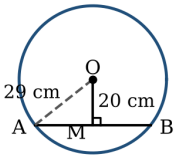
Day 63 **S Tier 10-a-day**

1 AB is a chord of a circle, centre O. M is the midpoint of AB. (Calculator)
(a) Work out the length of the chord AB.
(b) Work out angle AOB, to 1 decimal place.
The diagram is not drawn accurately.



2 The table shows the number of members in each of four groups.
(a) A stratified sample of 31 is taken. Work out how many come from Group B.
(b) A different stratified sample has 18 from Group B. Work out the size of this sample.

	Group A	Group B	Group C	Group D
Number	200	120	140	160

3 Factorise fully $5x^3 - 180x$

4 The ratio of juniors to seniors in a school is 1 : 4.
25% of the juniors and 30% of the seniors play a sport.
What percentage of all of these students play a sport?

5 Given that $x > 0$, solve $x^{\frac{5}{4}} = 32$

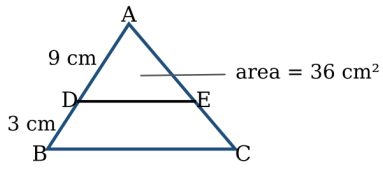
Day 63	S Tier 10-a-day

6 A circle has equation $(x + 4)^2 + (y + 2)^2 = 130$.
The point P(3, −11) lies on the circle.
Find an 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.

7 Two solid shapes, A and B, are mathematically similar.
The surface area of A is 24 cm^2 and the surface area of B is 216 cm^2.
The volume of A is 100 cm^3.
Work out the volume of B.

8 The HCF of two numbers is 3 and their LCM is 330.
One of the numbers is 33.
Work out the other number.

9 In the diagram, DE is parallel to BC. AD = 9 cm, DB = 3 cm and the area of triangle ADE is 36 cm^2.
Work out the area of the trapezium DBCE.
The diagram is not drawn accurately.



10 The diagram shows the graph of $y = ka^x$, where k and a are constants and a > 0.
The curve passes through the points (2, 24) and (4, 96).
Find the value of k and the value of a.

