## Exercise 1.1

**1.** *Is zero a rational number? Can you write it in the form* $\frac{p}{q}$, *where p and q are integers and* $q \neq 0$?

**Sol.** Yes, zero is a rational number as $0 = \frac{0}{1}$ or $\frac{0}{2}$ or $\frac{0}{-1}$.

This is in the form $\frac{p}{q}$, $q \neq 0$.

**2.** *Find six rational numbers between 3 and 4.*

**Sol.** For six rational numbers between 3 and 4,

$$3 = \frac{21}{7} \text{ and } 4 = \frac{28}{7}.$$

Six rational numbers between 3 and 4 are $\frac{22}{7}, \frac{23}{7}, \frac{24}{7}, \frac{25}{7}, \frac{26}{7}, \frac{27}{7}$ or another set is 3.1, 3.2, 3.3, 3.4, 3.5, 3.6. There can be other set of rational numbers also.

**3.** *Find five rational numbers between* $\frac{3}{5}$ *and* $\frac{4}{5}$.

**Sol.** We have $\frac{3}{5} = \frac{18}{30}$ and $\frac{4}{5} = \frac{24}{30}$.

Five rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$ are $\frac{19}{30}, \frac{20}{30}$,

$\frac{21}{30}, \frac{22}{30}, \frac{23}{30}$. There can be other set of rational numbers also.

**4.** *State whether the following statements are true or false. Give reasons for your answers.*

(*i*) *Every natural number is a whole number.*

(*ii*) *Every integer is a whole number.*

(*iii*) *Every rational number is a whole number.*

**Sol.** (*i*) True, as the set of whole numbers contains all the natural numbers.

(*ii*) False, as negative integer, *e.g.*, –2 is not a whole number.

(*iii*) False, as $\frac{2}{3}$ is a rational number but not a whole number.