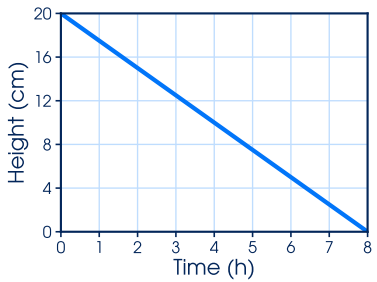
GCSE HIGHER · REVISION MAT 4

Rates of change from graphs

1 Find the rate at which the candle burns down.



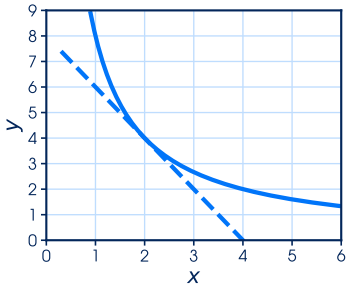
2 Find the average rate of change of $y = 5x - x^2$ between $x = 0$ and $x = 4$.

3 On a graph of cost (£) against mass (kg), what are the units of the gradient?

4 $d = t^3$

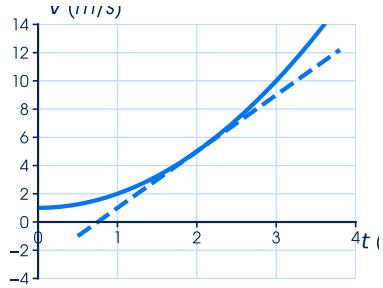
Find the average speed between $t = 1$ and $t = 3$.

5 A tangent is drawn to $y = \frac{8}{x}$ at $x = 2$.



Show that the gradient at $x = 2$ is -2.

6 Estimate the acceleration at $t = 2$ for $v = t^2 + 1$.



7 Explain why the gradient of a velocity–time graph is the acceleration.

8 $N = 50 \times 2^t$

Estimate the rate of growth at $t = 3$ using $t = 2.9$ and $t = 3.1$.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

Rates of change from graphs

1 $\frac{20}{8}$

2.5 cm per hour

2 $\frac{4 - 0}{4}$

1

3 **£ per kg**

4 $\frac{27 - 1}{2}$

13

5 Tangent through (0, 8) and (4, 0)

$\frac{-8}{4} = -2$

6 Tangent through (1, 1) and (3, 9)

≈ 4 m/s²

7 **Gradient = change in velocity ÷ time = acceleration.**

8 $50(2^{3.1} - 2^{2.9}) = 55.5$

÷ 0.2

≈ 277

Mr&Mrs MATHS