

Describing linear graphs that are not directly proportional

- Homework exercise

- b. When the mass of the candle is 196.5 grams, I estimate this to occur when the time is 3.7 minutes.
- c. When the candle has been burning 9.75 minutes, I estimate the mass to be 178.5 grams
- d. Points used to determine gradient $(x_1, y_1) = (0, 208)$

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{181 - 208}{9 - 0} \\ &= -3.00 \end{aligned}$$

$$(x_2, y_2) = (9, 181)$$

$$\begin{aligned} \text{unit for gradient} &= \frac{\text{unit on y axis}}{\text{unit on x axis}} \\ &= \frac{\text{g}}{\text{minutes}} \end{aligned}$$

gradient for the candle is $-3.00 \text{ g} \cdot \text{minute}^{-1}$ (3 s.f.)

e. The intercept is at 208 minutes.

f. dependent axis = m

independent axis = t

gradient = $-3.00 \text{ g} \cdot \text{minute}^{-1}$

intercept = 208 minutes

$$y = mx + c$$

$$m = -3t + 208$$

the mathematical relationship for the candle is,

$$m = -3t + 208$$

g. The decreasing mass of the burning candle is proportional to the increasing time.