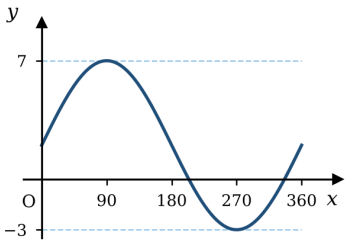
Day 253	S Tier 10-a-day
1 The sum of the interior angles of a polygon is 2520°. Work out the number of sides of the polygon.	
2 80 beetles in a field are caught, marked and put back. Later, a second sample of 40 beetles is caught. 4 of these are marked. (a) Work out an estimate for the number of beetles in a field. (b) State one assumption you have made.	
3 Solve $3x^2 + 4x - 7 = 0$	
4 The 4-digit number 33k6 is a multiple of 3. k is a single digit. Find all the possible values of k.	
5 Callum changes £300 into euros at £1 = €1.3. Callum spends €180 and then changes the rest back into pounds at £1 = €1.6. How many pounds does Callum get back?	

Day 253 **S Tier 10-a-day**

6 $f(x) = 3x - 1$ and $g(x) = \frac{4}{x}$

(a) Find gf(x).
(b) Solve $gf(x) = -4$

7 The diagram shows the graph of $y = a \sin x + c$.
(a) Write down the value of a and the value of c.
(b) Work out the value of y when $x = 30°$.



8 The area of a circle is 238 cm^2, correct to the nearest cm^2.
Work out the lower bound of the radius of the circle.
Give your answer correct to 3 significant figures. (Calculator)

9 x is an acute angle and $\cos x = \frac{5}{8}$.

(a) Find the exact value of sin x.
(b) Find the exact value of tan x. Give each answer as a fraction or a surd. Do not use a calculator.

10 Show that $\sqrt{24 + 16\sqrt{2}} = 4 + 2\sqrt{2}$