Day 172	B Tier 10-a-day
1 $\mathbf{a} = \begin{pmatrix} 7 \\ -6 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 5 \\ -5 \end{pmatrix}$ Work out (a) $3\mathbf{a} + \mathbf{b}$ (b) $3\mathbf{a} - \mathbf{b}$	
2 Simplify fully (a) $(3y^2)^2$ (b) $4y^7 \div 2y^4$	
3 (a) The point P(1, 3) is translated by the vector $\begin{pmatrix} 1 \\ 5 \end{pmatrix}$. Write down the coordinates of the image. (b) The point P(1, 3) is rotated 180° about the origin. Write down the coordinates of the image.	
4 The probability that a spinner lands on blue is $\frac{1}{5}$. Work out how many times you would expect this to happen in 120 spins.	
5 Work out the value of this expression. (Calculator) $\frac{4.1}{8.2} + \frac{9.8}{2.2}$ Give your answer correct to 3 significant figures.	

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6 In a bag of counters, the ratio of yellow to black is 5 : 6. The ratio of black to white is 5 : 1. Write down the ratio yellow : black : white.	
7 $s = ut + \frac{1}{2}at^2$ Work out the value of s when u = 8, a = 6 and t = 6	
8 The price of a meal including VAT at 20% is £360. (Calculator) Work out the price of the meal before VAT was added.	
9 In triangle XYZ, XY = 13 cm, YZ = 12 cm and angle XYZ = 140°. (Calculator) Work out the area of the triangle. Give your answer correct to 1 decimal place.	
10 The price of a laptop is £100. The price is first reduced by 25%, then the new price is reduced by 25%. (a) Work out the final price. (b) Work out the overall percentage decrease in the price.	