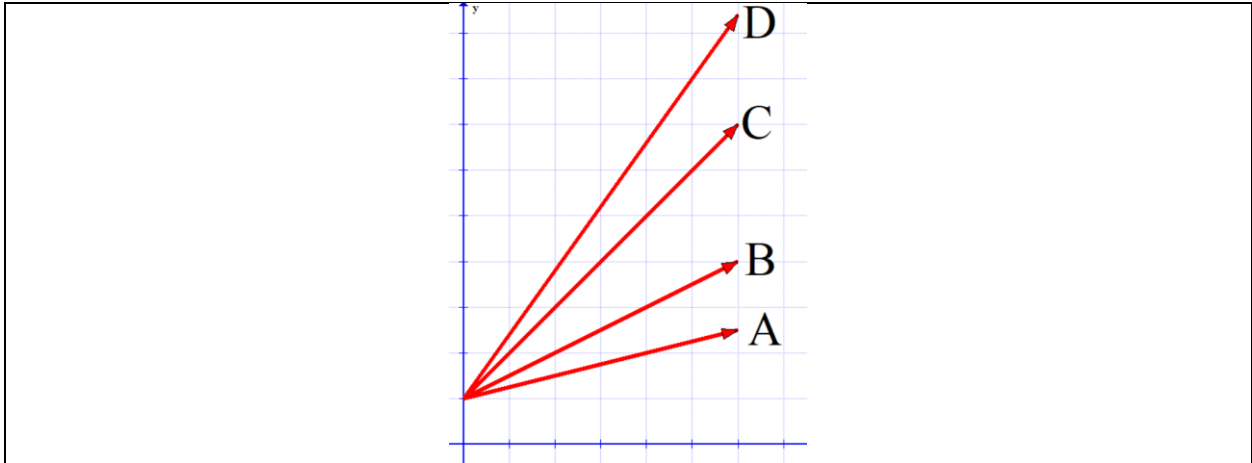


## Slope and Rate of Change Practice

Use the following information to answer the first question.



1. The line with the **second greatest** rate of change is

A) A

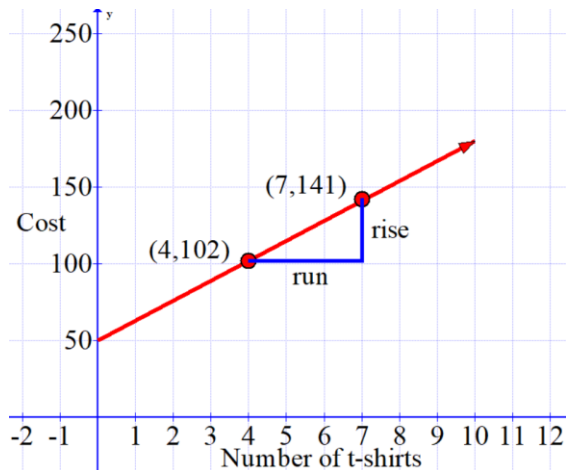
B) B

C) C

D) D

Use the following information to answer the next question.

