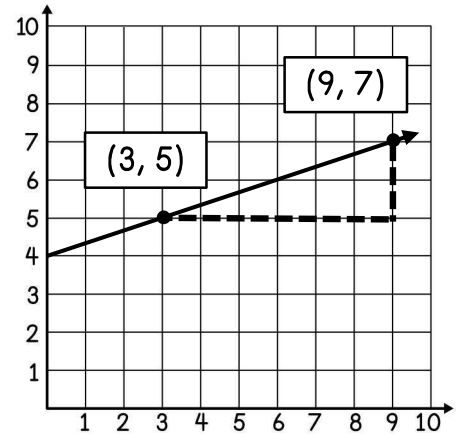


THE SLOPE FORMULA

To find the slope of the graph, Aiden chose the two points shown and counted the rise to be 2 and the run to be 6. He used these values to set up the ratio $\frac{2}{6}$ and simplified the slope to $\frac{1}{3}$.



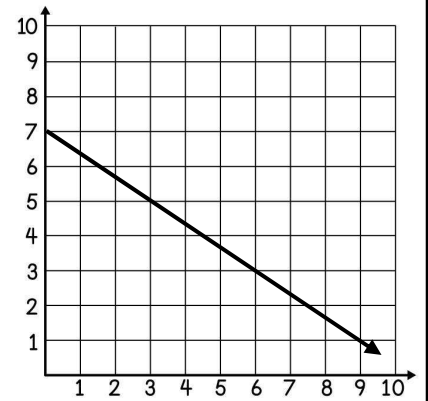
- Using the values in the ordered pairs, how else could Aiden have found the rise to be 2?
- Using the values in the ordered pairs, how else could Aiden have found the run to be 6?

THE SLOPE FORMULA

If a linear relationship contains two ordered pairs (x_1, y_1) and (x_2, y_2) , the slope can be found using the formula below:

$$\frac{y_2 - y_1}{x_2 - x_1}$$

Ex. Use the formula to find the slope of the graphed line.



1. A graphed line passes through each of the following pairs of points. Use the slope formula to find the slope of each line. Show all work.

	POINTS	FORMULA AND WORK	SLOPE
A	(2, 4) and (1, 7)		
B	(-1, 3) and (5, -5)		
C	(8, 11) and (10, 22)		
D	(-1, 9) and (-1, 6)		

In 2-3, each table represents a linear relationship. Choose two ordered pairs from the table and use the slope formula to find the rate of change.

2.

x	0	1	2	3
y	5	5.5	6	6.5

Formula: _____ Slope: _____

3.

x	3	8	11	14
y	15	15	15	15

Formula: _____ Slope: _____

4. A web designer charges customers an initial consultation fee plus an hourly rate. The table shows the linear relationship between x , the number of hours and y , the total cost of hiring the designer.

HOURS	TOTAL COST
2	\$205
5	\$400
8	\$595
10	\$725

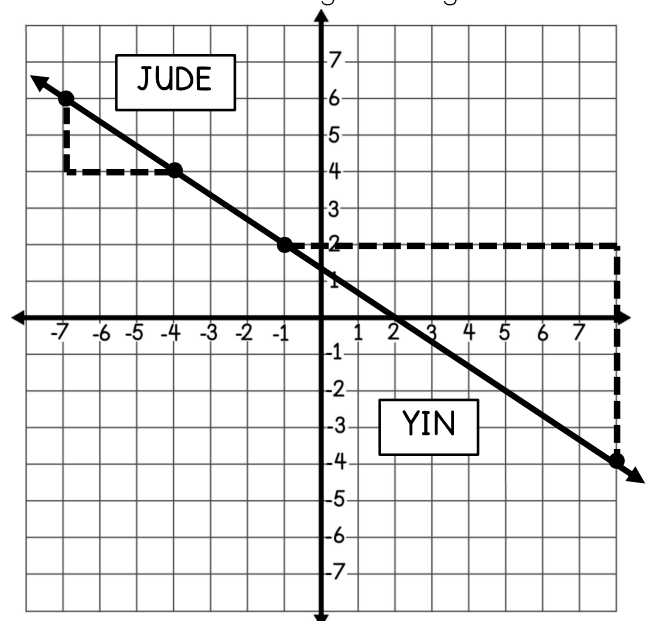
- Find the rate of change.
- What does the rate of change represent in the context of the situation?

