

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

## Parallel or Perpendicular Lines

Sheet 3

- 1) A line  $p$  passes through  $(-9, -4)$  and  $(-4, -1)$ . Slope of a line  $q$  is  $\frac{3}{5}$ . Prove that the lines  $p$  and  $q$  are parallel?

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- 2)  $\overleftrightarrow{PQ}$  passes through  $(-1, 3)$  and  $(4, 8)$ .  $\overleftrightarrow{RS}$  passes through  $(1, 2)$  and  $(5, 6)$ . Are the lines parallel or perpendicular? Justify your answer.

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- 3) A line passes through  $(-2, 5)$  and  $(3, -1)$ . Another line passes through  $(1, 2)$  and  $(4, 8)$ . Prove that the lines are perpendicular.

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- 4) A line passes through  $(-3, 4)$  and  $(2, -1)$ . Another line passes through  $G(5, -7)$  and  $H(10, -2)$ . Prove that the lines are perpendicular.

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- 5) Slope of a line  $u$  is  $-1$ . A line  $v$  passes through  $(0, -6)$  and  $(6, 0)$ . Are the lines  $u$  and  $v$  parallel or perpendicular? Justify.

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**Parallel or Perpendicular Lines**

- 1) A line  $p$  passes through  $(-9, -4)$  and  $(-4, -1)$ . Slope of a line  $q$  is  $\frac{3}{5}$ . Prove that the lines  $p$  and  $q$  are parallel?

$$\text{slope of } p = \frac{3}{5} ; \text{ slope of } q = \frac{3}{5}$$

$$\text{slope of } p = \text{slope of } q$$

**The lines  $p$  and  $q$  are parallel.**

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- 2)  $\overleftrightarrow{PQ}$  passes through  $(-1, 3)$  and  $(4, 8)$ .  $\overleftrightarrow{RS}$  passes through  $(1, 2)$  and  $(5, 6)$ . Are the lines parallel or perpendicular? Justify your answer.

$$\text{slope of } \overleftrightarrow{PQ} = 1$$

$$\text{slope of } \overleftrightarrow{PQ} = 1$$

**The lines are p**

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

$$\text{Slope of a line} = \frac{1-3}{4-(-2)} = \frac{-2}{6} = -\frac{1}{3}$$

$$\text{Slope of another line} = \frac{2-0}{1-0} = 2$$

$$\text{Product of the slopes} = -\frac{1}{3} \times 2 = -\frac{2}{3} \neq -1$$

**perpendicular.**

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- 4) A line passes through  $(-1, 2)$  and  $(3, 2)$ . Another line passes through  $(5, -7)$  and  $(1, -7)$ . Prove that the lines are parallel.

$$\text{slope of } \overleftrightarrow{EF} = \frac{2-2}{3-(-1)} = \frac{0}{4} = 0$$

$$\text{slope of } \overleftrightarrow{EF} = \text{slope of } \overleftrightarrow{GH}$$

**$\overleftrightarrow{EF}$  is parallel to  $\overleftrightarrow{GH}$ .**

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- 5) Slope of a line  $u$  is  $-1$ . A line  $v$  passes through  $(0, -6)$  and  $(6, 0)$ . Are the lines  $u$  and  $v$  parallel or perpendicular? Justify.

$$\text{slope of } u = -1 ; \text{ slope of } v = 1$$

$$\text{slope of } u \times \text{slope of } v = -1$$

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

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