Rational Numbers
Ex 1F

Q1.

Answer :

$\text{Required number} = \frac{1}{2}\left(\frac{1}{4}+\frac{1}{3}\right)$

$= \frac{1}{2}\left(\frac{3+4}{12}\right)$

$= \left(\frac{1}{2}\times\frac{7}{12}\right)$

$= \frac{7}{24}$

Q2.

Answer :

$\text{Required Number} = \frac{1}{2}\times\left(2+3\right)$

$= \frac{5}{2}$

Q3.

Answer :

$\text{Required number} = \frac{1}{2}\times\left(\frac{-1}{3}+\frac{1}{2}\right)$

$= \frac{1}{2}\times\left(\frac{-2+3}{6}\right)$

$= \frac{1}{2}\times\frac{1}{6}$

$= \frac{1}{12}$

Q4.

Answer :

Required number $= \frac{1}{2} \times (-3-2)$

$= \frac{1}{2}\left(-5\right)$

$= \frac{-5}{2}$

We know :

$-3 < \frac{-5}{2} < -2$

Rational number between -3 and $\frac{-5}{2} = \frac{1}{2} \times \left(-3-\frac{5}{2}\right)$

$= \frac{1}{2}\left(\frac{-6-5}{2}\right)$

$= \frac{1}{2} \times \frac{-11}{2}$

$= \frac{-11}{4}$

Thus, the required numbers are $\frac{-5}{2}$ and $\frac{-11}{4}$.

Q5.

Answer :

Rational number between 4 and 5 :

$\frac{1}{2}\left(4+5\right)$

$= \frac{9}{2}$

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

$\frac{1}{2}\left(4+\frac{9}{2}\right)$

$= \frac{1}{2}\left(\frac{8+9}{2}\right)$

$= \frac{1}{2}\left(\frac{17}{2}\right)$

$= \frac{17}{4}$

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

$\frac{1}{2}\left(\frac{9}{2}+5\right)$

$= \frac{1}{2}\left(\frac{9+10}{2}\right)$

$= \frac{19}{4}$

We know :

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

Q6.

Answer :

Rational number between $\frac{2}{3}$ and $\frac{3}{4}$:

$\frac{1}{2}\left(\frac{2}{3}+\frac{3}{4}\right)$

$= \frac{1}{2}\left(\frac{8+9}{12}\right)$

$= \frac{17}{24}$

We know :

$\frac{2}{3} < \frac{17}{24} < \frac{3}{4}$

Rational number between $\frac{2}{3}$ and $\frac{17}{24}$:

$\frac{1}{2}\left(\frac{2}{3}+\frac{17}{24}\right)$

$= \frac{1}{2}\left(\frac{16+17}{24}\right)$

$= \frac{1}{2}\left(\frac{33}{24}\right)$

$= \frac{33}{48} = \frac{33 \div 3}{48 \div 3} = \frac{11}{16}$

Rational number between $\frac{17}{24}$ and $\frac{3}{4}$:

$\frac{1}{2}\left(\frac{17}{24}+\frac{3}{4}\right)$

$= \frac{1}{2}\left(\frac{17+18}{24}\right)$

$= \frac{1}{2}\left(\frac{35}{24}\right)$

$= \frac{35}{48}$

We know :

$\frac{2}{3} < \frac{11}{16} < \frac{17}{24} < \frac{35}{48} < \frac{3}{4}$

Thus, the three rational numbers are $\frac{11}{16}$, $\frac{17}{24}$ and $\frac{35}{48}$.

Q8.

Answer :

We may write :

$-1 = \frac{-10}{10}$

and

$2 = \frac{20}{10}$

Rational numbers between -1 and 2 :

$\frac{-9}{10}, \frac{-8}{10}, \frac{-7}{10}, \frac{-6}{10}, \frac{-5}{10}, \frac{-4}{10}, \ldots, \frac{14}{10}, \frac{15}{10}, \frac{16}{10}, \frac{17}{10}, \frac{18}{10}$ and $\frac{19}{10}$

We can take any 12 numbers out of these.