5. The post office calculates shipping costs based on the weight of the item in addition to a fee. The cost to ship a 2-pound item is \$6.09, while the cost to ship a 7-pound item is \$8.84. Find the rate of change of the cost with respect to the weight of the item.



6. Jude and Yin each chose two points on the graphed line below and drew right triangles to find the slope of the line. Use their triangles to answer a-d.

- Use Jude's points to set up and simplify the slope formula below.
- Use Yin's points to set up and simplify the slope formula below.
- How are the two triangles related to one another?
- What can we assume about the slope between any two points on the same line? Explain.



THE SLOPE FORMULA

In 1-3, find the slope of the graphed line that contains the given ordered pairs. Show all work.

<p>1. (8, 7) and (2, 12)</p> <p style="text-align: right; margin-top: 100px;">slope: _____</p>	<p>2. (12, -10) and (15, -8)</p> <p style="text-align: right; margin-top: 100px;">slope: _____</p>	<p>3. (1, 4) and (0, 11)</p> <p style="text-align: right; margin-top: 100px;">slope: _____</p>
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4. Madeline needs to find the slope of the line that passes through the points (9, 12) and (7, 4). She sets up the following work:

$$\frac{12 - 4}{7 - 9}$$

Has she set up her work correctly? Why or why not?

5. A graphed line has a slope of $\frac{5}{3}$. Which of the following points could the line contain?

- A. (15, 13) and (0, 4)
- B. (3, 9) and (6, 14)
- C. (0, 4) and (19, 9)
- D. (5, 7) and (10, 10)

In 6-8, each table represents a linear relationship. Use the slope formula to find the slope or rate of change shown in each table.

6.

x	2	6	10	14
y	8	28	48	68

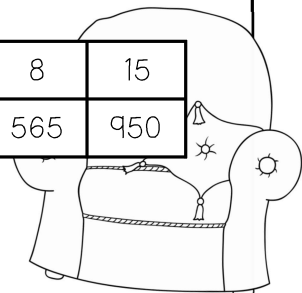
7.

x	-6	4	9	20
y	5	10	12.5	18

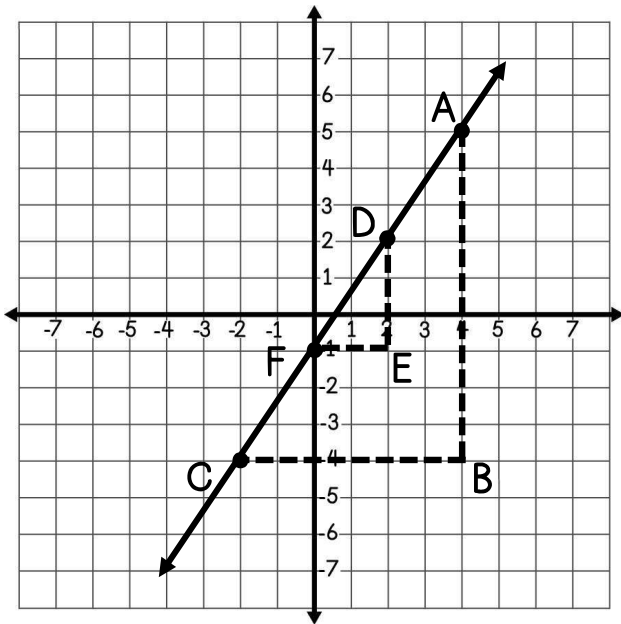
8. An interior designer charges customers an initial consultation fee plus an hourly rate. The table shows the linear relationship between x, the number of hours, and y, the total cost of hiring the designer.

HOURS	0	2	8	15
TOTAL COST (\$)	125	235	565	950

- a. Find the rate of change.
- b. What does the rate of change represent in the context of the situation?



Use the graphed line and triangles ABC and DEF below to answer 9-10.



9. Find the slope of \overline{AC} .

10. Which is a true statement about the slope of \overline{AC} compared to the slope of \overline{DF} ?

- a. The slope of \overline{AC} is greater than the slope of \overline{DF} .
- b. The slope of \overline{AC} is less than the slope of \overline{DF} .
- c. The slopes are equal because $\frac{5 - (-4)}{4 - (-2)} = \frac{2 - (-1)}{2 - 0}$.
- d. The slopes are equal because $\frac{4 - (-2)}{5 - (-4)} = \frac{2 - 0}{2 - (-1)}$.