

## EXERCISE 3.7

**Find the square root of the following numbers in decimal form:**

**1. 84.8241**

**Solution:**

By using long division method

$$\begin{array}{r}
 9.21 \\
 9 \overline{) 84.8241} \\
 \underline{81} \phantom{00} \\
 182 \phantom{00} \\
 \underline{364} \phantom{00} \\
 1841 \phantom{00} \\
 \underline{1841} \phantom{00} \\
 0
 \end{array}$$

$\therefore$  the square root of 84.8241

$$\sqrt{84.8241} = 9.21$$

**2. 0.7225**

**Solution:**

By using long division method

$$\begin{array}{r}
 0.85 \\
 0 \overline{) 0.7225} \\
 \underline{0} \phantom{00} \\
 8 \phantom{00} \\
 \underline{64} \phantom{00} \\
 165 \phantom{00} \\
 \underline{825} \phantom{00} \\
 825 \phantom{00} \\
 0
 \end{array}$$

$\therefore$  the square root of 0.7225

$$\sqrt{0.7225} = 0.85$$

**3. 0.813604**

**Solution:**

By using long division method

**Myclass24**  
Your Class. Your Pace.

$$\begin{array}{r}
 0.902 \\
 0 \overline{) 0.813604} \\
 \underline{0} \\
 9 \quad 81 \\
 \underline{81} \\
 180 \quad 36 \\
 \underline{0} \\
 1802 \quad 3604 \\
 \underline{3604} \\
 0
 \end{array}$$

∴ the square root of 0.813604  
 $\sqrt{0.813604} = 0.902$

#### 4. 0.00002025

**Solution:**

By using long division method

$$\begin{array}{r}
 0.0045 \\
 0 \overline{) 0.00002025} \\
 \underline{0 \quad 0 \quad 0} \\
 4 \quad 20 \\
 \underline{16} \\
 85 \quad 425 \\
 \underline{425} \\
 0
 \end{array}$$

∴ the square root of 0.00002025  
 $\sqrt{0.00002025} = 0.0045$

#### 5. 150.0625

**Solution:**

By using long division method

$$\begin{array}{r}
 12.25 \\
 1 \overline{) 150.0625} \\
 \underline{1} \\
 22 \quad 050 \\
 \underline{44} \\
 242 \quad 606 \\
 \underline{484} \\
 2445 \quad 12225 \\
 \underline{12225} \\
 0
 \end{array}$$

∴ the square root of 150.0625  
 $\sqrt{150.0625} = 12.25$

**6. 225.6004**

**Solution:**

By using long division method

$$\begin{array}{r}
 15.02 \\
 1 \overline{) 225.6004} \\
 \underline{1} \phantom{00} \\
 25 \phantom{00} \\
 \underline{25} \phantom{00} \\
 300 \phantom{00} \\
 \underline{300} \phantom{00} \\
 3002 \phantom{00} \\
 \underline{3002} \phantom{00} \\
 0
 \end{array}$$

∴ the square root of 225.6004  
 $\sqrt{225.6004} = 15.02$

**7. 3600.720036**

**Solution:**

By using long division method

$$\begin{array}{r}
 60.006 \\
 6 \overline{) 3600.720036} \\
 \underline{36} \phantom{00} \\
 120 \phantom{00} \\
 \underline{120} \phantom{00} \\
 1200 \phantom{00} \\
 \underline{1200} \phantom{00} \\
 12006 \phantom{00} \\
 \underline{12006} \phantom{00} \\
 0
 \end{array}$$

∴ the square root of 3600.720036  
 $\sqrt{3600.720036} = 60.006$

**8. 236.144689**

**Solution:**

By using long division method



$$\begin{array}{r}
 15.367 \\
 \hline
 1 \overline{) 236.144689} \\
 \underline{1} \phantom{00} \\
 136 \phantom{00} \\
 \underline{125} \phantom{00} \\
 1114 \phantom{00} \\
 \underline{909} \phantom{00} \\
 3066 \phantom{00} \\
 \underline{20546} \phantom{00} \\
 18396 \phantom{00} \\
 30727 \phantom{00} \\
 \underline{215089} \\
 0
 \end{array}$$

