


Look at $\frac{\text{rise}}{\text{run}}$ as

$\frac{\text{the change in the } y\text{'s}}{\text{the change in the } x\text{'s}}$


$= \frac{3 - (-1)}{4 - (-2)} = \frac{4}{6} = \frac{2}{3}$

Unit 5: Linear Equations

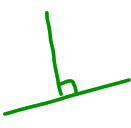


5.4 Parallel and Perpendicular Lines

Consider two lines with slopes m_1 and m_2 .

* The lines are PARALLEL if they have the same slope. 

Ex.) $m_1 = \frac{1}{2}$ $m_2 = \frac{3}{6}$

** The lines are PERPENDICULAR if the product of their slopes is -1. 

Ex.) $\frac{2}{3} \cdot -\frac{3}{2} = -\frac{6}{6} = \boxed{-1}$

And/or the slopes are negative reciprocals of each other.

Ex.) $m_1 = \frac{2}{3}$ $m_2 = -\frac{3}{2}$

↑ ↑

diff. signs flip


 fraction

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Unit 5: Linear Equations



Ex.) Consider the line segment AC with a slope of $\frac{3}{4}$.

a) Write the slope of line segment GH which is parallel to AC.


$m_{GH} = \frac{3}{4}$ $AC \parallel GH$

b) Write the slope of line segment BF which is perpendicular to AC.

$m_{BF} = -\frac{4}{3}$ $AC \perp BF$

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Ex.) Determine if the following are parallel, perpendicular or neither.

a) $m_1 = \frac{1}{4}, m_2 = \frac{3}{12}$


$\cancel{*}$ b) $m_1 = \frac{5}{7}, m_2 = \frac{14}{10} = \frac{7}{5}$

$l_1 \parallel l_2$ neither

parallel

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Ex.) If P is the point $(4, 7)$ and Q is the point $(6, -2)$, find the slope of a line segment;

$$m_{PQ} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 7}{6 - 4} = \frac{-9}{2}$$

a) parallel to line segment PQ .

$$m = -\frac{9}{2} = -\frac{18}{4} = -4.5$$

b) perpendicular to line segment PQ .

$$m = \frac{2}{9} = \frac{4}{18} = \frac{6}{27}$$