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Rational numbers between two rational numbers

There are always definite amount of numbers between two natural/whole numbers or integers. But, there can be **indefinite** amount of numbers between two rational numbers.

- Natural numbers between 4 and 22 are 17
(5, 6, ..., 20, 21).
- Whole numbers between 0 and 5 are 4
(1,2,3 and 4).
- Integers between -4 and 9 are 12
(-3, -2, ..., 7, 8)
- Rational numbers between $\frac{3}{10}$ and $\frac{7}{10}$ can be:
 - $\frac{4}{10}, \frac{5}{10}, \frac{6}{10}$

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:

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

Example

Problem: Find 5 rational numbers which are smaller than 2 ?

Solution: 2 can be represented as $\frac{14}{7}$ or $\frac{10}{5}$ etc.

Therefore, 5 rational numbers smaller than $\frac{14}{7}$ are:

$$\frac{13}{7}, \frac{12}{7}, \frac{11}{7}, \frac{10}{7}, \frac{9}{7}$$

Also, 5 rational numbers smaller than $\frac{10}{5}$ are:

$$\frac{9}{5}, \frac{8}{5}, \frac{7}{5}, \frac{6}{5}, \frac{5}{5}$$