

A 250-L holding tank contains 75 L of liquid and is being filled at an average rate of 25 L/min.

The following equation shows the amount of liquid in the tank:

$L = 75 + 25m$ In this equation, L is the volume of liquid in the tank, and m is the number of minutes

"Volume" and "Time" are the variables.

Which one is the independent variable and which one is the dependent variable?

independent = time (m) dependent = Volume (L)

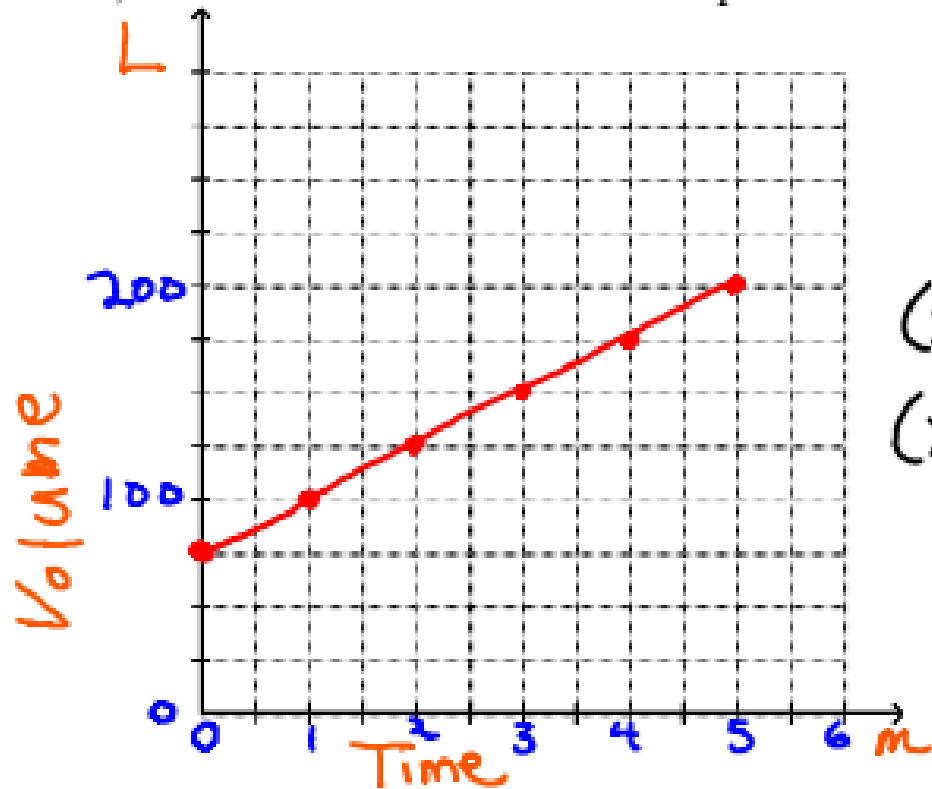
$$L = 75 + 25m$$

b) Create a table of values showing the volume in the tank at 1-minute intervals, up to 5 min.

Filling time (m)	Volume in the tank (L)
0	75
1	100
2	125
3	150
4	175
5	200

$$\begin{aligned} L &= 75 + 25(0) = 75 \\ L &= 75 + 25(1) = 100 \\ L &= 75 + 25(2) = 125 \\ &\vdots \end{aligned}$$

c) Plot the data and calculate the slope of the line.



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$(x_1, y_1) = (0, 75)$$

$$(x_2, y_2) = (1, 100)$$

$$m = \frac{100 - 75}{1 - 0} = \frac{25}{1} = 25$$

d) What does the slope represent?

The rate at which liquid is going into the tank in units of "L/min".