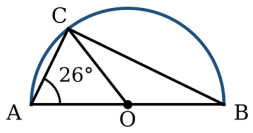
Day 317 **S Tier 10-a-day**

1 The table shows the number of students in each of four groups.
(a) A stratified sample of 34 is taken. Work out how many come from Year 8.
(b) A different stratified sample has 22 from Year 7. Work out the size of this sample.

	Year 7	Year 8	Year 9	Year 10
Number	110	90	70	70

2 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 26°.
(a) Work out the size of angle ACB.
(b) Work out the size of angle COB.
The diagram is not drawn accurately.



3 Factorise $12x^2 - 41x + 35$

4 In a bag, the ratio of the number of red counters to the number of blue counters is 3 : 8.
Then 6 more red counters are added and 16 blue counters are removed.
The ratio is now 7 : 8.
How many red counters were there at the start?

5 Triangle T has vertices A(6, −1), B(5, −2), C(1, 1).
T is enlarged with scale factor 3 and centre (3, −2).
(a) Write down the coordinates of the image of A.
(b) The area of T is 12 square units. Work out the area of the image of T.

Day 317	S Tier 10-a-day
6 Work out $(1.4 \times 10^{-6})^3$ Give your answer in standard form.	
7 An alloy contains 355 g of zinc and 356 g of copper. The density of zinc is 7.1 g/cm^3. The density of copper is 8.9 g/cm^3. Work out the density of the alloy.	
8 A circle has equation $x^2 + y^2 = 841$. The point P(−21, 20) 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.	
9 Find the smallest positive integer k such that $135 \div k$ is a square number.	
10 The line $y = x + k$ is a tangent to the circle $x^2 + y^2 = 17$. Find the possible values of k. Give any surds in their simplest form.	