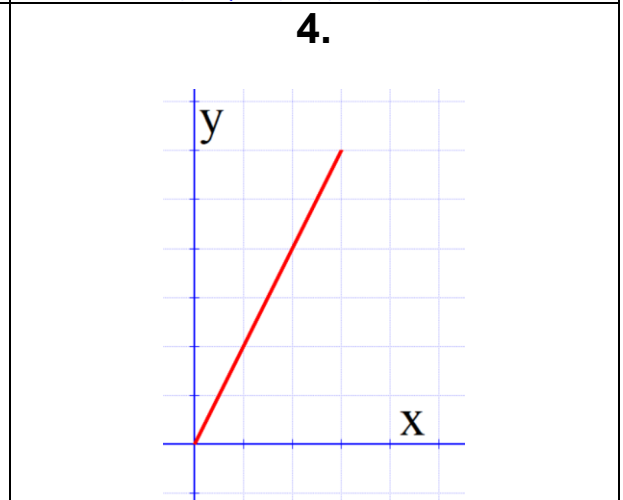
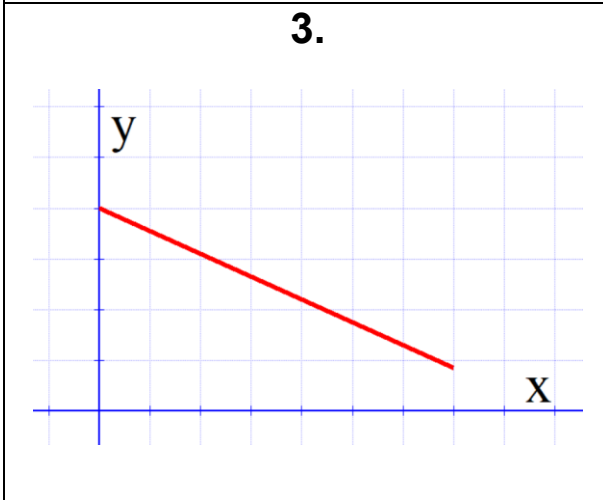
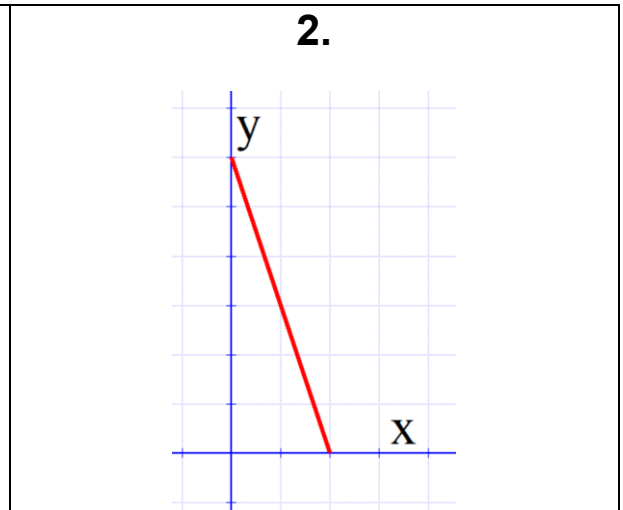
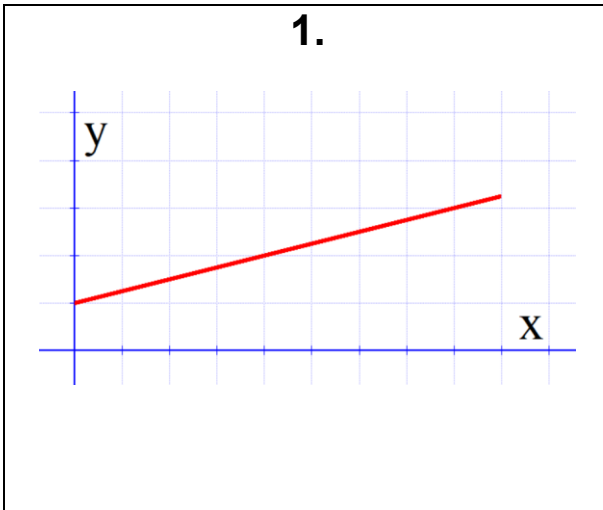
The total cost,  $C$ , to produce  $x$  t-shirts is given by the equation,  $C = Tx + 50$ , where 50 is the one charge set-up fee, and  $T$  is the cost of each t-shirt.



2. The cost of each t-shirt, to the nearest dollar, is \_\_\_\_\_.

Use the following information to answer the next question.

Consider the 4 graphs below.



3. The 2 graphs having a negative rate of change are

A) 1 and 2

B) 3 and 4

C) 2 and 3

D) 1 and 4

Use the following information to answer the next question.

The cost of gas in price per litre, or rate of change, varies quite often over time due to a variety of economic factors. Consider the following table of values showing the current relationship between the number of litres of gas purchased and the total cost of the purchase.

