

# Slope

## Slope Formula

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$

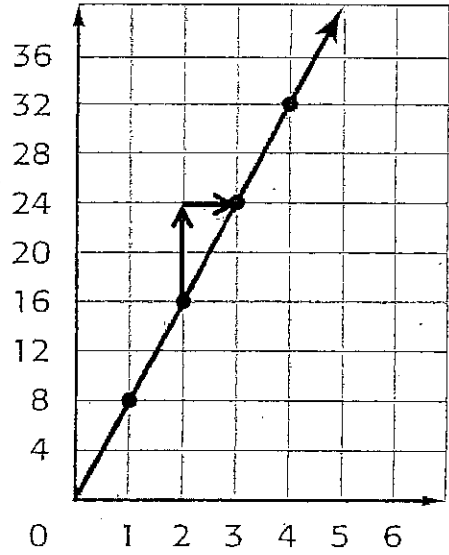
← vertical change
← horizontal change



You can also say that  
 Slope =  $\frac{\text{rise}}{\text{run}}$

- Count the number of units that make up the RISE of the line. Write this number for the NUMERATOR of the fraction below.
- Count the number of units that make up the RUN of the line. Write this number for the DENOMINATOR of the fraction below.

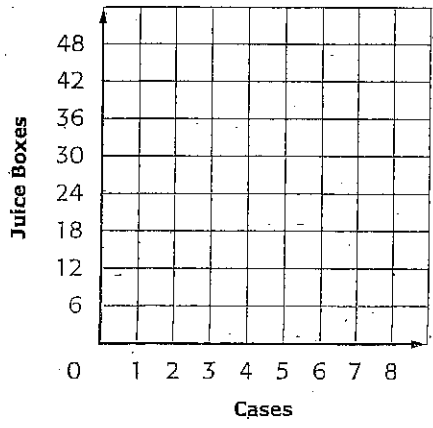
$\frac{\text{rise}}{\text{run}} = \frac{\quad}{\quad}$ 
So, the slope of the line is  $\frac{\quad}{\quad}$



**DIRECTIONS:** Graph the data. Then find the slope of the line. Explain what the slope represents.

- The table shows the number of juice boxes per case.

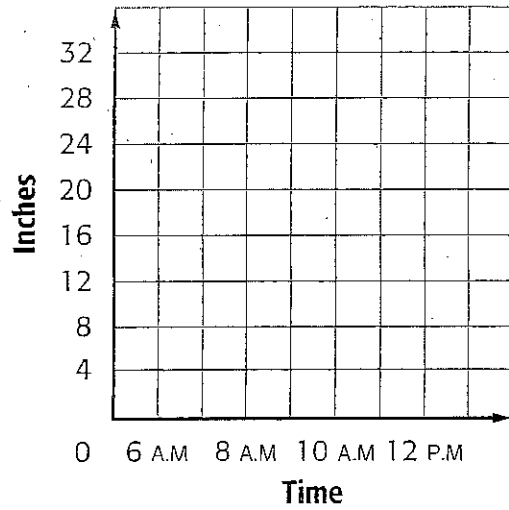
Cases	1	2	3	4
Juice Boxes	12	24	36	48



# Examples

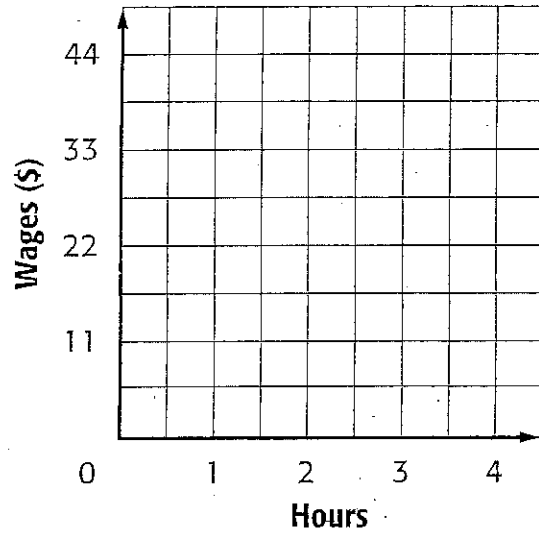
**DIRECTIONS:** Graph the data. Then find the slope of the line. Explain what the slope represents.

