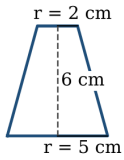
Day 32	S Tier 10-a-day

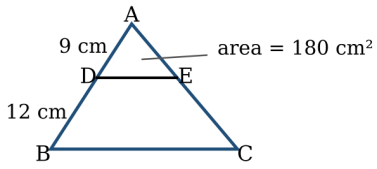
1 The ratio of men to women in a school is 1 : 5.
55% of the men and 10% of the women own a car.
What percentage of all of these students own a car?

2 A cone is cut parallel to its base to make a smaller cone and a frustum.
The frustum has height 6 cm, top radius 2 cm and base radius 5 cm.
Work out the volume of the frustum. Give your answer in terms of π.



3 The population of a village increased by 5% in 2023.
In 2024 the population increased by a further 10%.
Work out the overall percentage increase over the two years.

4 In the diagram, DE is parallel to BC. AD = 9 cm, DB = 12 cm and the area of triangle ADE is 180 cm^2.
Work out the area of the trapezium DBCE.
The diagram is not drawn accurately.



5 The curve $y = x^2 - 6x$ crosses the x-axis at the points A and B.
(a) Find the coordinates of A and B.
(b) Find the coordinates of the minimum point of the curve.

Day 32	S Tier 10-a-day
6 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.	
7 The probability that a bus is more than 5 minutes late on any morning is $\frac{1}{10}$. Events on different occasions are independent. Work out the probability that this happens at least once in 4 mornings. Give your answer correct to 3 significant figures. (Calculator)	
8 The lengths of the sides of a right-angled triangle are (x + 6) cm, (x − 1) cm and (x + 7) cm. The longest side is (x + 7) cm. (a) Show that $x^2 - 4x - 12 = 0$ (b) Hence work out the area of the triangle.	
9 Tariq and Kira share some money in the ratio 9 : 5. Tariq gives Kira £96. The ratio of their money is now 3 : 7. How much money do they have altogether?	
10 a = 8.71 and b = 88.6, 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)	