

Class - 7

Chapter - 1

Rational and Irrational Number

<u>Lecture sheet – 5</u>

Perfect square fraction: When the numerator and denominator of a fraction are perfect square or numerator and denominator of a reduced fraction are perfect square, the fraction is said to be a perfect square fraction.

Example 1:
$$\frac{50}{32} = \frac{25}{16}$$
 [Reduced to last form]

Here, the numerator of the fraction $\frac{25}{16}$ is 25, which is a perfect square number and denominator 16 is also a perfect square number.

So, $\frac{25}{16}$ is a perfect square fraction.

Square root of a fraction: The square root of a fraction is determined by dividing the square root of numerator by the square root of denominator of the fraction.

Example 2: Find the square root of $\frac{64}{81}$.

Solution: Given fraction is $\frac{64}{81}$

Square root of the numerator 64 of the fraction = $\sqrt{64}$ = 8

And square root of the denominator 81 of the fraction = $\sqrt{81}$ = 9

$$\therefore \text{ Square root of } \frac{64}{81} = \sqrt{\frac{64}{81}} = \frac{8}{9}$$

$$\therefore \text{ The required square root} = \frac{8}{9}$$

Ans:
$$\frac{8}{9}$$
.

Example 3: Find the square root of $52\frac{9}{16}$.

Solution: Given fraction, $52\frac{9}{16}$

Square root of $52\frac{9}{16} = \sqrt{52}\frac{9}{16} = \sqrt{\frac{(52 \times 16) + 9}{16}} = \sqrt{\frac{841}{16}} = \frac{29}{4} = 7\frac{1}{4}$

 $\therefore \text{ Square root of } 52\frac{9}{16} = 7\frac{1}{4}$

Ans: $7\frac{1}{4}$.

Example 4: Find the square root of $27\frac{46}{49}$.

Solution: Given fraction, $27\frac{46}{49}$

Square root of $27\frac{46}{49} = \sqrt{27\frac{46}{49}} = \sqrt{\frac{(27 \times 49) + 46}{49}} = \sqrt{\frac{1369}{49}} = \frac{37}{7} = 5\frac{2}{7}$

 $\therefore \text{ Square root of } 27\frac{46}{49} = 5\frac{2}{7}$

Ans: $5\frac{2}{7}$.

1. Exercise (Do yourself)

*Determine the square root of the following fractions:

a)
$$\frac{1}{64}$$
 b) $\frac{49}{121}$ c) $11\frac{97}{144}$ d) $32\frac{241}{324}$

If the denominator of a fraction is not a perfect square number then it is to be transformed into perfect square by multiplication.

Example 5: Find the square root of $2\frac{8}{15}$ upto three decimal places.

Solution: The square root of
$$2\frac{8}{15}$$

$$=\sqrt{2}\frac{8}{15}$$

$$=\sqrt{\frac{38}{15}}$$

$$=\sqrt{\frac{38\times15}{15\times15}}$$

$$=\sqrt{\frac{570}{225}}$$

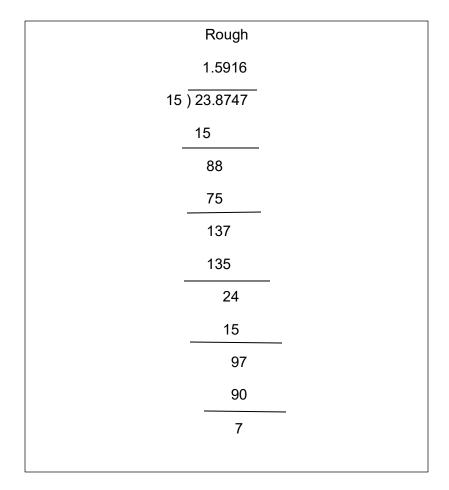
$$=\frac{23.8747}{15}$$

$$= 1.5916 (approx)$$

∴ The square root upto three decimal places = 1.592 (approx)

Ans: 1.592 (approx) .

Rough				
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	4			
43	1 70			
	1 29			
468	41 00			
	37 44			
4767	3 56 00			
	3 33 69			
47744	22 31 00			
	19 09 76			
477486	3 21 24 00			
	2 86 49 16			
	34 74 84			



- **Example 6:** Find the square root of $1\frac{8}{5}$ upto two decimal places.
- **Solution:** The square root of $1\frac{8}{5}$

$$=\sqrt{1\frac{8}{5}}$$

$$=\sqrt{\frac{13}{5}}$$

$$=\sqrt{\frac{13\times5}{5\times5}}$$

$$=\sqrt{\frac{65}{25}}$$

$$=\frac{8.062}{5}$$

∴ The square root upto two decimal places = 1.61 (approx)

Ans: 1.61 (approx).

2. Exercise (Do yourself)

*Determine the square root upto three decimal places:

- a) $\frac{6}{7}$ b) $2\frac{5}{6}$ c) $7\frac{9}{13}$