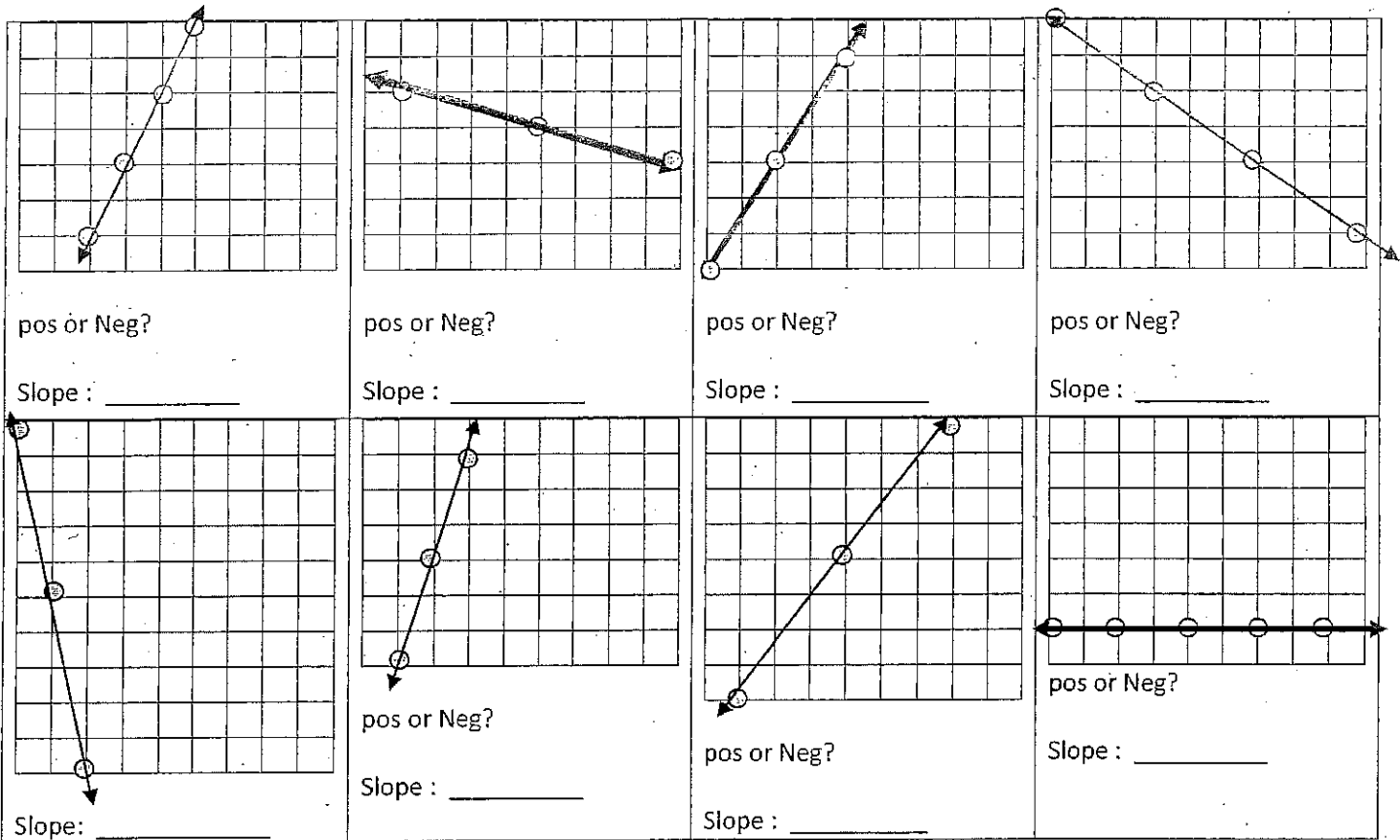
1. At 6 A.M., the retention pond had 28 inches of water in it. The water receded so that at 10 A.M. there were 16 inches of water left.