Number of Litres(N)	0	10	15	20	25
Total cost of gas in dollars (T)	0	14.70	22.05	29.40	36.75

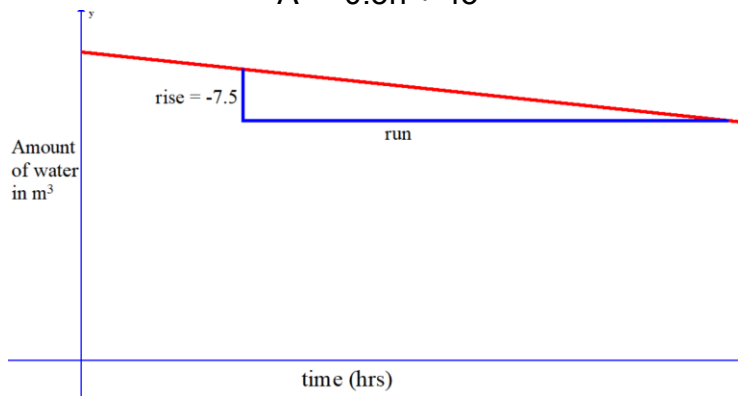
4. When the equation of this relationship is written in the form  $T = Nx$ , the value of N is

- A) 14.70                      B) 1.47                      C) 22.05                      D) 2.21

Use the following information to answer the next question.

A  $45 \text{ m}^3$  outdoor pool developed a slow, constant leak. It was determined that the rate of change in the water capacity was  $-0.5 \text{ m}^3/\text{hour}$ . The equation of the line below, where the amount, A, remaining in the pool as a function of time, h, is

$$A = -0.5h + 45$$

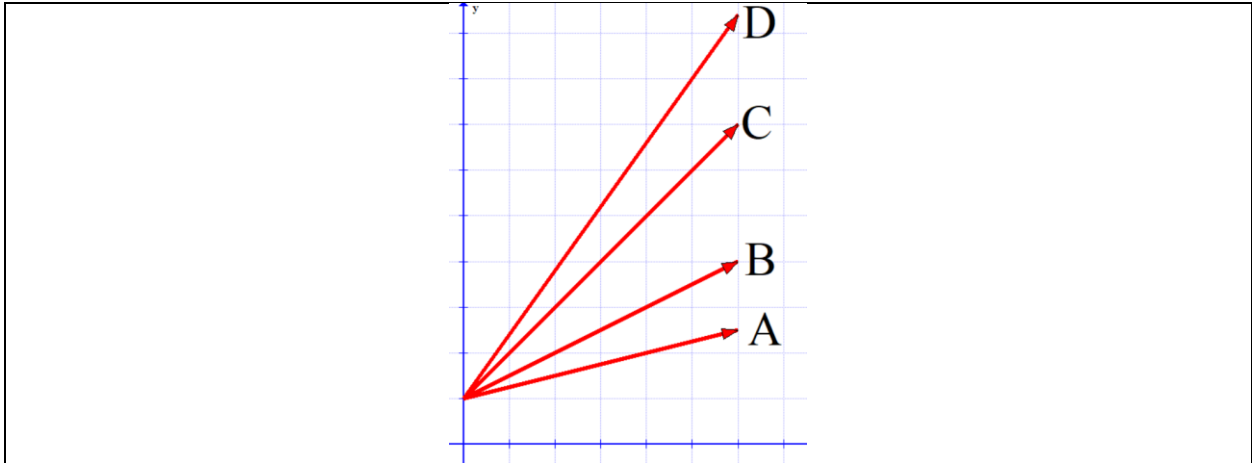


5. The value of the "run" in the diagram, in hours, is

- A) 7.5                      B) 0.75                      C) 15                      D) 1.5

Slope and Rate of Change Practice **Solutions**

Use the following information to answer the first question.



1. The line with the **second greatest** rate of change is

A) A

B) B

C) C

D) D

**Solution**

The steeper the line, the greater the slope. The steeper the line, the greater the rate of change.

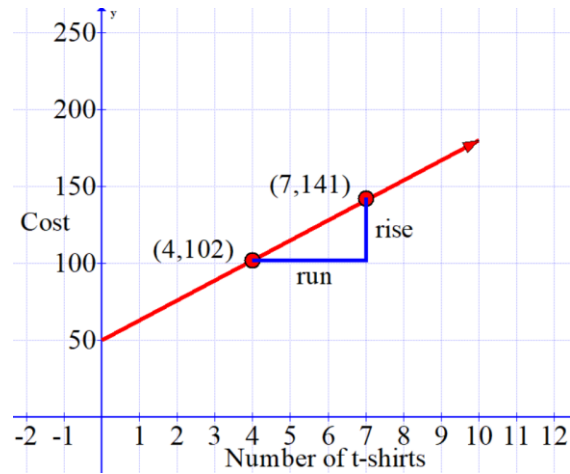
The steepest line is D, followed by the next steepest line of C.

