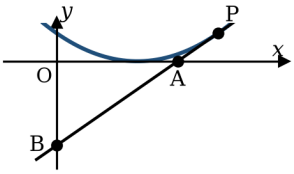
Day 71	IGCSE 10-a-day
1 Solve $\frac{x+6}{4} + \frac{x-6}{3} = -4$	
2 Work out the exact value of tan 45° × sin 45° Give your answer in its simplest form, as a fraction or surd. Do not use a calculator.	
3 A particle P moves in a straight line. After t seconds its displacement from a fixed point O is s metres, where $s = 3t^2 + t + 6 + \frac{16}{t}$ $(t > 0)$ Find (a) the velocity of P, (b) the acceleration of P, when t = 1.	
4 Here are six numbers. $\sqrt{2} + \sqrt{8}$, $(\sqrt{6} + 2)(\sqrt{6} - 2)$, $\frac{\sqrt{18}}{\sqrt{2}}$, $\sqrt{8} \times \sqrt{2}$, $3 + \sqrt{12}$, $\frac{1}{\sqrt{3}}$ Write down the irrational numbers.	
5 A particle P moves in a straight line. After t seconds, its displacement from a fixed point O is s metres, where $s = 2t^3 - 18t^2 + 30t$ $(t \geq 0)$ Find the times when P is at rest.	

Day 71	IGCSE 10-a-day
6 Nadia drives 45 km at an average speed of 30 km/h. The drive then continues for another 35 km at an average speed of 35 km/h. Work out the average speed for the whole journey.	
7 $y = ab^x$, where a and b are positive constants. When x = 2, y = 2250. When x = 4, y = 20250. Find the values of a and b, and the value of y when x = 6.	
8 The diagram shows the curve $y = x^2 - 4x + 4$ and the tangent at P(4, 4), meeting the axes at A and B. (a) Find an equation of the tangent at P. (b) Work out the area of triangle OAB. 	
9 The mean of the masses in kg for the boys is 46. The mean of the masses in kg for the girls is 70. The mean for all of the boys and girls together is 49. Work out the ratio of the number of boys to the number of girls.	
10 Points A and B are on level ground, 95 m apart, with B between A and the foot of a flagpole. The angle of elevation of the top of the flagpole is 42° from A and 66° from B. Work out the height of the flagpole. Give your answer to 3 significant figures. (Calculator)	