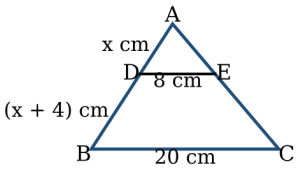
Day 328	S Tier 10-a-day

1 In the diagram, DE is parallel to BC.
AD = x cm, DB = (x + 4) cm, DE = 8 cm and BC = 20 cm.
(a) Find the value of x.
(b) Work out the length of AB.
The diagram is not drawn accurately.



2 A and B are the points (7, −5) and (1, 3).
AB is a diameter of a circle.
Find an equation of the circle.

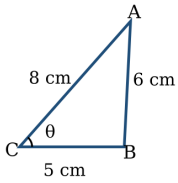
3 Simplify fully $\frac{4\sqrt{150}}{2\sqrt{6}}$

4 Here are five numbers: 2x − 3, x + 3, 2x + 3, 3x − 3, 2x.
The mean of the five numbers is 16.
(a) Work out the value of x.
(b) Work out the range of the five numbers.

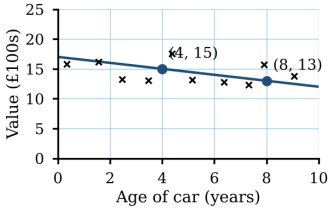
5 Here are the first five terms of a quadratic sequence.
19, 34, 53, 76, 103
Find an expression for the nth term.

Day 328 **S Tier 10-a-day**

6 The diagram shows triangle ABC. (Calculator)
(a) Work out angle ACB, marked θ, to 1 decimal place.
(b) Work out the area of triangle ABC to 3 significant figures.
The diagram is not drawn accurately.



7 The scatter graph shows age of car (x) and value (y).
The line of best fit passes through (4, 15) and (8, 13).
(a) Find its equation in the form y = mx + c.
(b) Explain what its gradient tells you.



8 Given that $(a + \sqrt{2})^2 = 83 + 18\sqrt{2}$,
where a is a positive integer, find the value of a.

9 P is directly proportional to the square of v and inversely proportional to the square of t.
When v = 3 and t = 2, P = 9.
Work out the value of P when v = 5 and t = 1.

10 a = 9.6 and b = 3.8,
both correct to 1 decimal place.
Work out the upper bound of a ÷ b.
Give your answer correct to 3 significant figures.