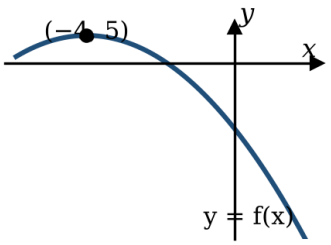
Day 262 **A Level Maths: C Tier 10-a-day**

1 The diagram shows the curve y = f(x). The maximum point is shown. Write down the coordinates of the maximum point on the curve with equation
(a) y = f(x + 4) (b) y = 2f(x)

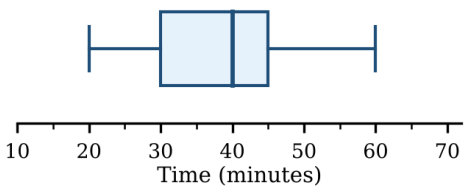


2 A sector has radius 15 cm and angle $\frac{5\pi}{6}$ radians.
Find the arc length, leaving π in your answer, and the perimeter.

3 $f(x) = x^3 - 5x^2 - 4x + 20$
(a) Show that (x + 2) is a factor of f(x).
(b) Factorise f(x) completely.

4 A skier starts from rest and moves in a straight line with constant acceleration 4 m s^{-2}.
It travels 98 m. Find the time taken.

5 The box plot summarises the journey times, in minutes, of some commuters.
Find the range and the interquartile range.



Day 262	A Level Maths: C Tier 10-a-day
6 A uniform rod AB of mass 6 kg and length 6 m is supported by a pivot 0.5 m from A. A particle of mass m kg is attached at A and the rod rests horizontally in equilibrium. Find m.	
7 Find the equation of the tangent to the curve $y = 4 \ln x + x$ at the point where $x = 1$.	
8 A population is $N(\mu, 4^2)$. H_0: $\mu = 45$, H_1: $\mu > 45$. A sample of 9 has mean $\bar{x} = 48.87$. Test at the 5% level. Critical value: $z = 1.645$.	
9 Find the gradient of the curve $y = \sqrt{2x + 3}$ at the point where $x = 3$.	
10 Divide $f(x) = x^4 + 6x^3 + 4x^2 - 11x - 12$ by $(x + 2)$. Find the quotient and the remainder.	