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# **Class 10 - ICSE**

# **MATHEMATICS**

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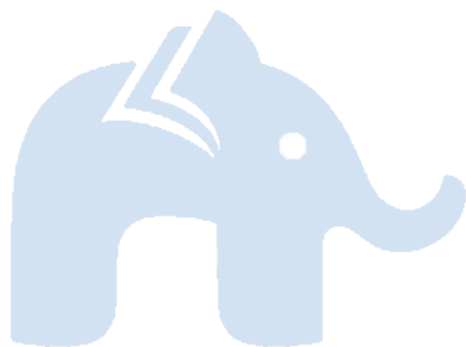
# Equation of a Line

## Revise Notes



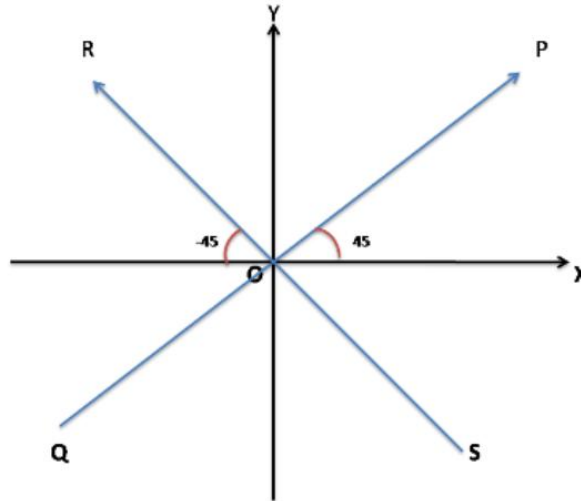
**TOPICS in this lesson**

**Equally Inclined Lines**



### Equally Inclined Lines

By the meaning of equally inclined lines, we mean that the lines which make equal angles with both the co-ordinate axes.



The above diagram shows that PQ and RS are the two equally inclined lines.

From the above diagram it is clear that;

For PQ: Inclination  $\theta = 45^\circ$ ,

So, slope =  $\tan 45^\circ = 1$

For RS: Inclination  $\theta = -45^\circ$ ,

So, slope =  $\tan (-45^\circ) = -\tan 45^\circ = -1$

#### Example 1:

Find the equation of the lines which is passes through the point (-2. 3) and equally inclined to the co-ordinate axes.

#### Solution:

From the above diagram it is clear that; there are two lines PQ and RS, equally inclined to the co-ordinate axes.

For line PQ:  $m = \tan 45^\circ = 1$  and  $(x_1, y_1) = (-2, 3)$

Therefore, its equation:  $y - y_1 = m(x - x_1)$

$\Rightarrow y - 3 = 1(x + 2)$

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$$\Rightarrow y - 3 = x + 2$$

$$\Rightarrow y = x + 5$$

For line RS:

$$m = \tan (-45^\circ) = -1$$

$$\text{and } (x_1, y_1) = (-2, 3)$$

Therefore, its equation:

$$y - y_1 = m(x - x_1)$$

$$\Rightarrow y - 3 = -1(x + 2)$$

$$\Rightarrow y - 3 = -x - 2$$

$$\Rightarrow y = -x + 1$$

$$\Rightarrow x + y = 1$$

Therefore, the required equations are  $y = x + 5$  and  $x + y = 1$

