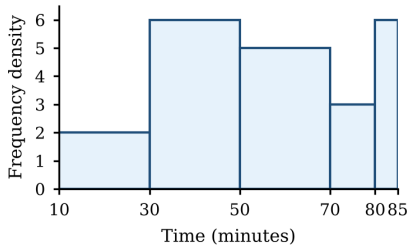
Day 230	A Level Maths: B Tier 10-a-day
1 X ~ B(10, 0.5). Find, to 3 significant figures, (a) P(X ≤ 5) (b) P(X = 5)	
2 Solve $3^x = 23$, giving your answer to 3 s.f.	
3 Solve $-2x^2 - 6x < 4$.	
4 Differentiate y = 5 cosec x with respect to x, and find the exact gradient when $x = \frac{\pi}{6}$.	
5 Express $\frac{8}{1-\sqrt{5}}$ in the form $p + q\sqrt{5}$, where p and q are integers.	

Day 230 **A Level Maths: B Tier 10-a-day**

6 Solve $e^{2x} - 16e^{x} + 60 = 0$,
giving your answers as exact values.

7 The circle C has equation $(x - 3)^2 + (y + 2)^2 = 65$.
The point P$(-5, -3)$ lies on C.
Find an equation of the tangent to C at P, in the form $ax + by + c = 0$ with integer a, b, c.

8 The histogram shows the times taken by a group of people to complete a task.
Estimate the number of people who took between 50 and 83 minutes.



9 A particle moves so that at time t s its velocity is $\mathbf{v} = (t^2 + 4)\mathbf{i} + (6t - 24)\mathbf{j}$ m s^{-1}.
Find the time when the particle is moving in the direction of $\mathbf{i}$, and its speed then.

10 A uniform rod AB of length 3 m and mass 6 kg hangs horizontally from two vertical strings attached 0.5 m from A and 0.5 m from B.
A particle of mass 3 kg is attached 1 m from A.
Take g = 9.8 m s^{-2}. Find the tension in each string.