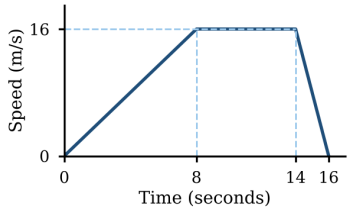
Day 31 **IGCSE 10-a-day**

1 A ball is thrown upwards. Its height above the ground, h metres, after t seconds is given by
$h = -2t^2 + 8t$
(a) Work out the greatest height reached by the ball.
(b) Work out the velocity of the ball when t = 7. State whether it is moving up or down.

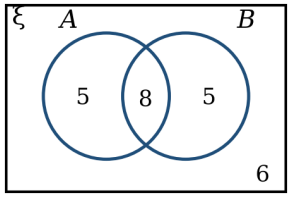
2 P is 40% less than D.
D is 15% less than S.
Work out P as a percentage of S.

3 (a) Solve $7 - 4x > 7$
(b) n is an integer. Write down all the values of n that satisfy
$-5 \leq 2n - 3 < 1$

4 The graph shows the speed of a car during 16 seconds.
(a) Work out the acceleration during the first 8 seconds.
(b) Work out the average speed over the whole 16 seconds.



5 A curve has equation $y = 6x^{3/2} - 6\sqrt{x}$.
Find the equation of the tangent to the curve at the point where x = 9.

Day 31	IGCSE 10-a-day
6 A biased wheel stops on one of four outcomes with these probabilities. A: 2x; B: 0.1; C: x + 0.2; D: 0.55 (a) Work out the value of x. (b) The biased wheel is used 80 times. Work out an estimate for the number of times it stops on A.	
7 A ship leaves a port P and travels 89 km on a bearing of 015° to Q. (Calculator) It then travels 108 km on a bearing of 325° to R. (a) Work out the distance PR. (b) Work out the bearing of R from P. Give distances to 1 decimal place and the bearing to the nearest degree.	
8 The Venn diagram shows information about 24 families. A: have a garden B: have a car (a) Find n(A ∪ B)′. (b) Find n(B′). 	
9 A curve has equation $y = x^3 + 9x + 3$. (a) Show that the curve has no stationary points. (b) Find the least value of the gradient of the curve.	
10 The diagram shows the graph of y = f(x) with a minimum point at (3, 3). The dashed curve C is the image of y = f(x) after a single transformation. The maximum point of C is (3, −3). Write down the equation of C in terms of f. 