

Exercise :- 3D.

Q1. Find the square roots of the following numbers by division method.

(a) 3969

$$\begin{array}{r} 63 \\ 6 \overline{) 3969} \\ \underline{36} \\ 369 \\ 123 \overline{) 369} \\ \underline{369} \\ \times \end{array}$$

$$\sqrt{3969} = 63$$

(b) 54289

$$\begin{array}{r} 233 \\ 2 \overline{) 54289} \\ \underline{4} \\ 142 \\ 43 \overline{) 142} \\ \underline{129} \\ 1389 \\ 463 \overline{) 1389} \\ \underline{1389} \\ \times \end{array}$$

$$\sqrt{54289} = 233$$

(c) 8281

$$\begin{array}{r} 91 \\ 9 \overline{) 8281} \\ \underline{81} \\ 181 \\ 181 \overline{) 181} \\ \underline{181} \\ \times \end{array}$$

$$\sqrt{8281} = 91$$

(d) 53361

$$\begin{array}{r} 231 \\ 2 \overline{) 53361} \\ \underline{4} \\ 133 \\ 43 \overline{) 133} \\ \underline{129} \\ 461 \\ 461 \overline{) 461} \\ \underline{461} \\ \times \end{array}$$

$$\sqrt{53361} = 231$$

(e) 6889

$$\begin{array}{r} 83 \\ 8 \overline{) 6889} \\ \underline{64} \\ 489 \\ 489 \\ \hline X \end{array}$$

$$\sqrt{6889} = 83$$

(f) 2116

$$\begin{array}{r} 46 \\ 4 \overline{) 2116} \\ \underline{16} \\ 516 \\ 516 \\ \hline X \end{array}$$

$$\sqrt{2116} = 46$$

(g) 423801

$$\begin{array}{r} 651 \\ 6 \overline{) 423801} \\ \underline{36} \\ 638 \\ 625 \\ \hline 1301 \\ 1301 \\ \hline X \end{array}$$

$$\sqrt{423801} = 651$$

(h) 2601

$$\begin{array}{r} 51 \\ 5 \overline{) 2601} \\ \underline{25} \\ 101 \\ 101 \\ \hline X \end{array}$$

$$\sqrt{2601} = 51$$

$$\begin{array}{r}
 \text{(i) } 831744 \\
 \begin{array}{r}
 912 \\
 \hline
 9 \overline{) 831744} \\
 \underline{81} \\
 217 \\
 \underline{181} \\
 3644 \\
 \underline{3644} \\
 x
 \end{array}
 \end{array}$$

$$\sqrt{831744} = 912.$$

Q2. Find the square root of the following rational numbers.

$$(a) \sqrt{\frac{4}{9}} = \frac{2}{3}$$

$$(g) \sqrt{\frac{1024}{2401}} = \frac{32}{49}$$

$$(b) \sqrt{\frac{16}{25}} = \frac{4}{5}$$

$$(h) 3 \frac{1269}{1764} = \sqrt{\frac{6561}{1764}} = \frac{81}{42}$$

$$(c) \sqrt{\frac{9}{16}} = \frac{3}{4}$$

$$(i) \sqrt{\frac{2 \times 2 \times 2 \times 2}{3 \times 3 \times 5 \times 5}} = \frac{2 \times 2}{3 \times 3} = \frac{4}{15}$$

$$(d) \sqrt{\frac{64}{225}} = \frac{8}{15}$$

$$(e) \sqrt{\frac{81}{100}} = \frac{9}{10}$$

$$(f) \sqrt{\frac{144}{400}} = \frac{12}{20}$$

Q3 find the square root of the following decimal numbers

(a) 46.24

$$\begin{array}{r} 6.8 \\ 6 \overline{) 46.24} \\ \underline{36} \\ 1024 \\ \underline{1024} \\ \times \end{array}$$

$$\sqrt{46.24} = 6.8$$

(b) 82.81

$$\begin{array}{r} 9.1 \\ 9 \overline{) 82.81} \\ \underline{81} \\ 181 \\ \underline{181} \\ \times \end{array}$$

$$\sqrt{82.81} = 9.1$$

(c) 4637.61

$$\begin{array}{r} 68.1 \\ 6 \overline{) 4637.61} \\ \underline{36} \\ 1037 \\ \underline{1024} \\ 1361 \\ \underline{1361} \\ \times \end{array}$$

$$\sqrt{4637.61} = 68.1$$

d). 13.69

$$\begin{array}{r}
 3.7 \\
 3 \overline{) 13.69} \\
 \underline{9} \\
 469 \\
 \underline{469} \\
 \hline
 \times
 \end{array}$$

$$\sqrt{13.69} = 3.7$$

e) 1772.41

$$\begin{array}{r}
 42.1 \\
 4 \overline{) 1772.41} \\
 \underline{16} \\
 172 \\
 \underline{164} \\
 841 \\
 \underline{841} \\
 \hline
 \times
 \end{array}$$

$$\sqrt{1772.41} = 42.1$$

f). 8136.04

$$\begin{array}{r}
 90.2 \\
 9 \overline{) 8136.04} \\
 \underline{81 \downarrow} \\
 \times 36 \\
 \underline{0} \\
 3604 \\
 \underline{3604} \\
 \hline
 \times
 \end{array}$$

$$\sqrt{8136.04} = 90.2$$

g). 268.96

$$\begin{array}{r}
 16.4 \\
 1 \overline{) 268.96} \\
 \underline{1} \\
 168 \\
 \underline{156} \\
 1296 \\
 \underline{1296} \\
 \hline
 \times
 \end{array}$$

$$\sqrt{268.96} = 16.4$$

Q4 Find the square root of the following correct up to 2 decimal places.

(a) 70

$$\begin{array}{r}
 8.366 \\
 \hline
 8 \overline{) 70.0000} \\
 \underline{64} \\
 163 \\
 \underline{163} \\
 0000 \\
 \underline{489} \\
 1666 \\
 \underline{1666} \\
 0000 \\
 \underline{9996} \\
 16726 \\
 \underline{16726} \\
 0000 \\
 \underline{100356} \\
 10044
 \end{array}$$

$$\sqrt{70} =$$

Ans 8.366

$$\sqrt{70} \approx 8.37.$$

(b) 89

$$\begin{array}{r}
 9.433 \\
 \hline
 9 \overline{) 89.0000} \\
 \underline{81} \\
 184 \\
 \underline{184} \\
 0000 \\
 \underline{736} \\
 1883 \\
 \underline{1883} \\
 0000 \\
 \underline{5649} \\
 18863 \\
 \underline{18863} \\
 0000 \\
 \underline{75100} \\
 56589 \\
 \underline{18511}
 \end{array}$$

$$\sqrt{89} = 9.433$$

$$\sqrt{89} \approx 9.43.$$

(c). 134.

$$\begin{array}{r} 11.575 \\ 1 \overline{) 134.0000} \\ \underline{1} \\ 21 \\ \underline{21} \\ 225 \\ \underline{225} \\ 2307 \\ \underline{2307} \\ 23145 \\ \underline{23145} \\ 19375 \end{array}$$

$$\begin{aligned} \sqrt{134} &= 11.575 \\ &= 11.58 \end{aligned}$$

(d) 526

$$\begin{array}{r} 22.934 \\ 2 \overline{) 526.0000} \\ \underline{4} \\ 42 \\ \underline{42} \\ 449 \\ \underline{449} \\ 4583 \\ \underline{4583} \\ 45864 \\ \underline{45864} \\ 31644 \end{array}$$

$$\begin{aligned} \sqrt{526} &= 22.934 \\ &= 22.93 \end{aligned}$$