

RATIONAL NUMBERS

PERIOD 8

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 1
CHAPTER NAME : RATIONAL NUMBERS

CHANGING YOUR TOMORROW

Learning outcome

Students will be able to insert rational numbers between two given rational numbers

Previous Knowledge:

Draw the number line and represent the following positive rational numbers on it:

(i) $\frac{1}{3}$

(ii) $\frac{2}{3}$

Inserting Rational Numbers between two given Rational Numbers

<https://www.youtube.com/watch?v=GM4bINTqDgo> (3:57)

Evaluation Questions:

1. Insert one rational number between 6 and 7.

Sol: Reqd. rational number = $(6+7)/2 = 13/2$

2. Insert two rational numbers between 4.8 and 6.

Sol : Reqd. numbers given by :

$$= 4.8, \frac{4.8+6}{2}, 6$$

$$= 4.8, 5.4, 6$$

(Insert one rational number 4.8 and 6)

$$= 4.8, \frac{4.8+5.4}{2}, 5.4, 6$$

$$= 4.8, 5.1, 5.4, 6$$

Required rational numbers between
4.8 and 6 are = 5.1 and 5.4

Example

Problem: Find 10 rational numbers between $-\frac{2}{5}$ and $\frac{1}{2}$?

Solution: $-\frac{2}{5}$ and $\frac{1}{2}$ can be represented as $-\frac{8}{20}$ and $\frac{10}{20}$ respectively.

Therefore, 10 rational numbers between $-\frac{2}{5}$ and $\frac{1}{2}$ are:

$$-\frac{7}{20}, -\frac{6}{20}, -\frac{5}{20}, -\frac{4}{20}, -\frac{3}{20}, -\frac{2}{20}, -\frac{1}{20}, 0, \frac{1}{20}, \frac{2}{20}$$

Write 3 rational numbers between $\frac{2}{3}$ and $\frac{3}{4}$

$$\begin{aligned}\text{Solution: Required number} &= \frac{1}{2} \left(\frac{2}{3} + \frac{3}{4} \right) \\ &= \frac{1}{2} \left(\frac{8+9}{12} \right) = \frac{1}{2} \times \frac{17}{12} = \frac{17}{24}\end{aligned}$$

$$\begin{aligned}\text{Rational number between } \frac{2}{3} \text{ and } \frac{17}{24} &= \frac{1}{2} \left(\frac{2}{3} + \frac{17}{24} \right) \\ &= \frac{1}{2} \left(\frac{16+17}{24} \right) = \frac{1}{2} \times \frac{33}{24} = \frac{33}{48}\end{aligned}$$

$$\begin{aligned}\text{Rational number between } \frac{17}{24} \text{ and } \frac{3}{4} &= \frac{1}{2} \left(\frac{17}{24} + \frac{3}{4} \right) \\ &= \frac{1}{2} \left(\frac{17+18}{24} \right) = \frac{1}{2} \times \frac{35}{24} = \frac{35}{48}\end{aligned}$$

Therefore, the three rational numbers are $\frac{17}{24}, \frac{33}{48}, \frac{35}{48}$.

Write 3 rational numbers between 4 and 5.

Answer :

Rational number between 4 and 5 :

$$\begin{aligned} & \frac{1}{2} (4 + 5) \\ &= \frac{9}{2} \end{aligned}$$

Rational number between 4 and $\frac{9}{2}$:

$$\begin{aligned} & \frac{1}{2} \left(4 + \frac{9}{2} \right) \\ &= \frac{1}{2} \left(\frac{8+9}{2} \right) \\ &= \frac{1}{2} \left(\frac{17}{2} \right) \\ &= \frac{17}{4} \end{aligned}$$

Rational number between $\frac{9}{2}$ and 5 :

$$\begin{aligned} & \frac{1}{2} \left(\frac{9}{2} + 5 \right) \\ &= \frac{1}{2} \left(\frac{9+10}{2} \right) \\ &= \frac{19}{4} \end{aligned}$$

We know :

$$4 < \frac{17}{4} < \frac{9}{2} < \frac{19}{4} < 5$$

Home Assignment

Exercise 1(E) -3 to 8

THANKING YOU
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