Ex 3.6

Q1 Find the value of

(i) $\frac{441}{961}$ (ii) $\frac{324}{841}$ (iii) $4\frac{29}{29}$ (iv) $2\frac{14}{25}$

(v) $2\frac{137}{196}$ (vi) $23\frac{26}{121}$ (vii) $25\frac{544}{729}$

(viii) $75\frac{46}{49}$ (ix) $3\frac{942}{2209}$ (x) $3\frac{334}{3025}$

(xi) $21\frac{2797}{3364}$ (xii) $38\frac{11}{25}$ (xiii) $23\frac{394}{729}$

(xiv) $21\frac{51}{169}$ (xv) $10\frac{151}{225}$

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

$\therefore$

	21
2	441
+2	4
41	41
	41
	0

	31
3	961
+3	9
61	61
	61
	0

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

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

$= \frac{18}{29}$

	18
1	324
+1	1
28	224
	224
	0

	29
2	841
+2	4
49	441
	441
	0

(iii) $\sqrt{4\frac{29}{49}} = \sqrt{\frac{225}{49}}$

$= \frac{\sqrt{225}}{\sqrt{49}} = \frac{15}{7}$

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

(v) $\sqrt{2\frac{137}{196}} = \sqrt{\frac{529}{196}} = \frac{23}{14}$

(vi) $\sqrt{23\frac{26}{121}} = \sqrt{\frac{2809}{121}} = \frac{103}{11}$

	53
5	2809
+5	25
103	309
	309
	0

(vii) $\sqrt{25\frac{544}{729}} = \sqrt{\frac{18769}{729}}$

$= \frac{137}{27}$

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

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(VIII) $\sqrt{75\frac{46}{49}} = \sqrt{\frac{3721}{49}} = \frac{\sqrt{3721}}{\sqrt{49}}$

$= \frac{61}{7}$

	61
6	3721
+6	36
121	121
	121
	0

(IX) $\sqrt{3\frac{942}{2209}}$

$= \sqrt{\frac{7569}{2209}}$

$= \frac{87}{47}$

	87
8	7569
+8	64
167	1169
	1169
	0

	47
4	2209
+4	16
87	609
	609
	0

(X) $\sqrt{3\frac{334}{3025}} = \sqrt{\frac{9409}{3025}}$

$= \frac{\sqrt{9409}}{\sqrt{3025}}$

$= \frac{97}{55}$

	97
9	9409
+9	81
187	1309
	1309
	0

	55
5	3025
+5	25
105	525
	525
	0

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(xi) $\sqrt{21\frac{2797}{3364}} = \sqrt{\frac{73441}{3364}}$

$= \frac{271}{58}$

	271
2	73441
+2	4
47	334
+7	329
541	541
	541
	0

	58
5	3364
+5	25
108	864
	864
	0

(xii) $\sqrt{38\frac{11}{25}} = \sqrt{\frac{961}{25}} = \frac{31}{5}$

(xiii) $\sqrt{23\frac{394}{729}} = \sqrt{\frac{17161}{729}}$

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

$= \frac{131}{27}$

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

(xiv) $\sqrt{21\frac{51}{169}} = \sqrt{\frac{3600}{169}} = \frac{60}{13}$

(xv) $\sqrt{10\frac{151}{225}} = \sqrt{\frac{2401}{225}} = \frac{49}{15}$

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Q.2 Find the value of

(i) $\frac{\sqrt{80}}{\sqrt{405}}$ (ii) $\frac{\sqrt{441}}{\sqrt{625}}$ (iii) $\frac{\sqrt{1587}}{\sqrt{1728}}$.

(iv) $\sqrt{72} \times \sqrt{338}$ (v) $\sqrt{45} \times \sqrt{20}$

Solution: (i) $\frac{\sqrt{80}}{\sqrt{405}} = \frac{\sqrt{16}}{\sqrt{81}} = \frac{4}{9}$

(ii) $\frac{\sqrt{441}}{\sqrt{625}} = \frac{21}{25}$

(iii) $\sqrt{\frac{1587}{1728}} = \frac{\sqrt{529}}{\sqrt{576}} = \frac{23}{24}$

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

$= \sqrt{2\times2\times2\times3\times3} \times \sqrt{2\times13\times13}$

$= \sqrt{2\times2\times2\times2\times3\times3\times13\times13}$

$= 2\times2\times3\times13$

$= 156$

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(v) $\sqrt{45} \times \sqrt{20} = \sqrt{3\times3\times5} \times \sqrt{2\times2\times5}$

$= \sqrt{3\times3\times2\times2\times5\times5}$

$= 3\times2\times5$

$= 30$

Q.3 The area of a square field is $80\frac{244}{729}\ m^2$. Find the length of each side of field.

Solution:

$(\text{side})^2 = 80\frac{244}{729}\ m^2$

$= \frac{58564}{729}$

$\therefore$ side $= \sqrt{\frac{58564}{729}}$

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

$= \frac{242}{27}$

	242
2	58564
+2	4
44	185
+4	176
482	964
	964

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

Solution: Area of square field $= 30\frac{1}{4} = \frac{121}{4}\ m^2$

$(\text{side})^2 = \left(\frac{11}{2}\right)^2 \Rightarrow$ side $= \frac{11}{2}\ m = 5\frac{1}{2}m$

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Q.5 Find the length of a side of a square play ground whose area is equal to the area of a rectangular field of dimension 72 m and 338 m.

Solution: Area of square = Area of rectangle

$= 72 \times 338 \ m^2$

$(side)^2 = 24336 \ m^2$

$\Rightarrow side = \sqrt{24336}$

$= 156 \ m$

	156
	$\overline{2}\,\overline{43}\,\overline{36}$
1	
+1	1
25	143
+5	125
306	1836
	1836
	0