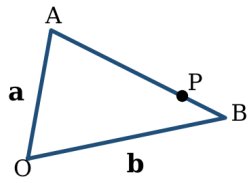
Day 342	A Level Maths: C Tier 10-a-day
1 A horizontal force of 8 N acts on a sledge of mass 20 kg on a smooth horizontal surface. Find the acceleration.	
2 Describe the single transformation that maps the graph of y = f(x) onto the graph of y = f(x + 4).	
3 In the diagram, OA = $\mathbf{a}$, OB = $\mathbf{b}$, and P lies on AB with AP : PB = 3 : 1. Find AB and AP in terms of $\mathbf{a}$ and $\mathbf{b}$. 	
4 Rationalise the denominator of $\frac{2}{5-\sqrt{7}}$. Write your answer in the form $p + q\sqrt{7}$.	
5 Three forces $(p\mathbf{i} + q\mathbf{j})$ N, $(-3\mathbf{i} - \mathbf{j})$ N and $(-\mathbf{i} - 2\mathbf{j})$ N act on a particle which is in equilibrium. $\mathbf{i}$ and $\mathbf{j}$ are perpendicular unit vectors. Find the values of p and q.	

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6 The nth term of an arithmetic sequence is $3n + 4$. Find the smallest n for which the term exceeds 500.	
7 Express $7 \sin x + 24 \cos x$ in the form $R \cos(x - \alpha)$, where $R > 0$ and $0° < \alpha < 90°$. Give α to 1 decimal place.	
8 $X \sim B(25, p)$. H_0: $p = 0.25$, H_1: $p < 0.25$. Find the critical region for a test at the 1% significance level.	
9 Find the exact value of $\int_0^{\frac{\pi}{2}} 6 \sin 2x \, dx$.	
10 $X \sim B(50, 0.25)$. Use a normal approximation to find $P(X \geq 12)$, to 3 s.f.	