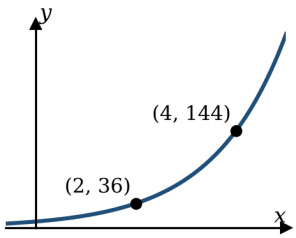
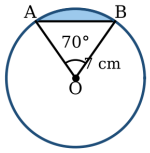
Day 144	S Tier 10-a-day
1 A flight leaves London at 07:05 (London time). It takes 6 hours 40 minutes. When it is 12:00 in London it is 21:00 in Sydney. At what time, in Sydney time, does the flight land? Say if it is on a different day.	
2 The diagram shows the graph of $y = ka^x$, where k and a are constants and $a > 0$. The curve passes through the points (2, 36) and (4, 144). Find the value of k and the value of a. 	
3 Work out $(2.4 \times 10^{-3}) - (4.3 \times 10^{-6})$ Give your answer in standard form.	
4 Isla sets off at 9:00 and cycles at 8 km/h along a path. Hassan sets off from the same place at 9:45 and cycles at 16 km/h along the same path. At what time does Hassan catch up with Isla?	
5 Solve $x^{-\frac{1}{2}} = \frac{1}{3}$	

Day 144	S Tier 10-a-day

6 The circle has centre O and radius 7 cm. A and B are points on the circle and angle AOB = 70°. (Calculator)
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.
The diagram is not drawn accurately.



7 An alloy contains 73 g of tin and 108 g of aluminium.
The density of tin is 7.3 g/cm^3. The density of aluminium is 2.7 g/cm^3.
Work out the density of the alloy.

8 A rectangle has area $(18 + 8\sqrt{5})$ cm^2 and length $(2 + \sqrt{5})$ cm.
Find the width of the rectangle.
Give your answer in the form $a + b\sqrt{5}$

9 A fair 4-sided dice and a fair 6-sided dice are each thrown once. The first score and the second score are recorded.
(a) Work out the probability that the sum is greater than 7.
(b) Given that at least one number is 3, work out the probability that the sum is greater than 7.

10 OA = $\mathbf{a}$ and OB = $\mathbf{b}$.
OP = $3\mathbf{a} - 3\mathbf{b}$, OQ = $\mathbf{a} + 3\mathbf{b}$ and OR = $6\mathbf{b}$.
(a) Show that P, Q and R lie on a straight line.
(b) Work out the ratio PQ : QR in its simplest form.