3$$

$$= 0.512$$

4) Find Cube Root of Follow

$$(i) \frac{27}{216}$$

$$(ii) = \frac{3 \times 3 \times 3}{6 \times 6 \times 6} = \frac{3^3}{6^3}$$

$$\frac{27^3}{216} \quad \frac{3^3}{6^3}$$