Line C represents the line with the second greatest rate of change.

**The correct answer is C.**

Use the following information to answer the next question.

The total cost,  $C$ , to produce  $x$  t-shirts is given by the equation,  $C = Tx + 50$ , where 50 is the one charge set-up fee, and  $T$  is the cost of each t-shirt.



2. The cost of each t-shirt, to the nearest dollar, is 13.

#### Solution

In this context, the cost of each t-shirt is represented by the slope, which is also the rate of change.

Using the 2 given points on the graph, the rise is determined by finding the difference between the y-coordinates. Rise =  $141 - 102$ , which is equal to 39.

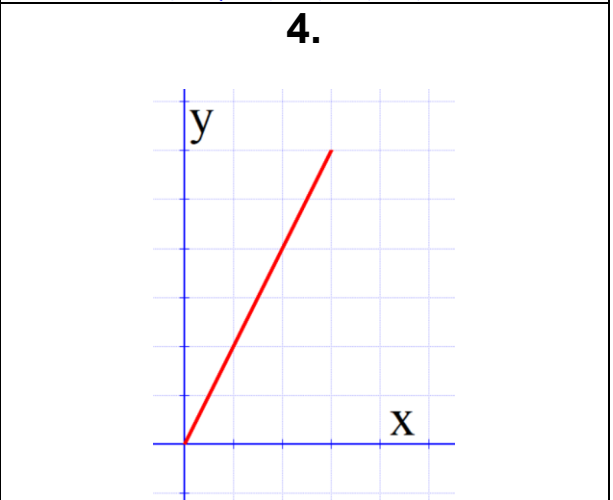
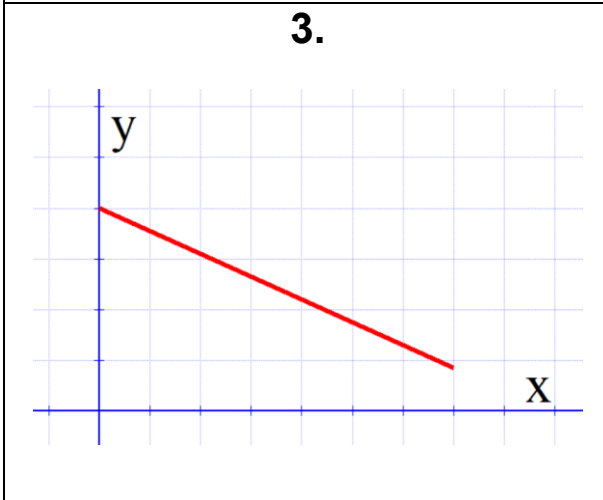
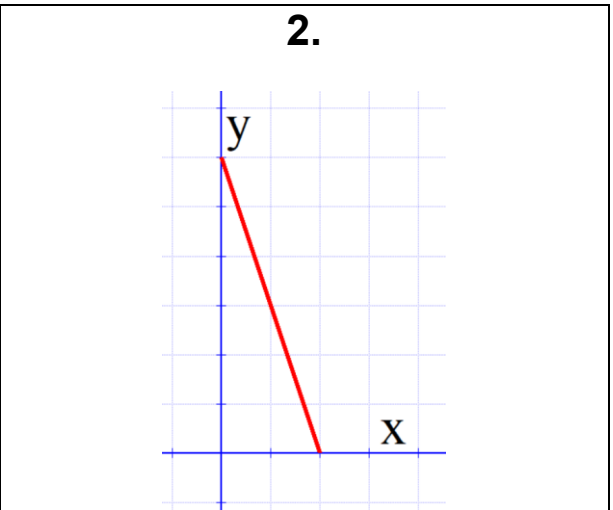
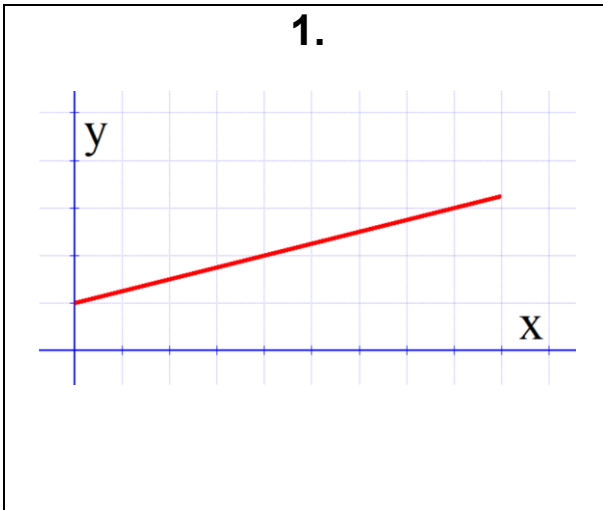
Using the 2 given points on the graph, the run is determined by finding the difference between the x-coordinates. Run =  $7 - 4$ , which is equal to 3.

