

Unit 3 Part 2: Modelling with Graphs
5.6 Connecting Variation, Slope and
First Differences



Connecting Variation, Slope and First Differences.

A line has an equation of the form $y = mx + b$, where m represents the slope and b represents the y -intercept (where the line intersects the y axis).

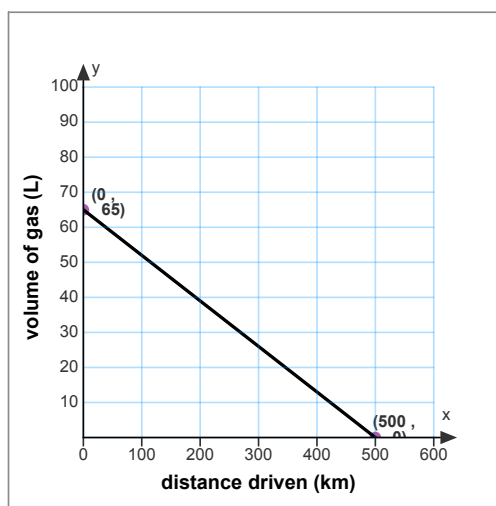
The slope of a linear relation remains constant. The first differences also remain constant.

The slope, m , of a line can be calculated by dividing the change in y by the change in x :

$$\begin{aligned} m &= \frac{\text{rise}}{\text{run}} \\ &= \frac{\Delta y}{\Delta x} \\ &= \frac{y_2 - y_1}{x_2 - x_1} \end{aligned}$$

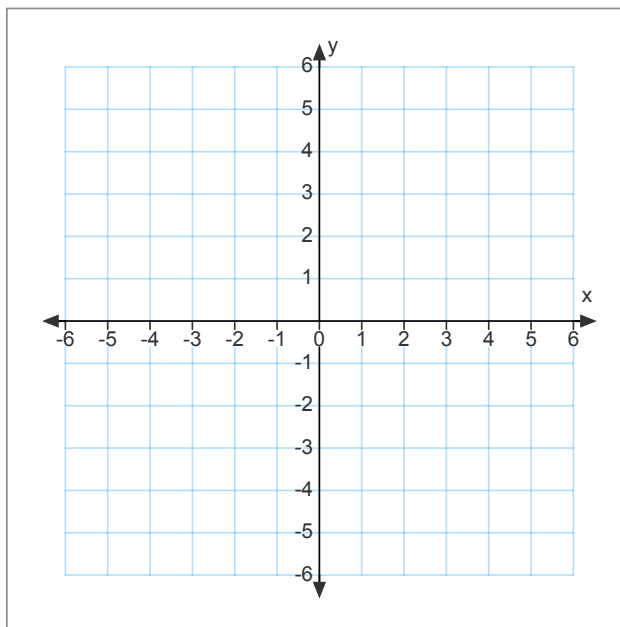
Ex. This graph shows the relationship between the volume of gasoline remaining in a car's fuel tank and the distance driven.

- calculate the slope and describe its meaning.
- determine the y-intercept.
- write an equation for this relation.



Ex. Graph the line $y = 2x - 5$ by creating a table of values

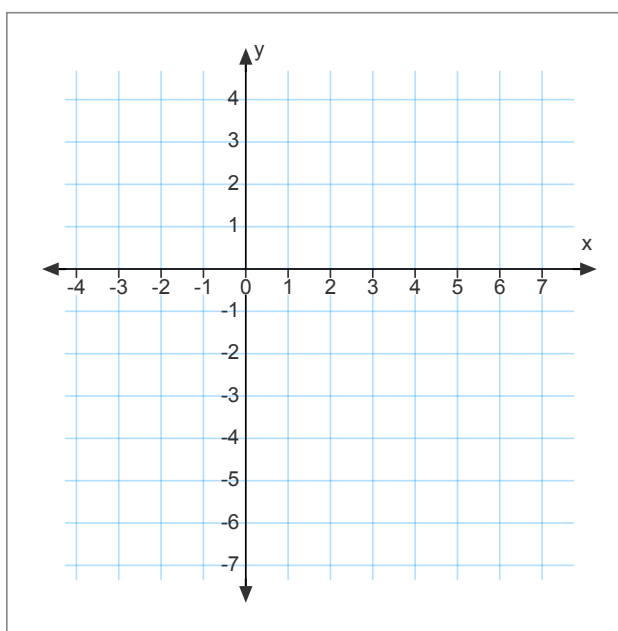
x	y



Ex. Graphing using the "slope - y - int method":

Graph the line $y = 3x - 6$

Graph the line $y = \frac{2}{5}x + 1$



Ex. The price charged to repair a computer is \$60, plus \$50 /h. Use the "rule of four" to describe this relationship.

Rule of Four

- using words
- using a graph
- using numbers (table of values)
- using an equation

- ★ a) What is the total cost of a repair that takes 3.5h?
- b) How would the equation change if the hourly cost changed to \$45?