Day 51	S Tier 10-a-day
1 y is directly proportional to the square of x and inversely proportional to the square of z. When x = 6 and z = 3, y = 12. Work out the value of y when x = 4 and z = 4.	
2 Ivan invests £12,000 for 3 years at 3.5% per year simple interest. Priya invests £12,000 for 3 years at 3.5% per year compound interest. Work out how much more interest Priya earns than Ivan. Give your answer to the nearest penny. (Calculator)	
3 Factorise $12x^2 + 25x - 7$	
4 Isla changes £700 into euros at £1 = €1.2. Isla spends €60 and then changes the rest back into pounds at £1 = €1.25. How many pounds does Isla get back?	
5 The curve $y = -x^2 - 6x$ crosses the x-axis at the points A and B. (a) Find the coordinates of A and B. (b) Find the coordinates of the maximum point of the curve.	

Day 51	S Tier 10-a-day
6 A plane leaves an airport P and travels 45 km on a bearing of 330° to Q. (Calculator) It then travels 95 km on a bearing of 040° to R. (a) Work out the distance PR. (b) Work out the bearing of R from P. Give distances to 1 decimal place and the bearing to the nearest degree.	
7 In a club, the ratio of the number of boys to the number of girls is 5 : 6. Then 5 boys are removed and 3 girls are removed. The ratio is now 2 : 3. How many boys were there at the start?	
8 The population of a village decreased by 10% in 2023. In 2024 the population decreased by a further 25%. Work out the overall percentage decrease over the two years.	
9 $f(x) = -2x - 1$ and $g(x) = x^2 - 6$ Solve $fg(x) = gf(x)$	
10 ABCD is a rectangle with AB = 10 cm and AD = 14 cm. A point P inside the rectangle is such that AP ≤ 10 cm and P is nearer to A than to B. Work out the area of the region in which P can lie. Give your answer in terms of π and surds.	