Slope of a Straight Line - the 'steepness' or 'rate of change' of that line

1. Find the slope from the given pair of points:
   
   A ( 5, 12 )
   B ( 8, 33 )

2. Find the slope from the given pair of points:
   
   A ( -8, -3 )
   B ( 37, -33 )

3. Find the slope from the given pair of points:
Slope of a Straight Line - the ‘steepness’ or ‘rate of change’ of that line

1. Find the slope from the given pair of points:

\[ a = \frac{y_2 - y_1}{x_2 - x_1} \]

A (5, 12)

B (8, 33)

\[ a = \frac{33 - 12}{8 - 5} = \frac{21}{3} = 7 \]

The slope is 7

\[ a = 7 \]

2. Find the slope from the given pair of points:

\[ a = \frac{y_2 - y_1}{x_2 - x_1} \]

A (-8, -3)

B (37, -33)

\[ a = \frac{-33 - (-3)}{37 - (-8)} = \frac{-30}{45} = -0.6 \]

The slope is -0.6

\[ a = -0.6 \]

3. Find the slope from the given pair of points:

\[ a = \frac{y_2 - y_1}{x_2 - x_1} \]

A (-1, -4)

B (1, -3)

\[ a = \frac{-3 - (-4)}{1 - (-1)} = \frac{1}{2} = 0.5 \]

The slope is 0.5

\[ a = 0.5 \]
4. Find the slope from the given pair of points:

![Graph showing two points on a coordinate plane.]

5. Lawrence works at a law firm. He charges his clients a flat hourly rate.

   After 3.5 hours of work, his fee is $1426.50
   After 8 hours of work, his fee is $3804.00.

   What is Lawrence’s hourly rate?

6. Emiko works at an engineering firm. Every week, she makes an initial salary but also earns additional cash by working overtime. Her overtime is paid according to a constant hourly rate.

   If Emiko works an extra 5 hours of overtime, she is paid a total of $2000 for the week.
   She is paid $2360 if she works an extra 9.5 hours of overtime.

   What is Emiko’s hourly overtime rate?
4. Find the slope from the given pair of points:

\[ a = \frac{y_2 - y_1}{x_2 - x_1} \]

\[ a = \frac{-4 - 4}{-2 - 4} = \frac{-8}{-6} = \frac{4}{3} = -1.25 \]

5. Lawrence works at a law firm. He charges his clients a flat hourly rate.

\[ y_1 = \frac{x_1}{y_1} \]

After 3.5 hours of work, his fee is $1,426.50
After 8 hours of work, his fee is $3,804.00.

What is Lawrence’s hourly rate?

ANSWER: \[ a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3,804 - 1,426.50}{8 - 3} = \frac{2,377.50}{5} = 475.50 \]

Lawrence’s hourly rate at the firm is $475.50/hour.

6. Emiko works at an engineering firm. Every week, she makes an initial salary but also earns additional cash by working overtime. Her overtime is paid according to a constant hourly rate.

\[ y_2 = \frac{x_2}{y_2} \]

If Emiko works an extra 5 hours of overtime, she is paid a total of $2,000 for the week.
She is paid $2,360 if she works an extra 9.5 hours of overtime.

What is Emiko’s hourly overtime rate?

ANSWER: Emiko’s hourly overtime rate is $80/hour.

\[ a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2,360 - 2,000}{9.5 - 5} = \frac{360}{4.5} = 80 \]