



Class – 7

Chapter – 1

Rational and Irrational Number

Lecture sheet – 3

Solution

1. a) 225

$$\begin{array}{r} 1 \overline{) 225} \quad (15 \\ \underline{1} \\ 25 \\ \underline{25} \\ 0 \end{array}$$

∴ The square root of 225 = $\sqrt{225} = 15$

Ans: 15.

b) 961

$$\begin{array}{r} 3 \overline{) 961} \quad (31 \\ \underline{9} \\ 61 \\ \underline{61} \\ 0 \end{array}$$

∴ The square root of 961 = $\sqrt{961} = 31$

Ans: 31.

c) 3969

$$\begin{array}{r} 6 \overline{) 39 \ 69} \text{ (63)} \\ \underline{36} \\ 3 \ 69 \\ \underline{3 \ 69} \\ 0 \end{array}$$

∴ The square root of 3969 = $\sqrt{3969} = 63$

Ans: 63.

2. a)

$$\begin{array}{r} 6 \overline{) 46 \ 39} \text{ (68)} \\ \underline{36} \\ 10 \ 39 \\ \underline{10 \ 24} \\ 15 \end{array}$$

Here, 15 is the remainder in finding the square root of 4639 by division method.

Therefore, if 15 is subtracted from the given number, then the number will be a perfect square.

∴ The required least number is 15.

Ans: 15.

b)

$$\begin{array}{r} 8 \overline{) 72 \ 50} \text{ (85)} \\ \underline{64} \\ 8 \ 50 \\ \underline{8 \ 25} \\ 25 \end{array}$$

Here, 25 is the remainder in finding the square root of 7250 by division method.

Therefore, if 25 is subtracted from the given number, then the number will be a perfect square.

∴ The required least number is 25.

$$\begin{aligned} \text{Required perfect square number} &= (7250 - 25) \\ &= 7225 \end{aligned}$$

$$\therefore \sqrt{7225} = 85.$$

Ans: Least number is 25 and square root of perfect square is 85.

3. a)

$$\begin{array}{r} \overline{7} \overline{5605} (\overline{74} \\ 49 \\ \hline 144 \quad 705 \\ 576 \\ \hline 129 \end{array}$$

We observe here that, $(74)^2 < 5605 < (75)^2$

$$\text{The required number to be added} = (75)^2 - 5605$$

$$= (75 \times 75) - 5605$$

$$= 5625 - 5605$$

$$= 20$$

Ans: 20.

b)

$$\begin{array}{r} \overline{8} \overline{6412} (\overline{80} \\ 64 \\ \hline 160 \quad 12 \\ 0 \\ \hline 12 \end{array}$$

We observe here that $(80)^2 < 6412 < (81)^2$

$$\begin{aligned}\text{The required number to be added} &= (81)^2 - 6412 \\ &= (81 \times 81) - 6412 \\ &= 6561 - 6412 \\ &= 149\end{aligned}$$

Ans:149.

4. Greatest number of four digits = 9999.

Let us try to find the square root of 9999.

$$\begin{array}{r} 3 \quad \overline{9999} \quad (316 \\ | \quad \underline{9} \\ 61 \quad 99 \\ \quad \quad \underline{61} \\ 626 \quad 3899 \\ \quad \quad \underline{3756} \\ \quad \quad \quad 143\end{array}$$

This shows that $(316)^2$ is less than 9999 by 143.
So, the least number to be subtracted is 143.
Hence, the required number = $(9999 - 143)$

$$= 99856.$$

Ans: 99856.

5. The least number of four digits = 1000, which is not a perfect square because here we have odd number of zeroes.

Now, we must find the least number which when added to 1000 gives a perfect square. This perfect square is the required number.
Now, we find out the square root of 1000.

$$\begin{array}{r} 3 \overline{) 1000} \quad (31 \\ \underline{9} \\ 100 \\ \underline{61} \\ 39 \end{array}$$

Clearly, $(31)^2 < 1000 < (32)^2$

Therefore, the least number to be added = $(32)^2 - 1000$

$$= (32 \times 32) - 1000$$

$$= 1024 - 1000$$

$$= 24$$

Ans: 24.

