

Name : \_\_\_\_\_

## Parallel or Perpendicular Lines

Sheet 4

- 1) A line passes through  $(1, -4)$  and  $(2, 2)$ . Another line passes through  $(0, 2)$  and  $(12, 0)$ . Prove that the lines are perpendicular.

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- 2) A line passes through  $A(0, 3)$  and  $B(3, 1)$ . Another line passes through  $C(-2, -5)$  and  $D(2, 1)$ . Is  $\overleftrightarrow{AB}$  perpendicular to  $\overleftrightarrow{CD}$ ?

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- 3) Slope of a line  $m$  is  $\frac{1}{2}$  and slope of a line  $n$  is  $-\frac{1}{2}$ . Are the lines  $m$  and  $n$  parallel or perpendicular?

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- 4) A line  $s$  passes through  $(-1, 2)$  and  $(3, 4)$ . Another line  $t$  passes through  $(2, 1)$  and  $(5, 3)$ . Prove that the lines  $s$  and  $t$  are perpendicular.

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- 5) A line passes through  $K(3, -2)$  and  $L(-5, 2)$ . Another line passes through  $M(-2, 4)$  and  $N(0, 3)$ . Prove that  $\overleftrightarrow{KL}$  and  $\overleftrightarrow{MN}$  are parallel.

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**Parallel or Perpendicular Lines**

- 1) A line passes through (1, -4) and (2, 2). Another line passes through (0, 2) and (12, 0). Prove that the lines are perpendicular.

**Slope of a line passing through (1, -4) and (2, 2) = 6**

**Slope of a line passing through (0, 2) and (12, 0) =  $-\frac{1}{6}$**

**Product of their slopes equals to -1, the lines are perpendicular.**

- 2) A line passes through A(0, 3) and B(3, 1). Another line passes through C(-2, -5) and D(2, 1). Is  $\overleftrightarrow{AB}$  perpendicular to  $\overleftrightarrow{CD}$ ?

**slope of  $\overleftrightarrow{AB}$  = -**

**slope of  $\overleftrightarrow{CD}$  = 3**

**Yes. Product of**

**is perpendicular to  $\overleftrightarrow{CD}$ .**

- 3) Slope of a line  $m$  is 7. Slope of a line  $n$  is  $-\frac{1}{7}$ . Are the lines  $m$  and  $n$  parallel or perpendicular?

**slope of  $m$  = 7**

**slope of  $n$  =  $-\frac{1}{7}$**

**As the slopes are**

- 4) A line  $s$  passes through (1, 1) and (2, 2). Another line  $t$  passes through (1, 2) and (2, 1). Prove that the lines  $s$  and  $t$  are perpendicular.

**slope of  $s$  = 1 ;**

**slope of  $t$  = -1**

**Product of their slopes equals to -1, the lines  $s$  and  $t$  are perpendicular.**

- 5) A line passes through K(3, -2) and L(-5, 2). Another line passes through M(-2, 4) and N(0, 3). Prove that  $\overleftrightarrow{KL}$  and  $\overleftrightarrow{MN}$  are parallel.

**slope of  $\overleftrightarrow{KL}$  =  $-\frac{1}{2}$  ; slope of  $\overleftrightarrow{MN}$  =  $-\frac{1}{2}$**

**slope of  $\overleftrightarrow{KL}$  = slope of  $\overleftrightarrow{MN}$**

**$\overleftrightarrow{KL}$  and  $\overleftrightarrow{MN}$  are parallel.**

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