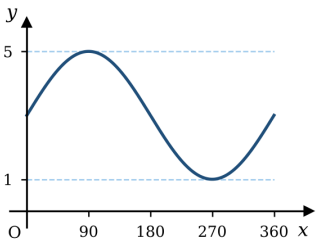
Day 151	S Tier 10-a-day

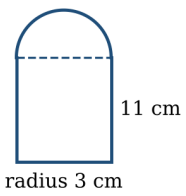
1 Work out the value of $\sqrt{y^2 - 4xz}$
when $x = -4$, $y = -4$ and $z = 3$.

2 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 $x = 330°$.



3 The 4-digit number 70k4 is a multiple of 9.
k is a single digit.
Find all the possible values of k.

4 A solid is made from a cylinder of height 11 cm and a hemisphere. Both have radius 3 cm.
Work out the total volume of the solid. Give your answer in terms of π.



5 Fatima drives 50 km at an average speed of 25 km/h.
The drive then continues for another 55 km at an average speed of 55 km/h.
Work out the average speed for the whole journey.

Day 151	S Tier 10-a-day
6 (a) Write 648 and 6 as products of prime factors. (b) Find the HCF and the LCM of 648 and 6. Give your answers as numbers.	
7 Pipe A can fill an empty pool in 15 minutes. Pipe B can fill an empty pool in 30 minutes. Both are turned on at the same time. How long do they take to fill an empty pool?	
8 Solve $\frac{3}{x+2} - \frac{6}{x+3} = 2$	
9 Given that $x > 0$, solve $x^{\frac{3}{2}} = 1728$	
10 OA = $\mathbf{a}$ and OB = $\mathbf{b}$. OP = $3\mathbf{a} + 5\mathbf{b}$, OQ = $5\mathbf{a} + 9\mathbf{b}$ and OR = $6\mathbf{a} + 11\mathbf{b}$. (a) Show that P, Q and R lie on a straight line. (b) Work out the ratio PQ : QR in its simplest form.	