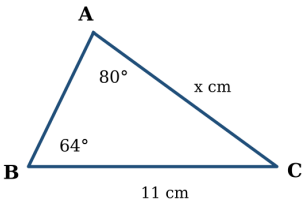
Day 44 **IGCSE 10-a-day**

1 Work out the length of AC.
Give your answer correct to 3 significant figures. (Calculator)



2 Simplify fully $\frac{9x^2y \times 7x^5y^6}{3x^5y^6}$

Give your answer in the form kx^ay^b

3 Priya invests £2,000 for 7 years at 3.5% per year compound interest.
Work out the value of the investment at the end of the 7 years.
Give your answer to the nearest penny.
(Calculator)

4 OA = **a** and OB = **b**.
OP = 3**a**, OQ = 6**a** + 6**b** and OR = 10**a** + 14**b**.
(a) Show that P, Q and R lie on a straight line.
(b) Work out the ratio PQ : QR in its simplest form.

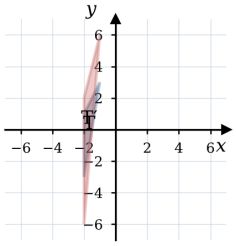
5 A particle moves in a straight line. After t seconds its displacement from O is s metres, where

$s = 16t^{\frac{3}{2}} + 2t^2$ $(t \geq 0)$

Find the velocity and the acceleration of the particle when t = 9.

Day 44 **IGCSE 10-a-day**

6 Triangle T is mapped onto triangle T′ by a single transformation.
(a) Describe fully this transformation.
(b) Write down the matrix that represents it.



7 A circle has equation $x^2 + y^2 = 25$.
The point P(4, 3) lies on the circle.
(a) Find the equation of the tangent to the circle at P. Give your answer in the form ax + by = c, where a, b and c are integers.
(b) The tangent meets the x-axis at the point T. Write down the coordinates of T.

8 A curve has equation $y = 2x^3 + 18x^2 + 58x + 1$.
(a) Show that the curve has no stationary points.
(b) Find the least value of the gradient of the curve.

9 A population is increased by x% in one year and then increased by a further x% the next year.
Over the two years the population increases by 10.25%.
Work out the value of x.

10 P is the point $(t, \frac{1}{2}t^2)$ on the curve $y = \frac{1}{2}x^2$, where $t \neq 0$.
The normal to the curve at P meets the y-axis at the point Q.
Show that the y coordinate of Q is $\frac{1}{2}t^2 + 1$.