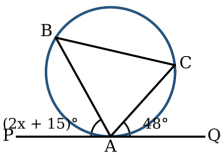
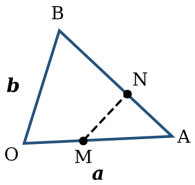
Day 17	S Tier 10-a-day
1 30 deer in a forest are caught, marked and put back. Later, a second sample of 20 deer is caught. 5 of these are marked. (a) Work out an estimate for the number of deer in a forest. (b) State one assumption you have made.	
2 The width of a table is 900 cm, correct to 1 significant figure. Write down the error interval for the width of a table, using w.	
3 PAQ is a tangent to the circle at A. B and C are points on the circle. Angle PAB = (2x + 15)°, angle ACB = (3x − 8)° and angle CAQ = 48°. (a) Work out the value of x. (b) Work out the size of angle BAC. The diagram is not drawn accurately. 	
4 A red light flashes every 4 minutes. A blue light flashes every 12 minutes. A green light flashes every 18 minutes. They all flash together at 10:00 am. (a) At what time do they next flash together?	
5 Solve 3 cos x° + 7 = 10 for 0 ≤ x ≤ 360	

Day 17	S Tier 10-a-day

6 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 2 : 3. N is on AB with AN : NB = 2 : 3.
(a) Find ON in terms of **a** and **b**.
(b) Find MN in terms of **a** and **b**.
The diagram is not drawn accurately.



7 A culture has 2500 bacteria.
The number of bacteria increases by 3% each hour.
After how many whole hours will there first be more than 5000 bacteria? (Calculator)

8 $f(x) = \frac{5}{x-5} + 4$
(a) Find $f^{-1}(x)$.
(b) Find the value of $f^{-1}(9)$.

9 A shop mixes two types of flour.
Type A costs £13.00 per kg and type B costs £7.00 per kg.
They are mixed in the ratio A : B = 1 : 4.
The mixture is sold for £12.30 per kg.
Work out the percentage profit.

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 2 : 1. N is on OB with ON : NB = 3 : 1. 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.

