Day 110	IGCSE 10-a-day
1 $f(x) = -2x^2 - 8x + 9$ Use differentiation to find the coordinates of the turning point of the graph of $y = f(x)$. State whether it is a maximum or a minimum.	
2 (a) Solve $1 - 2x < -3$ (b) n is an integer. Write down all the values of n that satisfy $-17 \leq 4n - 1 \leq 3$	
3 The curve $y = x^3 - 3x^2 - 16x + 7$ has gradient -7 at two points. Find the coordinates of these points.	
4 The position vectors of A and P are $\begin{pmatrix} -5 \\ -1 \end{pmatrix}$ and $\begin{pmatrix} -8 \\ 0 \end{pmatrix}$. P lies on AB so that AP : PB = 1 : 2. Find the position vector of B.	
5 Work out the exact value of $\sin 60° \times \sin 45°$ Give your answer in its simplest form, as a fraction or surd. Do not use a calculator.	

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6 Work out the square root of 4.84×10^{10}. Give your answer in standard form.	
7 Tap A can fill an empty tank in 10 minutes. Tap B can fill an empty tank in 40 minutes. Both are turned on at the same time. How long do they take to fill an empty tank?	
8 $f(x) = x^3 + kx^2 + 75x - 5$, where k is a constant. Given that f is an increasing function for all values of x, find the range of possible values of k.	
9 x is an acute angle and $\tan x = \frac{3}{7}$. (a) Find the exact value of sin x. (b) Find the exact value of cos x. Give each answer as a fraction or a surd with a rational denominator.	
10 A bag has 4 black and 7 green counters. Three counters are taken at random without replacement. (a) Work out the probability that all three are green. (b) Work out the probability that at least one is black.	