∴ the square root of 236.144689  
 $\sqrt{236.144689} = 15.367$

**9. 0.00059049**

**Solution:**

By using long division method

$$\begin{array}{r}
 0.0243 \\
 \hline
 0 \overline{) 0.00059049} \\
 \underline{0} \phantom{0000} \\
 0 \phantom{0000} \\
 \underline{0} \phantom{0000} \\
 2 \phantom{0000} \\
 \underline{05} \phantom{0000} \\
 4 \phantom{0000} \\
 44 \phantom{0000} \\
 \underline{190} \phantom{0000} \\
 176 \phantom{0000} \\
 483 \phantom{0000} \\
 \underline{1449} \phantom{0000} \\
 1449 \phantom{0000} \\
 0
 \end{array}$$

∴ the square root of 0.00059049  
 $\sqrt{0.00059049} = 0.0243$

**10. 176.252176**

**Solution:**

By using long division method



$$\begin{array}{r}
 13.276 \\
 1 \overline{) 176.252176} \\
 \underline{1} \phantom{000} \\
 13 \phantom{00} \underline{076} \\
 \phantom{130} \underline{69} \\
 262 \phantom{00} \underline{725} \\
 \phantom{2620} \underline{524} \\
 2647 \phantom{00} \underline{20121} \\
 \phantom{26470} \underline{18529} \\
 26546 \phantom{00} \underline{159276} \\
 \phantom{265460} \underline{159276} \\
 \phantom{2654600} 0
 \end{array}$$

∴ the square root of 176.252176  
 $\sqrt{176.252176} = 13.276$

**11. 9998.0001**

**Solution:**

By using long division method

$$\begin{array}{r}
 99.99 \\
 9 \overline{) 9998.0001} \\
 \underline{81} \phantom{000} \\
 189 \phantom{00} \underline{1898} \\
 \phantom{1890} \underline{1701} \\
 1989 \phantom{00} \underline{19700} \\
 \phantom{19890} \underline{17901} \\
 19989 \phantom{00} \underline{179901} \\
 \phantom{199890} \underline{179901} \\
 \phantom{1998900} 0
 \end{array}$$

∴ the square root of 9998.0001  
 $\sqrt{9998.0001} = 99.99$

**12. 0.00038809**

**Solution:**

By using long division method



$$\begin{array}{r}
 0.0197 \\
 0 \overline{) 0.00038809} \\
 \underline{0} \\
 0 \overline{) 000} \\
 \underline{0} \\
 1 \overline{) 03} \\
 \underline{1} \\
 29 \overline{) 288} \\
 \underline{261} \\
 387 \overline{) 2709} \\
 \underline{2709} \\
 0
 \end{array}$$

$\therefore$  the square root of 0.00038809  
 $\sqrt{0.00038809} = 0.0197$

**13. What is that fraction which when multiplied by itself gives 227.798649?**

**Solution:**

Let us consider a number a

Where,  $a = \sqrt{227.798649}$   
 $= 15.093$

By using long division method let us verify

$$\begin{array}{r}
 15.093 \\
 1 \overline{) 227.798649} \\
 \underline{1} \\
 25 \overline{) 127} \\
 \underline{125} \\
 300 \overline{) 279} \\
 \underline{0} \\
 3009 \overline{) 27986} \\
 \underline{27081} \\
 30183 \overline{) 90549} \\
 \underline{90549} \\
 0
 \end{array}$$

$\therefore$  15.093 is the fraction which when multiplied by itself gives 227.798649.

**14. The area of a square playground is 256.6404 square meter. Find the length of one side of the playground.**

**Solution:**

We know that the given area of a square playground = 256.6404

i.e.,  $L^2 = 256.6404 \text{ m}^2$

$$L = \sqrt{256.6404}$$

$$= 16.02\text{m}$$

By using long division method let us verify

$$\begin{array}{r} 16.02 \\ 1 \overline{) 256.6404} \\ \underline{1} \phantom{00} \\ 26 \phantom{00} \\ \underline{26} \phantom{00} \\ 320 \phantom{00} \\ \underline{320} \phantom{00} \\ 3202 \phantom{00} \\ \underline{3202} \phantom{00} \\ 0 \end{array}$$

∴ length of one side of the playground is 16.02m.

