RD SHARMA

Solutions

Class 8 Maths

Chapter 3

Ex 3.6

1.) Find the square root of:

(i) $\frac{441}{961}$

We know:

$\sqrt{\frac{441}{961}} = \sqrt{\frac{441}{961}}$

Now, let us complete the square roots of the numerator and denominator separately.

$\sqrt{441} = \sqrt{(3 \times 3) \times (7 \times 7)} = 3 \times 7 = 21$

$\sqrt{961} = \sqrt{31 \times 31} = 31$

$\therefore \sqrt{\frac{441}{961}} = \frac{21}{31}$

(ii) $\frac{324}{841}$

We know:

$\sqrt{\frac{324}{841}} = \sqrt{\frac{324}{841}}$

Now, let us complete the square roots of the numerator and denominator separately

$\sqrt{324} = \sqrt{2 \times 2 \times 3 \times 3 \times 3} = 2 \times 3 \times 3 = 18$

$\sqrt{841} = \sqrt{29 \times 29} = 29$

$\therefore \frac{324}{841} = \frac{18}{29}$

(iii) $4\frac{29}{29}$

By looking at the book's answer key, the fraction should be $\sqrt{4\frac{29}{49}}$, not $\sqrt{4\frac{29}{29}}$

We know:

$\sqrt{4\frac{29}{49}} = \sqrt{\frac{225}{49}}$

$\therefore \sqrt{4\frac{29}{49}} = \frac{15}{7}$

(iv) $2\frac{14}{25}$

We know:

$\sqrt{2\frac{14}{25}} = \sqrt{\frac{64}{25}} = \frac{8}{5}$

(v) $2\frac{137}{196}$

We know

$\sqrt{2\frac{137}{196}} = \sqrt{\frac{529}{196}}$

Now, let us complete the square roots of the numerator and the denominator separately.

$\sqrt{529} = \sqrt{23 \times 23} = 23$

$\sqrt{196} = \sqrt{2 \times 2 \times 7 \times 7} = 2 \times 7 = 14$

$\sqrt{2\frac{137}{196}} = \frac{23}{14}$

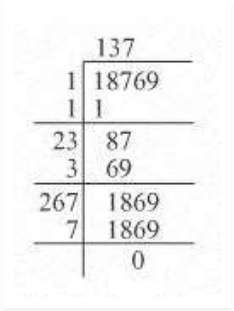
(vii) $25\frac{54}{729}$

We know:

$\sqrt{25\frac{544}{729}} = \sqrt{\frac{18769}{729}}$

Now, let us compute the square roots of the numerator and denominator separately.

$\sqrt{25\frac{544}{729}} = \frac{137}{27}$



	137
1	18769
1	1
23	87
3	69
267	1869
7	1869
	0

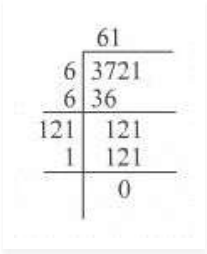
(viii) $75\frac{46}{49}$

We know,

$\therefore \sqrt{75\frac{46}{49}} = \sqrt{\frac{3721}{49}}$

Now, let us compute the square roots of the numerator and denominator separately.

$\therefore \sqrt{75\frac{46}{49}} =$ [latex]$\frac{61}{7}$



	61
6	3721
6	36
121	121
1	121
	0

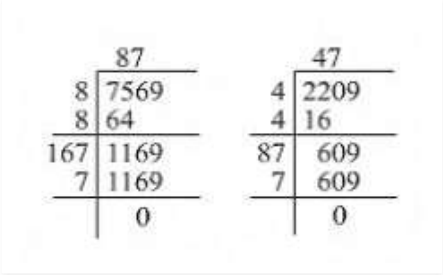
(ix) $3\frac{942}{2209}$

We know:

$\sqrt{3\frac{942}{2209}} = \sqrt{3\frac{942}{2209}}$

Now, let us compute the square roots of the numerator and the denominator separately.

$\sqrt{3\frac{942}{2209}} = \frac{87}{47}$



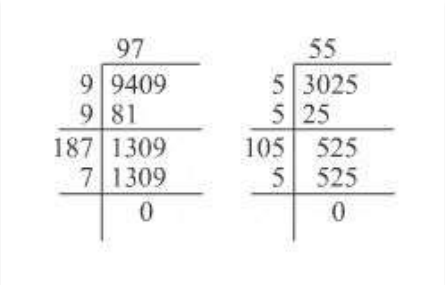
(x) 3 $\frac{334}{3025}$

We know:

$\sqrt{3\frac{334}{3025}} = \sqrt{\frac{73441}{3364}}$

Now, let us compute the square roots of the numerator and denominator separately.

$\therefore \sqrt{3\frac{334}{3025}} = \frac{97}{55}$



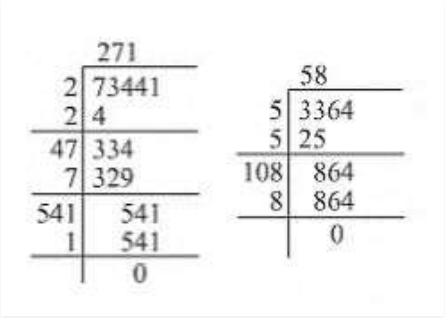
(xi) 21 $\frac{2797}{3364}$

We know:

$\therefore \sqrt{21\frac{2797}{3364}} = \frac{73441}{3364}$

Now, let us compute the square roots of the numerator and denominator separately.

