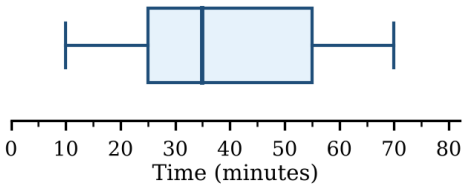
Day 253 **A Level Maths: C Tier 10-a-day**

1 The box plot summarises the delivery times, in minutes, of a pizza company.
Find the range and the interquartile range.



2 A circle has equation $(x + 3)^2 + (y - 4)^2 = 36$.
Determine whether the point P$(-4, -7)$ is inside, outside or on the circle.

3 A train's engine works at a constant rate of 30 kW. Find the driving force when the vehicle is moving at 30 m s^{-1}.

4 A line has equation $\mathbf{r} = \begin{pmatrix} 1 \\ 3 \\ 0 \end{pmatrix} + t\begin{pmatrix} -2 \\ 1 \\ 2 \end{pmatrix}$.
Show that the point $(-3, 5, 4)$ lies on the line.

5 A particle of mass 3 kg slides from rest down a smooth plane inclined at angle α to the horizontal, where $\sin\alpha = \frac{3}{5}$. Take g = 9.8 m s^{-2}.
Find (a) its acceleration, (b) its speed after 2 s.

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6 Sketch $y = \|2x - 1\|$. Write down the coordinates of the vertex and of the point where the graph meets the y-axis.	
7 Given that $dy/dx = 4xy$ and $y = 1$ when $x = 0$, find y in terms of x.	
8 Express $\frac{-2x + 8}{(x - 1)(x + 1)}$ in partial fractions.	
9 Simplify $3\sin^2 x + 3\cos^2 x$.	
10 $X \sim B(40, 0.5)$. Use a normal approximation to find $P(X \leq 17)$, to 3 s.f.	