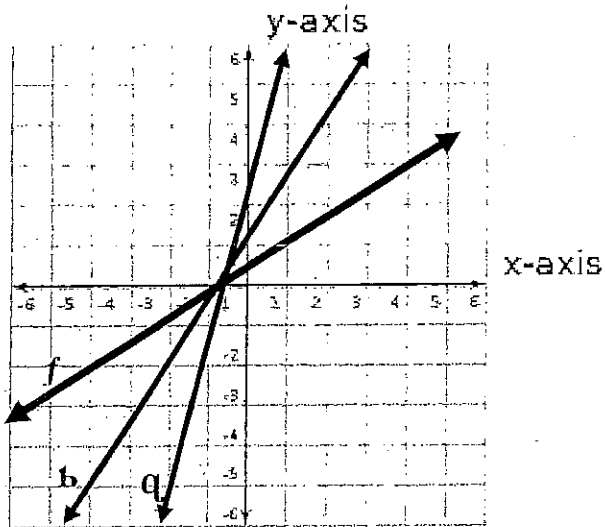
2.

Hours	1	2	3	4
Wages (\$)	11	22	33	44





Answers:  $\frac{4}{3}$ , -5, 0, 2,  $-\frac{2}{3}$ ,  $\frac{3}{2}$ , 3,  $-\frac{1}{3}$



1.) Which line has the greatest slope?

a. line f    b. line b    c. line q

2.) What does it mean for a line to have a greater slope than another?

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3.) Is it more difficult to run up a ramp with a slope of  $\frac{1}{5}$  or a ramp with a slope of 5? Explain: \_\_\_\_\_

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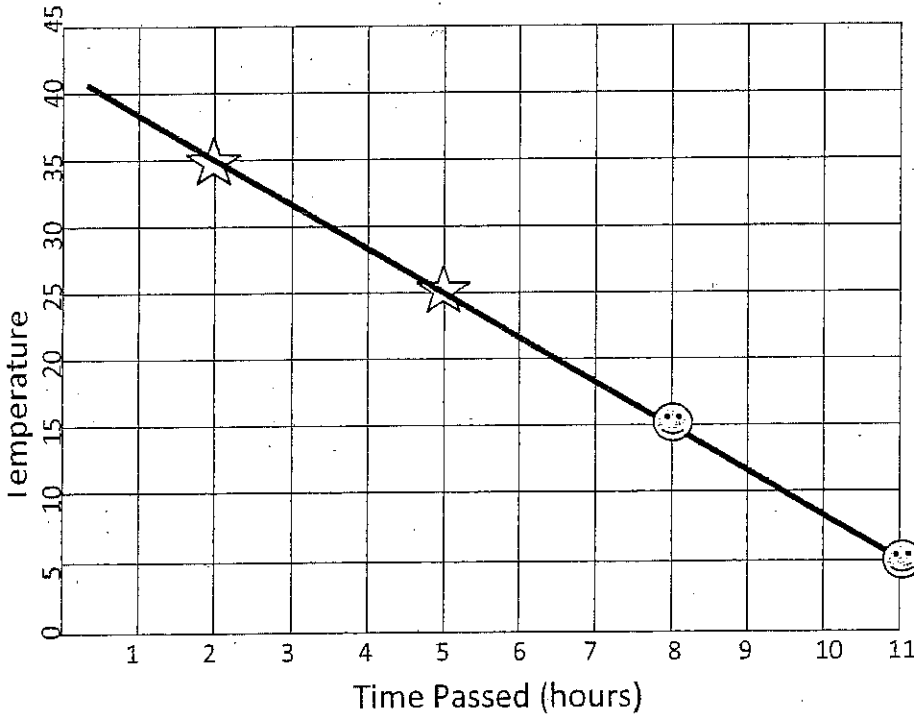
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slope = \_\_\_\_\_

Slope is a \_\_\_\_\_ that compares the \_\_\_\_\_ in the \_\_\_\_\_ - value to the \_\_\_\_\_ in the \_\_\_\_\_ - value.