The ratio of the rise to the run is  $\frac{39}{3}$ . Thus, the slope or rate of change is 13.

Each t-shirt costs \$13.

Use the following information to answer the next question.

Consider the 4 graphs below.



3. The 2 graphs having a negative rate of change are

A) 1 and 2

B) 3 and 4

C) 2 and 3

D) 1 and 4

**Solution**

Lines rising to the left indicate a negative slope, which is also a negative rate of change.

**The correct answer is C.**

Use the following information to answer the next question.

The cost of gas in price per litre, or rate of change, varies quite often over time due to a variety of economic factors. Consider the following table of values showing the current relationship between the number of litres of gas purchased and the total cost of the purchase.

Number of Litres(x)	0	10	15	20	25
Total cost of gas in dollars(T)	0	14.70	22.05	29.40	36.75

4. When the equation of this relationship is written in the form  $T = Nx$ , the value of N is

A) 14.70

B) 1.47

C) 22.05

D) 2.21

**Solution**

The value of N is the slope, or rate of change. In other words, for every litre of gas, the total cost will increase by a constant amount. This constant amount, or cost/litre, can be determined by dividing any of the values in the table for Total cost of gas (T) by the corresponding number of litres.

For example,

$$\frac{14.70}{10} = \frac{22.05}{15} = \frac{29.40}{20} = \frac{36.75}{25}$$

All of these ratios are equal to 1.47.

The value of the price per litre, slope, and rate of change are all equal to 1.47.

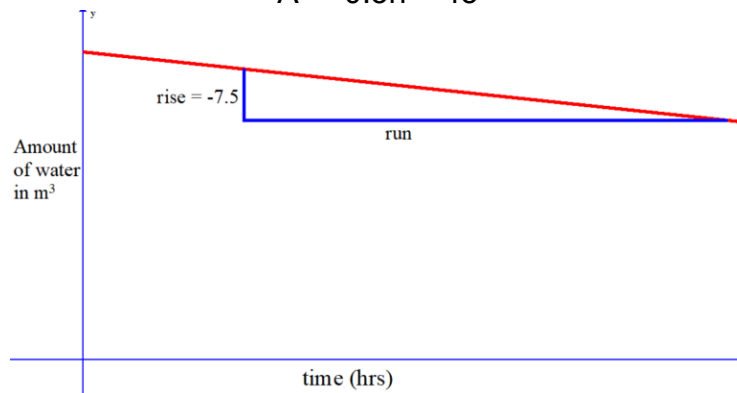
The value of N in the equation represents slope, rate of change, and price per litre.

**The correct answer is B.**

Use the following information to answer the next question.

A 45 m<sup>3</sup> outdoor pool developed a slow, constant leak. It was determined that the rate of change in the water capacity was -0.5 m<sup>3</sup>/hour. The equation of the line below, where the amount, A, remaining in the pool as a function of time, h, is

$$A = -0.5h + 45$$



5. The value of the “run” in the diagram, in hours, is

A) 7.5

B) 0.75

C) 15

D) 1.5

**Solution**

Given the equation  $A = -0.5h + 45$ , we know that the slope is -0.5.

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

Substitute what is known.

$$-0.5 = \frac{-7.5}{\text{run}}$$

Isolate run.

$$\text{run} = \frac{-7.5}{-0.5}$$

The run is 15 hours.

**The correct answer is C.**