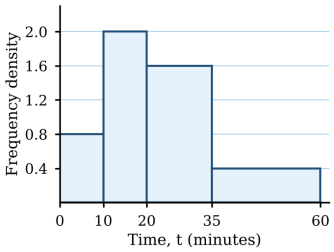
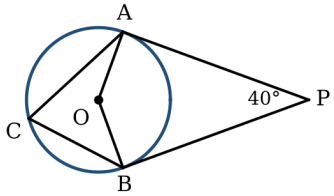
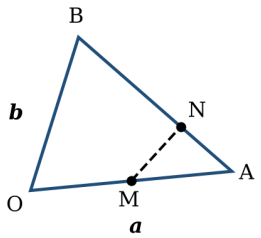
Day 1	S Tier 10-a-day
1 Show that $\frac{6}{(3-\sqrt{3})}$ can be written as $3+\sqrt{3}$	
2 The ratio of a to b is 2 : 3. When 12 is added to each of a and b, the ratio becomes 3 : 4. Work out the values of a and b.	
3 $f(x) = 2x + 3$ and $g(x) = x^2 - 1$ (a) Find gf(x). Give your answer in the form $ax^2 + bx + c$. (b) Solve $gf(x) = 24$	
4 The histogram shows the times taken by some people to complete a task. (a) Work out the number of people with a time in the class $20 < t \leq 35$. (b) Estimate the number of people with a time greater than 30 minutes. 	
5 PA and PB are tangents to a circle, centre O. C is a point on the circle. Angle APB = 40°. (a) Work out the size of angle AOB. (b) Work out the size of angle ACB. The diagram is not drawn accurately. 	

Day 1	S Tier 10-a-day
6 (a) Show that the equation $x^3 - 3x - 5 = 0$ has a solution between $x = 2$ and $x = 3$. (b) Using $x_{n+1} = \sqrt[3]{3x_n + 5}$ with $x_0 = 2$, work out x_1 and x_2. Give your answers correct to 3 decimal places. (Calculator)	
7 Prove that the sum of the squares of any two consecutive odd numbers is always 2 more than a multiple of 8.	
8 OAB is a triangle. OA = a and OB = b. M is the midpoint of OA. N is the point on AB such that AN : NB = 1 : 2. (a) Find MN in terms of a and b. (b) The line MN is extended to meet OB extended at the point P. Find OP in terms of b. 	
9 A bag contains 4 red counters and n blue counters. Two counters are taken at random, without replacement. The probability that both counters are red is $\frac{2}{15}$. (a) Show that $n^2 + 7n - 78 = 0$ (b) Hence find the value of n.	
10 A circle has equation $x^2 + y^2 = 25$. The point P(3, 4) lies on the circle. Find the equation of the tangent to the circle at P. Give your answer in the form $ax + by = c$.	