The slope of a line will be the \_\_\_\_\_ at all parts of the line, so it does not matter which points you use to find the slope:

Sometimes you have to draw your own points in, if they are not given to you.



1.) Is the slope of the line positive or negative?

Find the slope between the two stars:

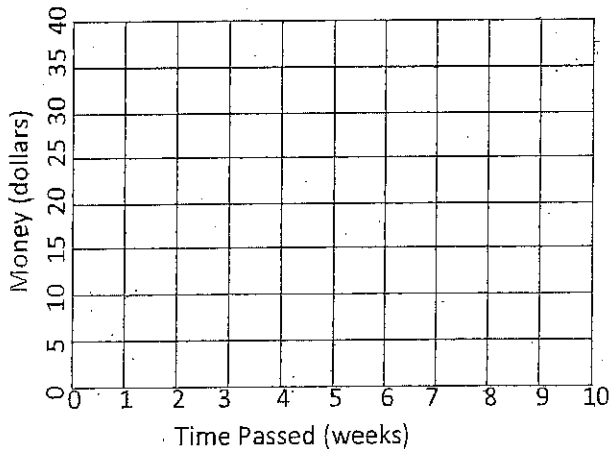
Find the slope of the line between the two faces:

Find the slope between the outside star and face:

Find the slope between the 2<sup>nd</sup> star and the 2<sup>nd</sup> face:

Explain the meaning of the slope in the real world:

2.) Tionna Started with \$5.00 in her bank account. She graphed the amount of money in her account over the next seven weeks. Each week she deposits the same amount of money into her account (it had a constant rate of change.) If the line has a slope of  $\frac{7 \text{ dollars}}{2 \text{ weeks}}$ , Draw a graph, and complete the table to represent the money in Tionna's account.



x ( week)	y (money)
0	
2	
4	
6	
8	

**Problem #1:**

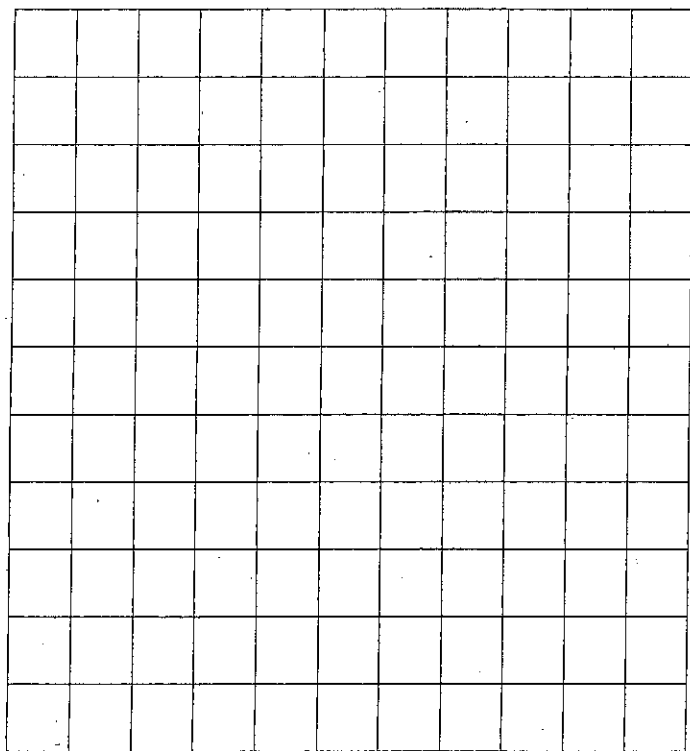
You get a job doing landscaping for the school district this summer, and they are going to pay you \$10 an hour. Also, they are going to pay you a \$50 bonus for starting immediately.

