



NCERT solutions for class 9 Maths Number System Ex-1.2

**Q1.** State whether the following statements are true or false. Justify your answers.

- (i) Every irrational number is a real number.
- (ii) Every point on the number line is of the form  $\sqrt{m}$ , where  $m$  is a natural number.
- (iii) Every real number is an irrational number.

**Ans:** (i) Consider the irrational numbers and the real numbers separately.

We know that irrational numbers are the numbers that cannot be converted in the form

$\frac{p}{q}$ , where  $p$  and  $q$  are integers and  $q \neq 0$ .

We know that a real number is the collection of rational numbers and irrational numbers.

Therefore, we conclude that, yes every irrational number is a real number.

(ii) Consider a number line. We know that on a number line, we can represent negative as well as positive numbers.

We know that we cannot get a negative number after taking square root of any number.

Therefore, we conclude that not every number point on the number line is of the form  $\sqrt{m}$ , where  $m$  is a natural number.

(iii) Consider the irrational numbers and the real numbers separately.

We know that irrational numbers are the numbers that cannot be converted in the form

$\frac{p}{q}$ , where  $p$  and  $q$  are integers and  $q \neq 0$ .

We know that a real number is the collection of rational numbers and irrational numbers.

So, we can conclude that every irrational number is a real number. But every real number is not an irrational number.

Therefore, we conclude that, every real number is not a rational number.

**Q2.** Are the square roots of all positive integers irrational? If not, give an example of the square root of a number that is a rational number.

**Ans:** We know that square root of every positive integer will not yield an integer.

We know that  $\sqrt{4}$  is 2, which is an integer. But,  $\sqrt{7}$  or  $\sqrt{10}$  will give an irrational number.

Therefore, we conclude that square root of every positive integer is not an irrational number.

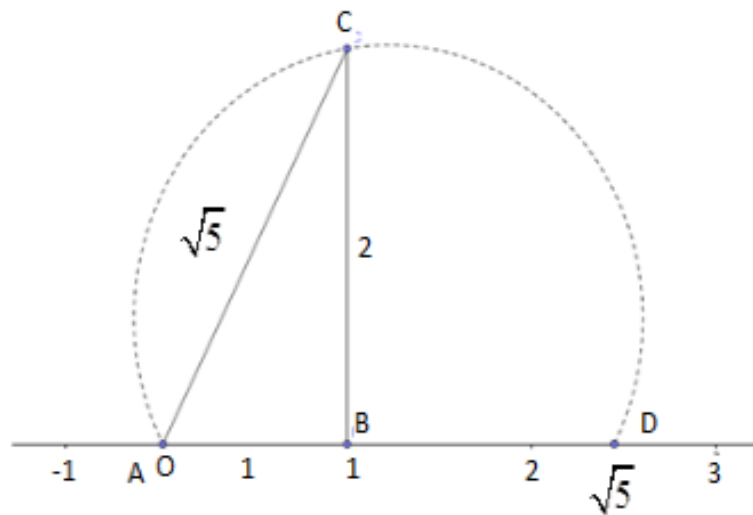
**Q3.** Show how  $\sqrt{5}$  can be represented on the number line.

Ans: According to the Pythagoras theorem, we can conclude that

$$(\sqrt{5})^2 = (2)^2 + (1)^2.$$

We need to draw a line segment  $AB$  of 1 unit on the number line. Then draw a straight line segment  $BC$  of 2 units. Then join the points  $C$  and  $A$ , to form a line segment  $AC$ .

Then draw the arc  $ACD$ , to get the number  $\sqrt{5}$  on the number line.



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