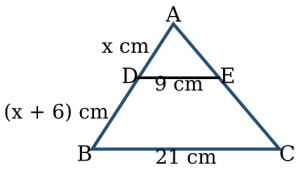
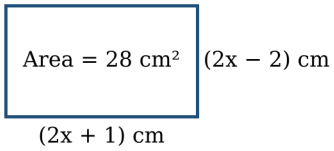
Day 365	S Tier 10-a-day

1 In the diagram, DE is parallel to BC.
AD = x cm, DB = (x + 6) cm, DE = 9 cm and BC = 21 cm.
(a) Find the value of x.
(b) Work out the length of AB.
The diagram is not drawn accurately.



2 Solve $\frac{x+1}{3} - \frac{x-7}{8} = 1$

3 The diagram shows a rectangle of length (2x + 1) cm, width (2x − 2) cm and area 28 cm^2.
(a) Show that $4x^2 - 2x - 30 = 0$.
(b) Work out the length of the diagonal of the rectangle. Give your answer correct to 3 significant figures.



4 The population of a town grows by 15% each year.
After 3 years the population is 3,041.
Work out the population 3 years ago.
(Calculator)

5 Triangle T has vertices A(−2, 3), B(−3, 2), C(4, 3).
T is enlarged with scale factor 3 and centre (0, 3).
(a) Write down the coordinates of the image of A.
(b) The area of T is 10 square units. Work out the area of the image of T.

Day 365	S Tier 10-a-day
6 Simplify fully $\frac{x^2 - 9}{x^2 + 5x} \div \frac{x^2 - 7x + 12}{x}$	
7 Given that $(a + \sqrt{2})^2 = 18 + 8\sqrt{2}$, where a is a positive integer, find the value of a.	
8 Solve the simultaneous equations $3x + y = -24$ $-x + y = 0$	
9 The mean of the marks in a test for the boys is 76. The mean of the marks in a test for the girls is 58. The mean for all of the boys and girls together is 68. Work out the ratio of the number of boys to the number of girls.	
10 a = 98.2 and b = 0.439, 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)	