**Part A:** Write an equation that will model the relationship between how much money you make and how many hours you work. (Let  $y$ =money and  $x$ =hours worked).

**Part B:** Complete the function table using the equation you wrote as the rule

**Part C:** Label the coordinate grid below appropriately, and then plot the points from your function table. Is the graph linear? Is the relationship proportional?

X (hours)	Y (money)
1	
2	
3	
4	
5	
6	



1.) Is the line that you graphed increasing or decreasing?

2.) Look at the table, what is the y column (money) changing by?

What is the x column (hours) changing by?

3.) What is the slope of the line?

4.) What is the relationship between the hours you work and the money you make?

5.) Could you find the slope of the relationship using the table, and not looking at the graph? How?

**Problem #2:**

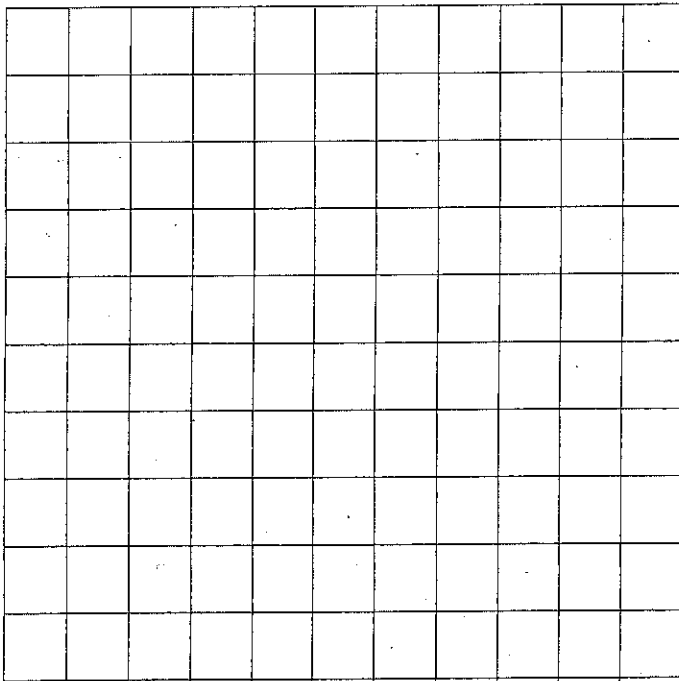
Our economy has been getting worse as time goes on. Every month, the value of a particular stock drops by 5 points. Before the economy began to suffer, the stock was valued at 350 points.

**Part A:** Write an equation that will model the relationship between the value of the stock and how many months have gone by. (Let  $y$ =value of the stock and  $x$ =months).

**Part B:** Complete the function table using the equation you wrote as the rule.

x (months)	0	1	2	3	4	5	6	7
y (value)								

**Part C:** Label the coordinate grid below appropriately, and then plot the points from your function table. Is the relationship linear? Is the relationship proportional?



1. Is the line that you graphed increasing or decreasing?
2. Is the slope positive or negative?
3. What is the slope of the graph?
- 4.) What is the y-value in the table changing by each time?
- 5.) What is the x-value in the table changing by?
- 6.) What is the relationship between x (months) and y (value of the stock)
- 7.) Could you find the slope using the table and not the graph? How?

Find the slope of each table, label units:

Minutes (x)	3	5	7	9
Words (y)	135	225	315	405

slope: \_\_\_\_\_

Gallons (x)	Miles (y)
5	162.5
10	325
15	487.5

slope: \_\_\_\_\_

Water (liters)	150	108	66
Time (hrs)	1	2	3

slope: \_\_\_\_\_