Day 104	S Tier 10-a-day
1 The value of a car is decreased by 50%. The new amount is then decreased by 30%. Work out the overall percentage change.	
2 Simplify fully $\frac{3x^6y^3 \times 3x^5y}{3x^2y}$ Give your answer in the form kx^ay^b	
3 The mean of the heights in cm for the Year 10 students is 78. The mean of the heights in cm for the Year 11 students is 63. The mean for all of the Year 10 students and Year 11 students together is 71.75. Work out the ratio of the number of Year 10 students to the number of Year 11 students.	
4 Dina spent $\frac{1}{3}$ of her money on a coat. She then spent $\frac{4}{7}$ of the money that was left on a bag. A bag cost £1,352. How much money did Dina have to start with?	
5 A solid cylinder of radius 10 cm and height 9 cm is melted down. The metal is used to make identical solid spheres of radius 3 cm. Work out the number of spheres that can be made. The volume of a sphere of radius r is $\frac{4}{3}\pi r^3$.	

Day 104	S Tier 10-a-day
6 A circle has equation $x^2 + y^2 = 65$. The point P(−8, −1) lies on the circle. Find an 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.	
7 A point A is on level ground in line with the base of a tower. (Calculator) The angle of elevation of the top of the tower from A is 48°. B is a point on the same line, 100 m further from the tower than A. The angle of elevation of the top of the tower from B is 18°. Work out the height of the tower. Give your answer to 1 decimal place.	
8 A computer was bought for £5,200. Each year its value decreases by the same percentage. After 2 years it is worth £4,212. Work out the percentage decrease each year.	
9 Nadia invested £15,500 in a savings account for 2 years. Compound interest was paid at a fixed rate per year. At the end of the 2 years the account held £17,415.80. Work out the annual rate of interest. (Calculator)	
10 Given that $\sqrt{252} - \sqrt{28} = \sqrt{n}$, find the value of n.	