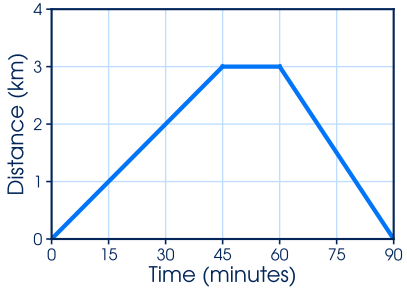
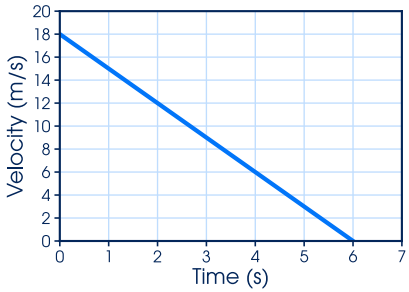
GCSE HIGHER · REVISION MAT 2

Gradients and areas under graphs

1 Find Jen's speed, in km/h, for the first 45 minutes.

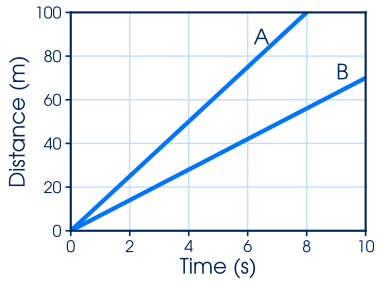


2 Find the deceleration.

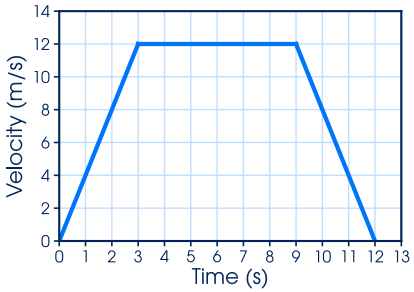


3 Who runs faster, A or B?

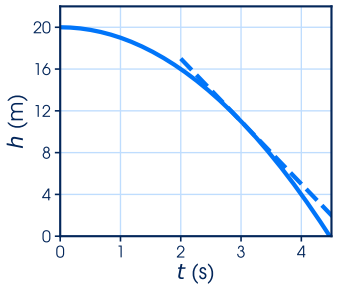
Explain.



4 Find the total distance travelled.



5 A tangent is drawn at $t = 3$.



Estimate the gradient at $t = 3$ and explain what it means.

6 The table gives the velocity of a car.

t (s)	0	2	4	6	8
v (m/s)	0	6	10	12	13

Estimate the distance travelled in 8 seconds.

7 A car accelerates uniformly from 5 m/s to 25 m/s in 10 seconds.

Show that it travels 150 m.

8 A train accelerates from rest at 0.5 m/s² for T seconds.

It then slows uniformly to rest in 20 s.

It travels 600 m. Find T.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 2

Gradients and areas under graphs

1 3 km in 0.75 hours

4 km/h

2 $\frac{18}{6}$

3 m/s²

3 **A: the gradient of A's line is steeper, so A covers more distance per second.**

4 18 + 72 + 18

108 m

5 Tangent through (2, 17) and (4, 5)

Gradient ≈ –6

Falling at about 6 m/s

6 $2 \times (\frac{1}{2}(0 + 13) + 6 + 10 + 12)$

≈ 69 m

7 Trapezium: $\frac{1}{2}(5 + 25) \times 10$

= 150 m

8 Top speed 0.5T

$\frac{1}{2}(T + 20)(0.5T) = 600$

$T^2 + 20T - 2400 = 0$

T = 40