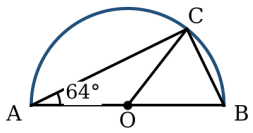
Day 201	S Tier 10-a-day
1 Write these numbers in order of size, starting with the smallest. $\frac{9}{17}$, 0.65, $\frac{8}{13}$, $\frac{5}{12}$	
2 80 deer in a forest are caught, marked and put back. Later, a second sample of 30 deer is caught. 5 of these are marked. (a) Work out an estimate for the number of deer in a forest. (b) State one assumption you have made.	
3 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 64°. (a) Work out the size of angle ACB. (b) Work out the size of angle COB. The diagram is not drawn accurately. 	
4 (a) Solve $7 - 6x < -17$ (b) n is an integer. Write down all the values of n that satisfy $3 \leq 3n - 3 < 12$	
5 (a) Write 432 and 1323 as products of prime factors. (b) Find the HCF and the LCM of 432 and 1323. Give your answers as numbers.	

Day 201	S Tier 10-a-day
6 Prove algebraically that $(3n + 1)^2 - 1$ is a multiple of 3 for all integer values of n.	
7 Write $\frac{15}{3 + \sqrt{3}}$ in the form $\frac{p + q\sqrt{3}}{r}$ where p, q and r are integers and r > 1, and the fraction is in its simplest form.	
8 Hire Shop A has a delivery charge of £7 plus £1.50 per day. Hire Shop B has a delivery charge of £13.50 plus £1 per day. (a) Work out the number of days for which the two costs are the same. (b) Which is cheaper for 21 days, and by how much?	
9 A circle has equation $x^2 + y^2 = 841$. The point P(−20, −21) lies on the circle. (a) Find the equation of the tangent to the circle at P. Give your answer in the form ax + by = c, where a, b and c are integers. (b) The tangent meets the x-axis at the point T. Write down the coordinates of T.	
10 In a population of 10,000 people, 4% have a certain disease. A test gives a positive result for 90% of people who have the disease and for 4% of people who do not. A person is chosen at random and tests positive. Work out the probability that they have the disease.	