

Use a table to determine the slope of a line.

Step 1: Identify the change in each consecutive pair of y-values in the table. In this case, the changes are 5, 5 and 10.

Step 2: Identify the change in each consecutive pair of x-values in the table. In this case, the changes are 1, 1, and 2.

Step 3: Write ratios showing the corresponding $\frac{\text{vertical change}}{\text{horizontal change}}$ in simplest form. In this case, the ratios $\frac{5}{1}$, $\frac{5}{1}$, and $\frac{10}{2}$ each simplify to $\frac{5}{1}$.

The slope of the line is $\frac{5}{1}$.

| x | y |
|---|----|
| 1 | -3 |
| 2 | 2 |
| 3 | 7 |
| 5 | 17 |

1
1
2



7

7

Finding Slope from Tables

Name _____

Date _____ Period _____

Determine the slope of the line represented by the table of values. Describe the graphs of the line as increasing, decreasing, horizontal, or vertical.

1.

| x | y |
|----|----|
| -2 | 3 |
| -1 | 5 |
| 0 | 7 |
| 1 | 9 |
| 2 | 11 |

m =

Graph Description

2.

| x | y |
|----|----|
| -3 | 5 |
| -2 | 2 |
| -1 | -1 |
| 0 | -4 |
| 1 | -7 |

m =

Graph Description

3.

| x | y |
|---|-----|
| 1 | -17 |
| 2 | -13 |
| 3 | -9 |
| 4 | -5 |
| 5 | -1 |

m =

Graph Description

4.

| x | y |
|----|-----|
| -6 | -4 |
| -5 | -9 |
| -4 | -14 |
| -3 | -19 |
| -2 | -24 |

m =

Graph Description

5.

| x | y |
|---|------|
| 0 | 3 |
| 1 | 5.5 |
| 2 | 8 |
| 3 | 10.5 |
| 4 | 13 |

m =

Graph Description

6.

| x | y |
|----|------|
| -2 | 5 |
| -1 | 4.75 |
| 0 | 4.5 |
| 1 | 4.25 |
| 2 | 4 |

m =

Graph Description

7.

| x | y |
|----|---------------|
| -2 | $\frac{2}{5}$ |
| -1 | $\frac{4}{5}$ |
| 0 | $\frac{6}{5}$ |
| 1 | $\frac{8}{5}$ |

m =

Graph Description

8.

| x | y |
|----|---|
| -1 | 1 |
| 1 | 2 |
| 3 | 3 |
| 5 | 4 |
| 7 | 5 |

m =

Graph Description

9.

| x | y |
|----|-----|
| -5 | 10 |
| -2 | 5 |
| 1 | 0 |
| 4 | -5 |
| 7 | -10 |

m =

Graph Description

10.

| x | y |
|----|----|
| -5 | 10 |
| -3 | 6 |
| -1 | 2 |
| 1 | -2 |
| 3 | -6 |

m =

Graph Description

11.

| x | y |
|----|---|
| -4 | 6 |
| -2 | 6 |
| 0 | 6 |
| 2 | 6 |
| 4 | 6 |

m =

Graph Description

12.

| x | y |
|---|----|
| 5 | 2 |
| 5 | 4 |
| 5 | 6 |
| 5 | 8 |
| 5 | 10 |

m =

Graph Description

Warm-Up

| | | |
|------------------|------------------|------------------|
| $f(x) = -2x + 4$ | $g(x) = 3^x - 1$ | $h(x) = x^2 + 7$ |
|------------------|------------------|------------------|

1. $h(-3) =$ _____ 2. $g(0) =$ _____ 3. $f(x) = -10; x =$ _____ 4. $f(4) - g(1) =$ _____

REMINDERS

Rate of Change: describes how one quantity _____ as another quantity _____.

Average Rate of Change Formula:

Positive ROC: _____

Negative ROC: _____

Linear functions have a _____ rate of change, meaning values increase or decrease at the SAME rate over a period of time.

Non-Linear functions DO NOT have a constant rate of change, meaning values increase or decrease at different rates over a period of time.

Horizontal Lines have _____ rate of change.

Vertical Lines have _____ rate of change.

SLOPE BETWEEN TWO POINTS

1. (4, 6) and (-2, -4) 2. (7, 5) and (7, -8) 3. (-5, 10) and (1, -2)

TABLES

Find the slope of the line represented by the table. Then describe the function as increasing, decreasing, horizontal, or vertical.

1.

| x | y |
|----|----|
| -2 | 3 |
| -1 | 5 |
| 0 | 7 |
| 1 | 9 |
| 2 | 11 |

$m =$ _____

description: _____

2.

| x | y |
|----|----|
| -5 | 10 |
| -3 | 6 |
| -1 | 2 |
| 1 | -2 |
| 3 | -6 |

$m =$ _____

description: _____

3.

| x | y |
|----|---|
| -4 | 6 |
| -2 | 6 |
| 0 | 6 |
| 2 | 6 |
| 4 | 6 |

$m =$ _____

description: _____

4.

| x | y |
|---|----|
| 5 | 2 |
| 5 | 4 |
| 5 | 6 |
| 5 | 8 |
| 5 | 10 |

$m =$ _____

description: _____

RATE OF CHANGE OVER INTERVAL

1. $f(x) = 3 - 2x$ over the interval $[2, 3]$.
2. $k(x) = 3x + 4$ over the interval $[-2, 3]$.
3. $k(x) = 3x + 4$ over the interval $[4, 6]$.
4. $g(x) = 0.5^x$ over the interval $[-1, 0]$.
5. $g(x) = 0.5^x$ over the interval $[-3, 0]$.

