What are Irrational Numbers?

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In the previous segment, we proved the existence of **Irrational numbers.** In this segment let us look at examples of Irrational Numbers.

What Type of numbers are square roots?

Irrational numbers are non-recurring and non-terminating.

For example,

1.240200200002..... is an irrational number between 1.23 and 1.25.

The square root of any perfect square will be a rational number. But the square root of any number which is not a perfect square will always be an irrational number.

For example,

Square Roots
$\sqrt{2}$ = 1.414213562373095.....
$\sqrt{3}$ = 1.732050807568877.....
$\sqrt{4}$ = 2
$\sqrt{5}$ = 2.23606797749979.....
$\sqrt{6}$ = 2.449489742783178.....
$\sqrt{7}$ = 2.645751311064591.....
$\sqrt{8}$ = 2.82842712474619.....
$\sqrt{9}$ = 3
$\sqrt{10}$ = 3.162277660168379.....

$\therefore \sqrt{2}, \sqrt{3}, \sqrt{5}, \sqrt{6}, \sqrt{7}, \sqrt{8}, \sqrt{10}$ *are Irrational Numbers and* $\sqrt{4}$ *and* $\sqrt{9}$ *are rational numbers.*

Example 2

Q. Find two Irrational numbers between 1.23 and 1.25.

Answer: 1.24 is incorrect as it is terminating

∴ We can start adding numbers after 1.24 which are Recurring and Non-terminating.

1.24010010001.....

1.240200200002.....

∴ To find irrational numbers between two numbers, write a rational number between them and then add non-terminating and non-recurring digits after it.

Summary

- The square root of any perfect square will be a rational number. But the square root of any number which is not a perfect square will always result in an Irrational number.
- To find irrational numbers between two numbers, write a rational number between them and then add non-terminating and non-recurring digits after it.

Did you know?

Irrational numbers often occur in geometry.

What's next?

In the next segment of Class 10 Maths, we will look at **Rational Numbers.**