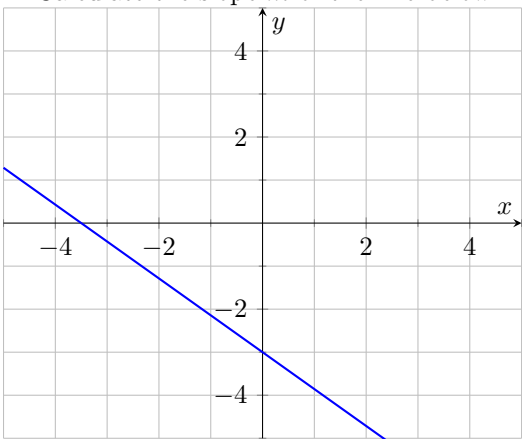
1. Calculate the slope m of the line below.



A. Undefined

B. $-\frac{3}{28}$

C. $-\frac{17}{28}$

D. $-\frac{6}{7}$

E. $-\frac{19}{14}$

F. $-\frac{4}{21}$

G. $-\frac{43}{42}$

H. $-\frac{1}{42}$

2. Calculate the slope m of a line passing through the points $(-6, 6)$ and $(-2, 2)$

A. $-\frac{1}{4}$

B. $-\frac{5}{4}$

C. $-\frac{11}{6}$

D. $-\frac{5}{3}$

E. $-\frac{3}{4}$

F. Undefined

G. -1

H. $-\frac{7}{4}$

3. The water tank on a firetruck holds 1700 gal of water. This water is used so the firefighters can begin pumping water as soon as they arrive at a fire. The volume of water remaining in the tank x seconds after the pump has been turned on is displayed in the table.

x seconds	y gallons
0	1700
7	1546
14	1392
21	1238
28	1084

(a.) Determine the rate of change of the volume with respect to time. (b.) Interpret the meaning of this value. (c.) At this rate, how long do the firefighters have to connect to a hydrant before the water in the tank runs out? Caution: be careful with units.

A. (a.) The rate of change is -22 gallons/minute. (b.) This means that for every minute the hose is turned on, the volume of water in the tank will decrease by 22 gallons. (c.) The firefighters have about 77.3 minutes before they must connect to a hydrant.

B. (a.) The rate of change is -22 gallons/second. (b.) This means that for every second the hose is turned on, the volume of water in the tank will decrease by 22 gallons. (c.) The firefighters have about 77.3 seconds before they must connect to a hydrant.

C. (a.) The rate of change is -12 gallons/minute. (b.) This means that for every minute the hose is turned on, the volume of water in the tank will decrease by 12 gallons. (c.) The firefighters have about 71.3 minutes before they must connect to a hydrant.

D. (a.) The rate of change is -9 gallons/minute. (b.) This means that for every minute the hose is turned on, the volume of water in the tank will decrease by 9 gallons. (c.) The firefighters have about 72.3 minutes before they must connect to a hydrant.

E. (a.) The rate of change is -23 gallons/second. (b.) This means that for every second the hose is turned on, the volume of water in the tank will decrease by 23 gallons. (c.) The firefighters have about 73.3 seconds before they must connect to a hydrant.

F. (a.) The rate of change is -9 gallons/second. (b.) This means that for every second the hose is turned on, the volume of water in the tank will decrease by 9 gallons. (c.) The firefighters have about 72.3 seconds before they must connect to a hydrant.

G. (a.) The rate of change is -12 gallons/second. (b.) This means that for every second the hose is turned on, the volume of water in the tank will decrease by 12 gallons. (c.) The firefighters have about 71.3 seconds before they must connect to a hydrant.

H. (a.) The rate of change is -23 gallons/minute. (b.) This means that for every minute the hose is turned on, the volume of water in the tank will decrease by 23 gallons. (c.) The firefighters have about 73.3 minutes before they must connect to a hydrant.

4. A linear equation gives the elevation of a falling object at terminal velocity in feet above the earth (y) in terms of the time spent falling in minutes (x). The slope of this line is -45. Interpret the meaning of this rate of change.

