CLASS - IX
MATHEMATICS

Real Numbers

1. Are all integers natural numbers?

Ans.: No, because natural numbers does not contain 0, -1, -2, ... etc.

2. Write three rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$.

Ans.: $\frac{1}{3}=\frac{2}{6}=\frac{20}{60}$

$\frac{1}{2}=\frac{3}{6}=\frac{30}{60}$

Three rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$ are $\frac{7}{20}, \frac{11}{30}, \frac{23}{60}$.

3. Write three irrational numbers between $\sqrt{5}$ and $\sqrt{11}$.

Ans.: Three irrational numbers between $\sqrt{5}$ and $\sqrt{11}$ are $\sqrt{6}, \sqrt{7}, \sqrt{10}$.

4. Write two irrational numbers such that sum and product of the numbers are rational.

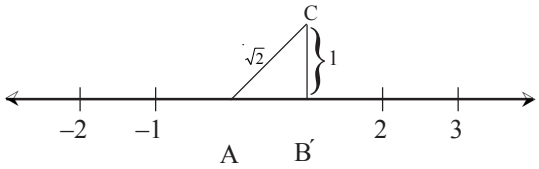
Ans.: $3+\sqrt{2}$ and $3-\sqrt{2}$ are two irrational numbers whose sum and product are rational numbers.

Sum of the numbers $=(3+\sqrt{2})+(3-\sqrt{2})=6$, which is rational.

Product of the numbers $=(3+\sqrt{2})\times(3-\sqrt{2})=9-2=7$, which is rational.

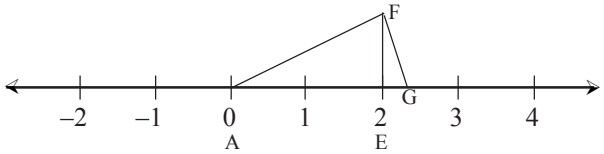
5. Place $\sqrt{6}$ on the real number line.

Ans.:



Let, on the real number line A denotes 0 (zero) and B denotes 1 (one). Draw perpendicular BC on AB such that BC = 1 unit. A, C are joined.

According to Pythagoras' theorem, $AC=\sqrt{1^2+1^2}$ units $=\sqrt{2}$ units.



Let, on the real number line A and E denote 0 (zero) and 2 (two) respectively. Draw perpendicular EF on AE such that EF = AC. $\therefore$ $EF=\sqrt{2}$ units. Join A and F.

According to Pythagoras' theorem, $AF=\sqrt{2^2+\left(\sqrt{2}\right)^2}$ units $=\sqrt{6}$ units. An arc is drawn with centre at A and radius AF, which cuts the real number line at G. G denotes $\sqrt{6}$ on real number line.