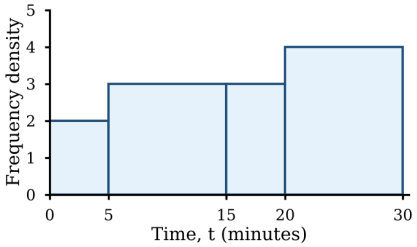
Day 85 **A Level Maths: C Tier 10-a-day**

1 Solve $\sin x = \frac{1}{2}$ for $0° \leq x \leq 180°$.

2 The histogram shows the times, t minutes, taken by some people to complete a puzzle. Find the number of people who took between 5 and 20 minutes.



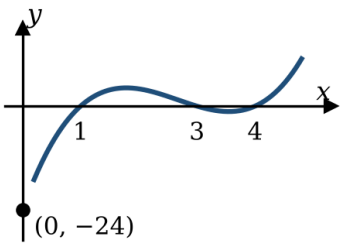
3 Rationalise the denominator of $\frac{1}{4+\sqrt{10}}$.
Write your answer in the form $p + q\sqrt{10}$.

4 A line has equation $\mathbf{r} = \begin{pmatrix} 3 \\ 0 \\ -3 \end{pmatrix} + t\begin{pmatrix} 3 \\ 3 \\ -2 \end{pmatrix}$.
Find the coordinates of the point on the line where t = 2.

5 A uniform rod AB of mass 15 kg and length 2 m is supported by a pivot 0.75 m from A. A particle of mass m kg is attached at A and the rod rests horizontally in equilibrium. Find m.

Day 85	A Level Maths: C Tier 10-a-day

6 The diagram shows the curve y = f(x), where f(x) is a cubic. Find f(x) in the form $k(x - a)(x - b)(x - c)$.



7 A train starts from rest and accelerates uniformly at 2 m s^{-2} for 5 s, then travels at constant speed for a further 10 s. Find the total distance travelled.

8 $x_{n+1} = 1 + \frac{4}{x_n}$, with $x_0 = 2$.
Find x_1, x_2 and x_3 to 3 decimal places.

9 X ~ B(40, 0.6). Use a normal approximation to find P(X ≥ 24), to 3 s.f.

10 $(x - 2)$ is a factor of $x^3 + kx^2 - 3x - 18$.
Find the value of k.