$\therefore \sqrt{21\frac{2797}{3364}} = \frac{271}{58}$



(xii) 38 $\frac{11}{25}$

We know:

$\sqrt{38\frac{11}{25}} = \sqrt{\frac{961}{25}}$

Now, let us compute the square roots of the numerator and the denominator separately.

$\therefore \sqrt{38\frac{11}{25}} = \frac{31}{5}$

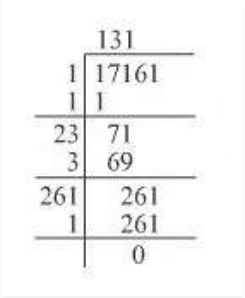
(xiii) 23 $\frac{394}{729}$

We know:

$\sqrt{23\frac{394}{729}} = \sqrt{\frac{17161}{729}}$

Now, let us compute the square roots of the numerator and the denominator separately.

$\therefore \sqrt{23\frac{394}{729}} = \frac{131}{24} = 4\frac{23}{27}$



	131
1	17161
1	1
23	71
3	69
261	261
1	261
	0

(xiv) 21 $\frac{51}{169}$

We know:

$\therefore \sqrt{21\frac{51}{169}} = \frac{3600}{169} =$

Now, let us compute the square roots of the numerator and denominator separately.

$\therefore \sqrt{21\frac{51}{169}} = \frac{60}{13} = 4\frac{8}{13}$

(xv) 10 $\frac{151}{225}$

We know:

$\sqrt{10\frac{151}{225}} = \sqrt{\frac{2401}{225}}$

Now let us compute the square roots of the numerator and denominator separately.

$\sqrt{2401} = \sqrt{7 \times 7 \times 7 \times 7} = 7 \text{ x } 7 = 49$

$\sqrt{225} = \sqrt{3 \times 3 \times 5 \times 5} = 3 \text{ x } 5 = 15$

$\therefore \sqrt{10\frac{151}{225}} = \frac{49}{15} = 3\frac{4}{15}$

2.) Find the value of:

(i) $\frac{\sqrt{80}}{\sqrt{405}}$

We have:

$\frac{\sqrt{80}}{\sqrt{405}} = \sqrt{\frac{80}{405}} = \sqrt{\frac{16}{81}} = \frac{4}{9}$

(ii) $\frac{\sqrt{441}}{\sqrt{625}}$

Comparing the square roots:

$\sqrt{441} = \sqrt{(3 \times 3) \times (7 \times 7)} = 3 \times 7 = 21$

$\sqrt{625} = \sqrt{(5 \times 5) \times (5 \times 5)} = 5 \times 5 = 25$

$\therefore \frac{\sqrt{441}}{\sqrt{625}} = \frac{21}{25}$

(iii) $\frac{\sqrt{1587}}{\sqrt{1728}}$

We have:

$\frac{\sqrt{1587}}{\sqrt{1728}} = \sqrt{\frac{529}{576}}$ (by dividing both numbers by 3)

Computing the square roots of the numerator and the denominator:

$\sqrt{529} = \sqrt{23 \times 23} = 23$

$\sqrt{576} = \sqrt{24 \times 24} = 24$

$\therefore \frac{\sqrt{1587}}{\sqrt{1728}} = \frac{23}{24}$

(iv) $\sqrt{72} \times \sqrt{338}$

We have:

$\sqrt{72} \times \sqrt{328} = \sqrt{72 \times 338} = \sqrt{2 \times 2 \times 2 \times 3 \times 3 \times 2 \times 13 \times 13}$
$= \sqrt{2 \times 2 \times 2 \times 3 \times 3 \times 2 \times 13 \times 13} = 2 \times 2 \times 3 \times 13$

$= 156$

(v) $\sqrt{45} \times \sqrt{20}$

We have:

$\sqrt{45} \times \sqrt{20} = \sqrt{3 \times 3 \times 5 \times 2 \times 2 \times 5} = 30$

3.) The area of a square is 80 $\frac{244}{729}$ square metres. Find the length of each side of the field.

The length of one side is the square root of the area of the field. Hence, we need to calculate the value of $\sqrt{80\frac{244}{729}}$

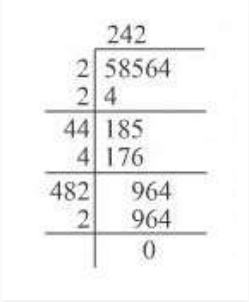
We have

$\sqrt{80\frac{244}{729}} = \sqrt{\frac{58564}{729}}$

Now, to calculate the square of the numerator and the denominator:
We know that:

$\sqrt{729} = 27$

Therefore, length of one side of the field = $\frac{242}{27} = 8\frac{26}{27}$ m



4.) The area of a square field is $30\frac{1}{4}$ m^2. Calculate the length of the side of the square.

Answer 4:

The length of one side is equal to the square root of the area of the field. Hence, we just need to calculate the value of $\frac{242}{27} = 8\frac{26}{27}$m

We have:

$\sqrt{30\frac{1}{4}} = \frac{\sqrt{121}}{\sqrt{4}}$

Now, calculating the square root of the numerator and the denominator

$\sqrt{121} = \sqrt{11 \times 11} = 11$

$\sqrt{4} = 2$

Therefore, the length of the side of the square= $30\frac{1}{4} = \frac{11}{2} = 5\frac{1}{2}$m

5.) Find the length of a side of a square playground whose area is equal to the area of a rectangular field of dimensions 72 m and 338 m.

Answer 5:

The area of the playground = 72 x 338 = 24336 m^2

The length of one side of a square is equal to the square root of its area. Hence, we just need to find the square root of 24336.

Hence, the length of one side of the playground is 156 meters.