**15. What is the fraction which when multiplied by itself gives 0.00053361?**

**Solution:**

Let us consider a number a

$$\text{Where, } a = \sqrt{0.00053361}$$

$$= 0.0231$$

By using long division method let us verify

$$\begin{array}{r} 0.0231 \\ 0 \overline{) 0.00053361} \\ \underline{0} \phantom{0000} \\ 0 \phantom{0000} \\ \underline{0} \phantom{0000} \\ 2 \phantom{0000} \\ \underline{2} \phantom{0000} \\ 43 \phantom{0000} \\ \underline{43} \phantom{0000} \\ 461 \phantom{0000} \\ \underline{461} \phantom{0000} \\ 0 \end{array}$$

∴ 0.0231 is the fraction which when multiplied by itself gives 0.00053361.

**16. Simplify:**

(i)  $(\sqrt{59.29} - \sqrt{5.29}) / (\sqrt{59.29} + \sqrt{5.29})$

(ii)  $(\sqrt{0.2304} + \sqrt{0.1764}) / (\sqrt{0.2304} - \sqrt{0.1764})$

**Solution:**

(i)  $(\sqrt{59.29} - \sqrt{5.29}) / (\sqrt{59.29} + \sqrt{5.29})$

Firstly let us find the square root  $\sqrt{59.29}$  and  $\sqrt{5.29}$

$$\begin{aligned}\sqrt{59.29} &= \sqrt{5929} / \sqrt{100} \\ &= 77/10 \\ &= 7.7\end{aligned}$$

$$\begin{aligned}\sqrt{5.29} &= \sqrt{529} / \sqrt{100} \\ &= 23/10 \\ &= 2.3\end{aligned}$$

$$\begin{aligned}\text{So, } (7.7 - 2.3) / (7.7 + 2.3) & \\ &= 54/10 \\ &= 0.54\end{aligned}$$

$$\begin{aligned}\text{So now, } \sqrt{506.25} &= \sqrt{50625} / \sqrt{100} \\ &= 225/10 \\ &= 22.5\end{aligned}$$

$$\begin{aligned}\sqrt{5.0625} &= \sqrt{50625} / \sqrt{10000} \\ &= 225/100 \\ &= 2.25\end{aligned}$$

**(ii)**  $(\sqrt{0.2304} + \sqrt{0.1764}) / (\sqrt{0.2304} - \sqrt{0.1764})$

Firstly let us find the square root  $\sqrt{0.2304}$  and  $\sqrt{0.1764}$

$$\begin{aligned}\sqrt{0.2304} &= \sqrt{2304} / \sqrt{10000} \\ &= 48/100 \\ &= 0.48\end{aligned}$$

$$\begin{aligned}\sqrt{0.1764} &= \sqrt{1764} / \sqrt{10000} \\ &= 42/100 \\ &= 0.42\end{aligned}$$

$$\begin{aligned}\text{So, } (0.48 + 0.42) / (0.48 - 0.42) & \\ &= 0.9/0.06 \\ &= 15\end{aligned}$$

**17. Evaluate  $\sqrt{50625}$  and hence find the value of  $\sqrt{506.25} + \sqrt{5.0625}$**

**Solution:**

By using long division method let us find the  $\sqrt{50625}$

$$\begin{array}{r} 225 \\ 2 \overline{) 50625} \\ \underline{4} \phantom{00} \\ 42 \phantom{00} \overline{) 106} \\ \underline{84} \phantom{00} \\ 445 \phantom{00} \overline{) 2225} \\ \underline{2225} \\ 0 \end{array}$$

So equating in the above equation we get,  
 $\sqrt{506.25} + \sqrt{5.0625} = 22.5 + 2.25$   
 $= 24.75$

**18. Find the value of  $\sqrt{103.0225}$  and hence find the value of**

**(i)  $\sqrt{10302.25}$**

**(ii)  $\sqrt{1.030225}$**

**Solution:**

By using long division method let us find the

$$\sqrt{103.0225} = \sqrt{(1030225/10000)} = \sqrt{1030225}/\sqrt{10000}$$

$$\begin{array}{r} 1015 \\ 1 \overline{) 1030225} \\ \underline{1} \phantom{00000} \\ 0302 \phantom{00} \\ \underline{201} \phantom{00} \\ 10125 \phantom{0} \\ \underline{10125} \\ 0 \end{array}$$

So now, (i)  $\sqrt{10302.25} = \sqrt{(1030225/ 100)}$   
 $= 1015/ 10$   
 $= 101.5$

(ii)  $\sqrt{1.030225} = \sqrt{1030225/ \sqrt{1000000}}$   
 $= 1015/1000$   
 $= 1.015$

