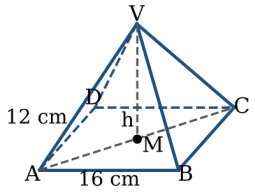
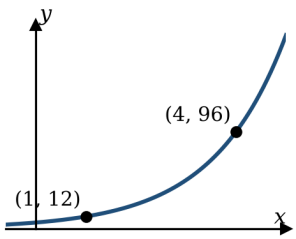
Day 105	S Tier 10-a-day
1 Evan invests £11,000 at 6% per year compound interest. After how many whole years will the investment first be worth more than £13,600? (Calculator)	
2 Rationalise the denominator of $\frac{5}{3\sqrt{3}}$ Give your answer in its simplest form.	
3 8 painters can paint a hall in 10 days. After 3 days, 6 of the painters leave. The rest carry on working at the same rate. How many more days does it take to finish?	
4 The population of a village decreased by 5% in 2023. In 2024 the population decreased by a further 10%. Work out the overall percentage decrease over the two years.	
5 Solve $2x^2 - 4x - 1 = 0$ (Calculator) Give your answers correct to 2 decimal places.	

Day 105 **S Tier 10-a-day**

6 VABCD is a pyramid on a square base. V is directly above the centre M.
(a) Work out the height VM of the pyramid.
(b) Work out the volume of the pyramid.
The diagram is not drawn accurately.



7 The diagram shows the graph of $y = ka^x$, where k and a are constants and $a > 0$.
The curve passes through the points (1, 12) and (4, 96).
Find the value of k and the value of a.



8 A sector of a circle has radius 12 cm and angle 150°.
The sector is made into a cone by joining the two straight edges together.
(a) Work out the radius of the base of the cone.
(b) Work out the exact volume of the cone.
Give your answer in terms of π, as a surd if necessary.

9 The value of a car is increased by 5%.
The new amount is then decreased by 50%.
Work out the overall percentage change.

10 x is an acute angle and $\tan x = \frac{1}{6}$.
(a) Find the exact value of sin x.
(b) Find the exact value of cos x. Give each answer as a fraction or a surd with a rational denominator.