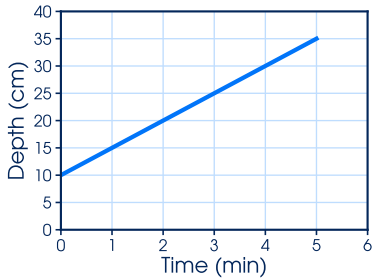
GCSE HIGHER · REVISION MAT 1

Rates of change from graphs

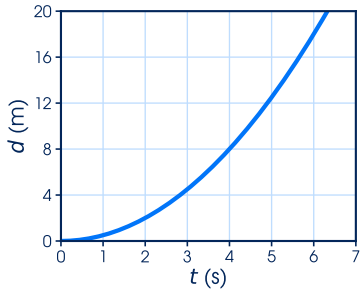
1 Find the rate at which the depth increases.



2 Find the average rate of change of $y = x^2$ between $x = 1$ and $x = 3$.

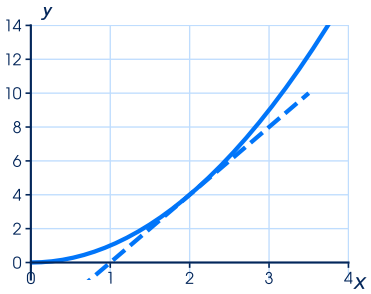
3 Explain why a straight-line graph has a constant rate of change.

4 The graph shows $d = 0.5t^2$.



Find the average speed between $t = 2$ and $t = 6$.

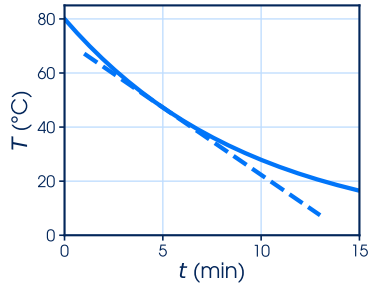
5 A tangent is drawn to $y = x^2$ at $x = 2$.



Show that the gradient at $x = 2$ is 4.

6 The temperature of a drink is $T = 80 \times 0.9^t$.

A tangent is drawn at $t = 5$.



Estimate the rate of cooling at $t = 5$.

7 Explain why the gradient of a distance–time curve gives the speed.

8 $P = 200 \times 1.1^t$

Estimate the rate of growth at $t = 10$ using $t = 9.5$ and $t = 10.5$.

ANSWERS · REVISION MAT 1

Rates of change from graphs

1 $\frac{35 - 10}{5}$

5 cm per minute

2 $\frac{9 - 1}{3 - 1}$

4

3 **Its gradient is the same everywhere.**

4 $\frac{18 - 2}{6 - 2}$

4 m/s

5 Tangent passes through (1, 0) and (3, 8)

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

6 Gradient ≈ –5

Cooling at about 5 °C per minute

7 **Gradient = change in distance ÷ change in time, which is speed.**

8 P(10.5) = 544.1, P(9.5) = 494.6

≈ 49.5 per year

Mr&Mrs MATHS