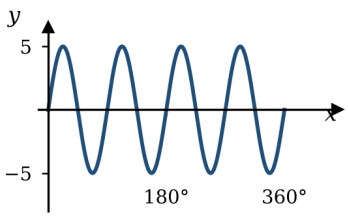
Day 161 **A Level Maths: C Tier 10-a-day**

1 A sequence is defined by $u_{n+2} = u_{n+1} + u_n$, with $u_1 = 2$ and $u_2 = 3$. Find u_6.

2 The diagram shows the graph of $y = a \sin bx$ for $0° \leq x \leq 360°$, where a and b are positive integers.
Find a and b.



3 A particle moves in a straight line. Its velocity at time t seconds is v m s^{-1}, where $v = 2t^2 - 16t + 6$.
(a) Find its acceleration when t = 3.
(b) Find the time when its acceleration is zero.

4 Solve $|3x + 4| = 11$.

5 $a = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$ and $b = \begin{pmatrix} 20 \\ 8 \end{pmatrix}$.
Show that a and b are parallel and find the ratio $|b| : |a|$.

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6 When $x^3 + kx^2 - x + 4$ is divided by $(x + 1)$, the remainder is 5. Find the value of k.	
7 A stone is thrown vertically downwards at 8 m s^{-1} from the top of a cliff and hits the sea after 4 s. Taking g = 9.8 m s^{-2}, find the height of the cliff.	
8 X ~ B(120, 0.25). Use a normal approximation to find P(X ≥ 25), to 3 s.f.	
9 The number of bacteria is $N = 1000\, e^{0.02t}$, where t is the time in hours. Find (a) N when t = 5, (b) the time when N = 2000. Give answers to 3 s.f.	
10 Seven daily rainfall readings (mm) from the Large Data Set are: 3.2, 4.6, 4.2, 0.4, tr, tr, 0.8. Here 'tr' means a trace, which is treated as 0. Find the mean daily rainfall to 3 s.f.	