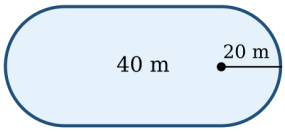
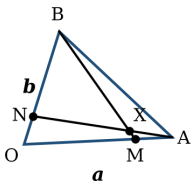
Day 93	S Tier 10-a-day
1 80 deer in a forest are caught, marked and put back. Later, a second sample of 50 deer is caught. 2 of these are marked. (a) Work out an estimate for the number of deer in a forest. (b) State one assumption you have made.	
2 Solve $9x^2 - 8 = 6x$	
3 A culture has 5000 bacteria. The number of bacteria increases by 8% each hour. After how many whole hours will there first be more than 12,500 bacteria? (Calculator)	
4 The diagram shows a running track made from a rectangle and two semicircles. (Calculator) An athlete runs 5 complete laps around the track. Work out the total distance run, to the nearest 10 metres. The diagram is not drawn accurately. 	
5 Given that $\frac{5^3 \times 25^3}{25^2} = 5^n$, find the value of n.	

Day 93	S Tier 10-a-day
6 A and B are points on the curve $y = 3x^2 + x + 4$. The x coordinate of A is 0 and the x coordinate of B is 2. Work out the gradient of the line AB.	
7 A sector of a circle has radius 15 cm and angle 120°. (a) Work out the length of the arc of the sector. (b) Work out the area of the sector. Give each answer in terms of π.	
8 A shop mixes two types of tea. Type A costs £4.00 per kg and type B costs £13.00 per kg. They are mixed in the ratio A : B = 1 : 4. The mixture is sold for £20.16 per kg. Work out the percentage profit.	
9 OAB is a triangle. OA = **a** and OB = **b**. M is on OA with OM : MA = 3 : 1. N is on OB with ON : NB = 1 : 3. AN and BM intersect at X. (a) Find BM in terms of **a** and **b**. (b) Find OX in terms of **a** and **b**. The diagram is not drawn accurately. 	
10 a = 20.5 and b = 0.692, both correct to 3 significant figures. Work out a ÷ b. Write down your answer to a suitable degree of accuracy. You must show your working and give a reason for your answer. (Calculator)	