WORD PROBLEMS

1. The table shows the cost per pound of Granny smith apples.

Describe the rates of change shown by the data.

| | | | | |
|--------------------|------|------|------|------|
| Weight (lb) | 1 | 2 | 3 | 4 |
| Cost (\$) | 1.49 | 2.98 | 4.47 | 5.96 |

Describe the rate(s) of change shown by the data.

3. The table shows the distance of a courier from her destination.

| | | | | |
|-------------------------|------|------|------|------|
| Time (PM) | 2:15 | 2:30 | 2:45 | 3:00 |
| Distance (miles) | 5.4 | 5.4 | 5.0 | 0.5 |

What is the rate of change from 2:15 PM to 2:30 PM? What does this rate of change mean?

2. The table shows Gabe's height on his birthday for five years.

| | | | | | |
|--------------------|----|------|------|----|----|
| Age | 9 | 11 | 12 | 13 | 15 |
| Height (in) | 58 | 59.5 | 61.5 | 65 | 69 |

Find the rate of change during each time interval.
9 – 11 years:

11 – 12 years:

12 – 13 years:

13 – 15 years:

Describe the rates of change shown by the data.

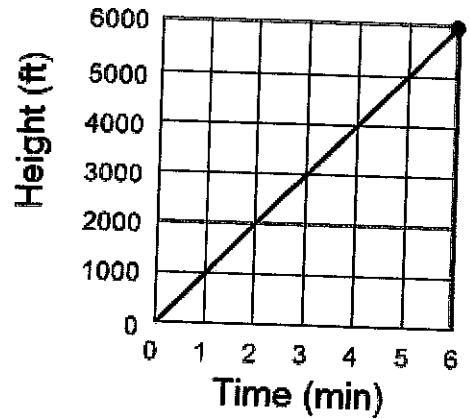
When did the greatest rate of change occur?

When was the rate of change the least?

During which two time periods were the rates of change the same?

The following represents the graph for a helium balloon's flight. Determine the rate of change of the graph.

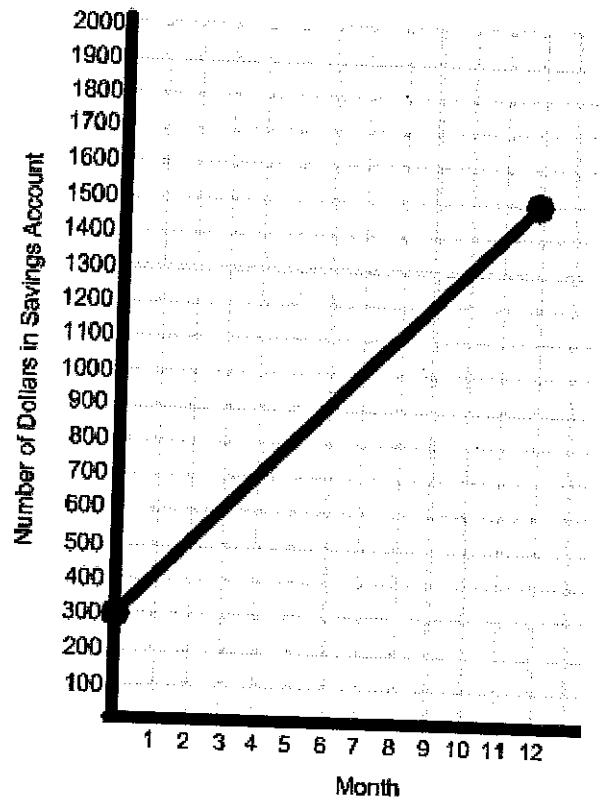
Time vs. Height



- b. What does this slope (rate of change) mean?
- c. When is the balloon at 5000 ft? Show this on your graph. _____
- d. How high is the balloon off the ground at 2 ~~seconds~~ ^{minutes}? Show this on your graph
- e. Although not on the graph, when will the balloon reach 10,000 feet? Show your reasoning

2. The following represents the balance in Brady's savings account.

- a. Find the slope of the graph.
- b. What does the slope represent as a rate of change?
- c. How much did Brady deposit when he opened the account?
- d. At this rate how much money will Brady have in his account after 15 months. Show your reasoning.
- e. If Brady deposited \$500 to begin with, but continued to deposit the same amount each month what would this graph look like? Sketch it on the graph.
- f. If Brady deposited \$300 initially, but spent it all in five months show this on the graph?



What would the slope of this line be? What does the negative sign indicate?