

RD SHARMA

Solutions

Class 8 Maths

Chapter 1

Ex 1.8

Q-1: Find a rational number between -3 and 1.

Solution:

Rational number between -3 and 1 is $\frac{-3+1}{2} = \frac{-2}{2} = -1$

Q-2. Find any five rational numbers less than 2.

Solution.

We can write:

$$2 = \frac{2}{1} = \frac{2 \times 5}{1 \times 5} = \frac{10}{5}$$

Integers less than 10 are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Hence, five rational numbers less than 2 are $\frac{0}{5}, \frac{1}{5}, \frac{2}{5}, \frac{3}{5}$ and $\frac{4}{5}$.

Q-3. Find two rational numbers between $\frac{-2}{9}$ and $\frac{5}{9}$.

Solution:

Since, both the fractions ($\frac{-2}{9}$ and $\frac{5}{9}$) have the same denominator, the integers between the numerators (-2 and 5) are -1, 0, 1, 2, 3, 4.

Hence, two rational numbers between ($\frac{-2}{9}$ and $\frac{5}{9}$) are ($\frac{0}{9}$ or 0 and $\frac{1}{9}$)

Q-4. Find two rational numbers between $\frac{1}{5}$ and $\frac{1}{2}$.

Solution:

$$\text{Rational number between } \frac{1}{5} \text{ and } \frac{1}{2} = \frac{(\frac{1}{5} + \frac{1}{2})}{2} = \frac{\frac{2+5}{10}}{2} = \frac{7}{20}$$

$$\text{Rational number between } \frac{1}{5} \text{ and } \frac{7}{20} = \frac{(\frac{1}{5} + \frac{7}{20})}{2} = \frac{\frac{4+7}{20}}{2} = \frac{11}{40}$$

Therefore, two rational numbers between $\frac{1}{5}$ and $\frac{1}{2}$ are $\frac{7}{20}$ and $\frac{11}{40}$.

Q-5. Find ten rational numbers between $\frac{1}{4}$ and $\frac{1}{2}$.

Solution:

The LCM of the denominators (2 and 4) is 4.

So, we can write $\frac{1}{4}$ as it is.

$$\text{Also, } \frac{1}{2} = \frac{1 \times 2}{2 \times 2}$$

As the integers between the numerators 1 and 2 of both the fractions are not sufficient, we will multiply the fractions by 20.

$$\therefore \frac{1}{4} = \frac{1 \times 20}{4 \times 20} = \frac{20}{80} \quad \frac{2}{4} = \frac{2 \times 20}{4 \times 20} = \frac{40}{80}$$

Between 20 and 40, there are 19 integers. They are 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40.

Thus, $\frac{21}{40}, \frac{22}{40}, \frac{23}{40}, \frac{24}{40}, \frac{25}{40}, \dots, \frac{38}{40}$ and $\frac{39}{40}$ are the fractions.

We can take any 10 of these.

Q-6. Find ten rational numbers between $\frac{-2}{5}$ and $\frac{1}{2}$.

Solution:

LCM of the denominators (2 and 5) of both the fractions is 10.

We can write:

$$\frac{-2}{5} = \frac{-2 \times 2}{5 \times 2} = \frac{-4}{10}$$

And $\frac{1}{2} = \frac{1 \times 5}{2 \times 5} = \frac{5}{10}$

Since, the integers between the numerators (-4 and 5) of both the fractions are not sufficient, we will multiply the fractions by 2.

$$\therefore \frac{-4}{10} = \frac{-4 \times 2}{10 \times 2} = \frac{-8}{20} \quad \frac{5}{10} = \frac{5 \times 2}{10 \times 2} = \frac{10}{20}$$

There are 17 integers between -8 and 10, which are -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

These can be written as:

$$\frac{-7}{20}, \frac{-6}{20}, \frac{-5}{20}, \frac{-4}{20}, \dots, \frac{8}{20} \text{ and } \frac{9}{20}$$

We can take any 10 of these.

Q-7. Find ten rational numbers between $\frac{3}{5}$ and $\frac{3}{4}$.

Solution:

LCM of the denominators (5 and 4) of both the fractions is 20.

We can write:

$$\frac{3}{5} = \frac{3 \times 4}{5 \times 4} = \frac{12}{20}$$

And $\frac{3}{4} = \frac{3 \times 5}{4 \times 5} = \frac{15}{20}$

Since, the integers between the numerators (12 and 15) of both the fractions are not sufficient, we will multiply the fractions by 5.

$$\therefore \frac{12}{20} = \frac{12 \times 5}{20 \times 5} = \frac{60}{100} \quad \frac{15}{20} = \frac{15 \times 5}{20 \times 5} = \frac{75}{100}$$

There are 14 integers between 60 and 75, which are 61, 62, 63, 64, 65, , 73 and 74. These can be written as:

$$\frac{60}{100}, \frac{61}{100}, \frac{62}{100}, \frac{63}{100}, \dots, \frac{73}{100} \text{ and } \frac{74}{100}$$

We can take any 10 of these.