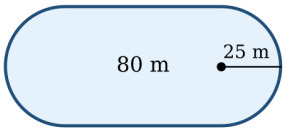
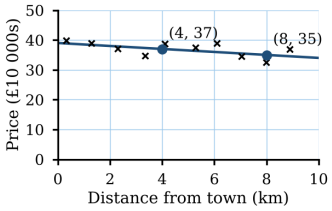
Day 267	S Tier 10-a-day
1 Solve $9^{x-3} = 27^{x+3}$	
2 The diagram shows a running track made from a rectangle and two semicircles. (a) Work out the total length of the boundary of the track. (b) Work out the area enclosed by the track. Give your answers in terms of π. The diagram is not drawn accurately. 	
3 P is 10% less than Q. Q is 60% more than A. Work out P as a percentage of A.	
4 A train travels at a constant speed of 108 km/h. It takes 30 seconds to go completely through a tunnel which is 830 m long. Work out the length of the train, in metres.	
5 Triangle ABC has AB = 19 cm and BC = 8 cm. The area of triangle ABC is 38 cm^2. Angle ABC is obtuse. Work out the size of angle ABC. Do not use a calculator.	

Day 267 **S Tier 10-a-day**

6 Use the iteration formula $x_{n+1} = \sqrt[3]{4x_n + 1}$ with $x_0 = 4$ (Calculator)
to work out x_1, x_2 and x_3.
Give each answer correct to 3 decimal places.

7 The scatter graph shows distance from town (x) and price (y).
The equation of the line of best fit is $y = -0.5x + 39$.
(a) Estimate y when x = 3.
(b) Explain why an estimate of y when x = 25 may be unreliable.



8 The graph of y = f(x) has a minimum point at (5, −2).
Write down the coordinates of the turning point of the graph of
(a) y = f(x) − 2
(b) y = 2f(x + 3)

9 A circle has centre C(−5, −2) and passes through the point P(−2, 0).
Find an equation of the circle.

10 Simplify $\frac{1}{3+\sqrt{7}} + \frac{1}{3-\sqrt{7}}$
Give your answer with a rational denominator.