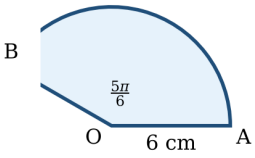
Day 352	A Level Maths: C Tier 10-a-day
1 The velocity of a particle is $(-4\mathbf{i} + 3\mathbf{j})$ m s^{-1}, where $\mathbf{i}$ and $\mathbf{j}$ are perpendicular unit vectors. (a) Find the speed. (b) Find the acute angle between the direction of motion and the line of $\mathbf{i}$. Give 1 d.p.	
2 Classify each variable as qualitative, discrete or continuous. (a) the number of texts sent in a day (b) the make of a car (c) the volume of water in a bottle	
3 The diagram shows sector OAB of a circle. Find, in terms of π, (a) the arc length AB, (b) the area of the sector. 	
4 Simplify $\sqrt{36x^4} \times 5x^2$.	
5 Use integration by parts to find $\int x \cos 4x \, dx$.	

Day 352	A Level Maths: C Tier 10-a-day
6 A particle of mass 10 kg is released from rest and falls 44.1 m. Take g = 9.8 m s^{-2}. Use energy to find (a) the loss in potential energy (3 s.f.), (b) the speed of the particle after falling 44.1 m.	
7 Find the set of values of x satisfying both $2x - 2 > 4$ and $x^2 - 7x < 0$.	
8 X ~ B(20, p). H_0: p = 0.6, H_1: p > 0.6. Find the critical region for a test at the 1% significance level.	
9 f(x) = 21 sin x + 20 cos x + 3. Write f(x) in the form R sin(x + α) + 3, with α in degrees to 1 d.p., and state the maximum value of f(x).	
10 $f(x) = x^3 + 8x^2 + 19x + 12$ (a) Show that (x + 4) is a factor of f(x). (b) Factorise f(x) completely.	