Day 229	S Tier 10-a-day
1 The interior angles of a pentagon are $x°$, $(x + 25)°$, $(x + 10)°$, $(x + 15)°$, $(2x - 20)°$ (a) Work out the value of x. (b) Work out the size of the largest angle.	
2 Simplify fully $5\sqrt{20} \times 4\sqrt{21}$	
3 FitLife has a joining fee of £1 plus £3 per month. GymNow has a joining fee of £29 plus £1 per month. (a) Work out the number of months for which the two costs are the same. (b) Which is cheaper for 20 months, and by how much?	
4 Grace changes £300 into dollars at £1 = $1.3. Grace spends $280 and then changes the rest back into pounds at £1 = $1.6. How many pounds does Grace get back?	
5 Given that $x > 0$, solve $x^{\frac{1}{3}} = 4$	

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6 The point P(−3, −1) is reflected in the y-axis. The image is then reflected in the line y = x. (a) Write down the coordinates of the final image of P. (b) Describe fully the single transformation that is equivalent to these two transformations.	
7 P is inversely proportional to t. When t = 3, P = 2. Find the value of P when t = 2.	
8 Expand and simplify $(1 + 3\sqrt{6})(2 + \sqrt{6})$ Give your answer in the form $p + q\sqrt{6}$	
9 OA = $\mathbf{a}$ and OB = $\mathbf{b}$. OP = $5\mathbf{a}$, OQ = $14\mathbf{a} + 3\mathbf{b}$ and OR = $20\mathbf{a} + 5\mathbf{b}$. (a) Show that P, Q and R lie on a straight line. (b) Work out the ratio PQ : QR in its simplest form.	
10 Show that the line y = −x + 14 is a tangent to the circle $x^2 + y^2 = 98$. Find the coordinates of the point where the line touches the circle.	