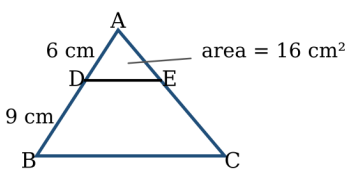
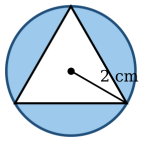
Day 275	S Tier 10-a-day
1 Factorise $3x^2 - 4x - 15$	
2 The mean of 9 numbers is 85. A new number is added and the mean of all 10 numbers is 78.2. Work out the new number.	
3 Write $\sqrt{50} - \sqrt{8} + \sqrt{2}$ in the form $a\sqrt{2}$ where a is an integer.	
4 In an animal shelter, the ratio of the number of cats to the number of dogs is 2 : 5. Then 20 more cats are added and 14 more dogs are added. The ratio is now 8 : 11. How many dogs were there at the start?	
5 In the diagram, DE is parallel to BC. AD = 6 cm, DB = 9 cm and the area of triangle ADE is 16 cm^2. Work out the area of the trapezium DBCE. The diagram is not drawn accurately. 	

Day 275	S Tier 10-a-day
6 Show that the equation $x^2 + 3kx - 7 = 0$ has two distinct real solutions for all values of k.	
7 The diagram shows an equilateral triangle inside a circle of radius 2 cm. The three vertices of the triangle lie on the circle. Work out the area of the shaded region. Give your answer in the form $a\pi - b\sqrt{3}$.  	
8 Write $\frac{5+\sqrt{3}}{6-\sqrt{3}}$ in the form $p + q\sqrt{3}$ where p and q are rational numbers.	
9 The 3rd term of a geometric sequence is 24. The 5th term of the sequence is 96. All the terms of the sequence are positive. (a) Work out the common ratio. (b) Work out the first term.	
10 Show that $5^{k+2} + 5^k$ is always a multiple of 26.	