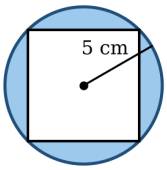
Day 247	S Tier 10-a-day
1 Simplify fully $\frac{\sqrt{45}}{3\sqrt{5}}$	
2 The mean of 8 numbers is 178. One number is removed and the mean of the remaining 7 numbers is 196. Work out the number that was removed.	
3 The population of a village decreased by 10% in 2023. In 2024 the population decreased by a further 60%. Work out the overall percentage decrease over the two years.	
4 The line L has equation $24x + 7y = 168$. L crosses the x-axis at the point A and the y-axis at the point B. (a) Find the coordinates of A and B. (b) Work out the area of triangle OAB, where O is the origin.	
5 Triangle T has vertices A(0, −5), B(−1, −5), C(0, 0). T is enlarged with scale factor −2 and centre (−1, −2). (a) Write down the coordinates of the image of A. (b) The area of T is 8 square units. Work out the area of the image of T.	

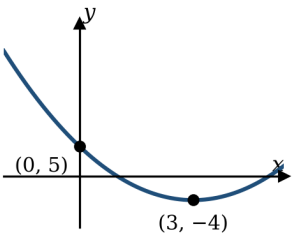
Day 247 **S Tier 10-a-day**

6 Solve $4^{x-3} = 16^{x+1}$

7 The diagram shows a square inside a circle of radius 5 cm.
The four vertices of the square lie on the circle.
Work out the area of the shaded region. Give your answer in terms of π.



8 The diagram shows a sketch of a quadratic curve with a turning point at $(3, -4)$.
The curve crosses the y-axis at $(0, 5)$.
Find an equation of the curve.
Give your answer in the form $y = ax^2 + bx + c$.



9 Show that $\sqrt{72 + 18\sqrt{7}} = 3 + 3\sqrt{7}$

10 y is inversely proportional to the square root of x.
When x = 9, y = 15.
Find the value of y when x = 25.