

Number System

Solution of Exercise 1.1:

Question 1: Answer is **yes**, because zero can be written as $0 = \frac{0}{1}, \frac{0}{2}, \frac{0}{3}$ etc. To prove this zero can be written as $\frac{p}{q}$, where $q \neq 0$, hence zero is rational number.

Question 2: As we know there are infinitely many rational numbers between two rational numbers. Here we have to calculate the six rational numbers between 3 and 4.

Now write 3 as $\frac{21}{4+3}$ and 4 as $\frac{28}{4+3}$

So we have following rational number between 3 and 4 is $\frac{22}{7}, \frac{23}{7}, \frac{24}{7}, \frac{25}{7}, \frac{26}{7}, \frac{27}{7}$.

Question 3: As we know there are infinitely many rational numbers between two rational numbers. Here we have to calculate the six rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$.

Now write $\frac{3}{5}$ as $\frac{30}{50}$ and $\frac{4}{5}$ as $\frac{40}{50}$

So we have following rational number between 3 and 4 is $\frac{31}{50}, \frac{32}{50}, \frac{33}{50}, \frac{34}{50}, \frac{35}{50}$.

Question 4:

- (i) **True**, because the collection of whole numbers contains all the natural numbers.
- (ii) **False**, for example all the negative integers.
- (iii) **False**, for example $\frac{3}{5}$ is a rational number but not the whole number.