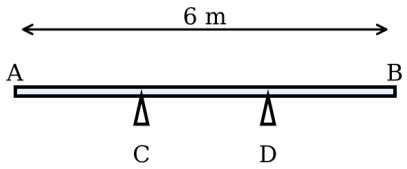
Day 41	A Level Maths: B Tier 10-a-day
1 Solve $-1 \leq -3x + 4 < 10$.	
2 A lift of mass 300 kg is raised and lowered by a vertical cable. The lift accelerates upwards at 0.5 m s^{-2}. Take g = 9.8 m s^{-2}. Find the tension in the cable.	
3 Given that $\tan\theta = 2$ and θ is acute, find the exact value of $\sec\theta$.	
4 Large data set: mean windspeed (knots) at Leeming has mean 9, sd 4. Outliers are more than 2 sd from the mean. Are the values 16 and -2 outliers?	
5 Solve $\lvert -2x - 5\rvert < -3x + 5$.	

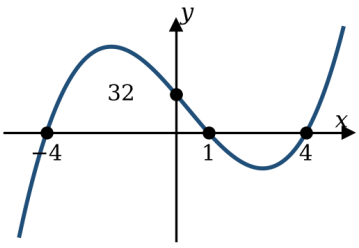
Day 41 **A Level Maths: B Tier 10-a-day**

6 A chord AB subtends an angle of 1.9 radians at the centre O of a circle of radius 4 cm.
Find the perimeter of the minor segment, to 3 s.f.

7 A uniform plank AB of length 6 m and mass 40 kg rests horizontally on supports at C and D, where AC = 2 m and DB = 2 m.
A girl of mass 25 kg walks from D towards B.
Find how far she is from D when the plank is about to tilt.



8 The diagram shows a sketch of the curve y = f(x), where f is a cubic. The curve meets the axes at the labelled points. Find f(x) in factorised form.



9 (a) Write 5 cos θ + 12 sin θ in the form R cos(θ − α), with R > 0 and 0 < α < 90°.
(b) Hence find its maximum value and the smallest θ ≥ 0 at which it occurs. Give α to 1 d.p.

10 A class of width 20, frequency 20, is a bar 2 cm wide, 5 cm tall.
(a) Find the bar height for width 10, frequency 18.
(b) Find the frequency of a 1 cm by 2.5 cm bar.