

Describing linear graphs that are not directly proportional - class exercise

- (b) When the temperature of the water is 20°C , I estimate the time to be 160 seconds.
- (c) When the time is 282 seconds, I estimate the temperature of the water to be 29.2°C
- (d) Points used to determine gradient $(x_1, y_1) = (0, 8.0)$
 $(x_2, y_2) = (380, 36.6)$

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

$$m = \frac{36.6 - 8.0}{380 - 0}$$

$$m = 0.075263157...$$

$$\begin{aligned}\text{unit for gradient} &= \frac{\text{unit on y axis}}{\text{unit on x axis}} \\ &= \frac{^{\circ}\text{C}}{\text{s}} \\ &= ^{\circ}\text{C s}^{-1}\end{aligned}$$

the gradient for the water is $0.075^{\circ}\text{C s}^{-1}$ (2 s.f.)

(e) the intercept is 8.0°C

(f) dependent axis = T

independent axis = t

gradient = $0.075^{\circ}\text{C s}^{-1}$

intercept = 8.0°C

$$y = mx + c$$

$$T = (0.075)t + 8.0$$

the mathematical relationship for the water is,

$$T = (0.075)t + 8$$