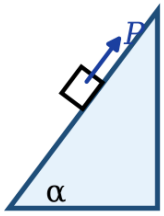
Day 227	A Level Maths: B Tier 10-a-day
1 Find the sum of all the multiples of 8 that lie between 45 and 240.	
2 A sector of a circle has radius 12 cm and arc length 21.6 cm. