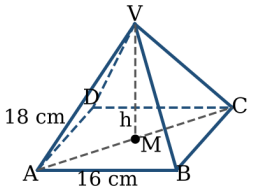
| Day 289 | S Tier 10-a-day |
|---|---|
| **1** Rationalise the denominator of $\frac{8}{4\sqrt{6}}$<br>Give your answer in its simplest form. | |
| **2** The 3rd term of a geometric sequence is 108.<br>The 6th term of the sequence is $-2916$.<br>(a) Work out the common ratio.<br>(b) Work out the first term. | |
| **3** A biased wheel stops on one of four outcomes with these probabilities.<br>A: 3x; B: x + 0.1; C: x + 0.1; D: 0.05<br>(a) Work out the value of x.<br>(b) The biased wheel is used 200 times. Work out an estimate for the number of times it stops on A. | |
| **4** Solve $3 \sin x° + 1 = 4$ for $0 \leq x \leq 360$ | |
| **5** Nia read $\frac{3}{4}$ of a book on Saturday.<br>On Sunday she read $\frac{3}{5}$ of the pages that were left.<br>She still had 18 pages to read.<br>How many pages are in the book? | |

**Day 289** **S Tier 10-a-day**

**6** A sector of a circle has angle 90° and area $49\pi$ $cm^2$.
(a) Work out the radius of the circle.
(b) Work out the length of the arc of the sector.
Give your answer to (b) in terms of $\pi$.

**7** Hassan invests £5,500 at 6% per year compound interest.
After how many whole years will the investment first be worth more than £9,400?
(Calculator)

**8** 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.




**9** The table gives information about 110 masses.
Work out an estimate for the median.
Assume the values in each class are evenly spread.

| Mass, m (kg) | Frequency |
|---|---|
| $0 < m \leq 20$ | 28 |
| $20 < m \leq 40$ | 30 |
| $40 < m \leq 60$ | 17 |
| $60 < m \leq 80$ | 6 |
| $80 < m \leq 100$ | 29 |

**10** Show that the line $y = -x - 4$ is a tangent to the circle $x^2 + y^2 = 8$.
Find the coordinates of the point where the line touches the circle.