

Perpendicular Lines

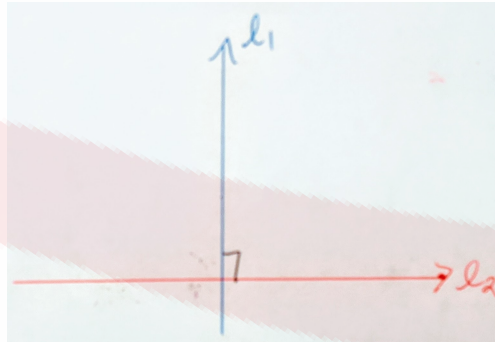
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## Perpendicular Lines

What does perpendicular mean? Two lines are said to be perpendicular when the angle between the two lines at the point of intersection is  $90^\circ$ , then the two lines are *perpendicular*.



How are the slopes of perpendicular lines related? If two lines  $l_1$  and  $l_2$  are perpendicular then the slope of  $l_1$  is the negative reciprocal of the slope of  $l_2$ .

$$m_1 = -\frac{1}{m_2}$$

where  $m_1$  is the slope of line  $l_1$  and  $m_2$  is the slope of line  $l_2$ .

## Exercises

1. For each of the lines below find the slope of the line perpendicular to each line.

a)  $m = -2, b = 0$

b)  $m = -\frac{1}{2}, b = 1$

c)  $m = 3, b = -5$

d)  $m = \frac{1}{4}, b = \frac{7}{2}$

2. Graph each of the lines in #1 and label.

3. Graph a line perpendicular to each line in #1 and label.