A. For every additional minute of falling, we can expect an decrease of 45 feet.

B. The number of feet is always equal to each minute of falling times -45.

C. For every additional minute of falling, we can expect an increase of 45 feet.

D. The number of feet can be expressed as each minute of falling divided by -45.

5. A section of road has a 4.5% grade. What is the change in elevation on this section of road covering a horizontal distance of 2000 ft?

A. The change in elevation is 160 ft.

B. The change in elevation is 140 ft.

C. The change in elevation is 90 ft.

D. The change in elevation is 110 ft.

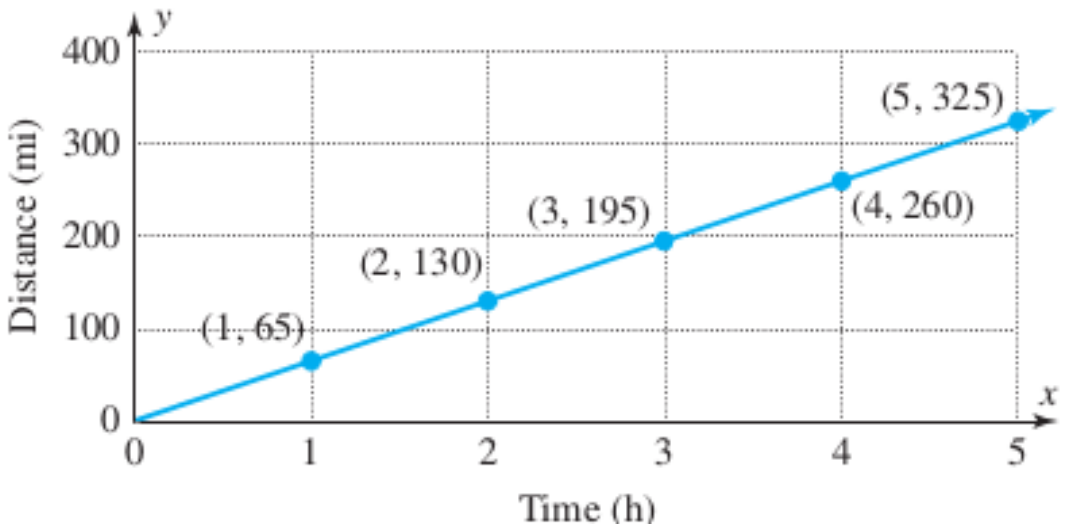
E. The change in elevation is 80 ft.

F. The change in elevation is 120 ft.

G. The change in elevation is 150 ft.

H. The change in elevation is 130 ft.

6. The graph gives the distance an automobile has traveled after different periods of time. Determine the slope of this line, and then interpret the meaning of this rate of change.



A. The slope of this line is 65 miles/second. This means that for every second, the automobile will travel 65 miles.

B. The slope of this line is 65 hours/mile. This means that for every mile, the automobile will travel 65 hours.

C. The slope of this line is 55 hours/mile. This means that for every mile, the automobile will travel 55 hours.

D. The slope of this line is 65 miles/hour. This means that for every hour, the automobile will travel 65 miles.

E. The slope of this line is 55 miles/hour. This means that for every hour, the automobile will travel 55 miles.

F. The slope of this line is 55 miles/second. This means that for every second, the automobile will travel 55 miles.

G. The slope of this line is 1/55 miles/hour. This means that for every hour, the automobile will travel 1/55 miles.

H. The slope of this line is 1/65 miles/hour. This means that for every hour, the automobile will travel 1/65 miles.

7. Calculate the slope of a line which is perpendicular to the line passing through the points $(-9, -4)$ and $(1, 5)$

A. Undefined

B. $-\frac{23}{18}$

C. $-\frac{13}{9}$

D. $-\frac{10}{9}$

E. $-\frac{31}{36}$

F. $-\frac{5}{18}$

G. $-\frac{4}{9}$

H. $-\frac{17}{18}$

8. Calculate the slope of a line which is perpendicular to the line passing through the points $(4, 7)$ and $(6, -6)$

A. $\frac{21}{52}$

B. $-\frac{7}{39}$

C. $-\frac{9}{26}$

D. $-\frac{31}{52}$

E. $\frac{77}{78}$

F. $\frac{2}{13}$

G. Undefined

H. $\frac{47}{52}$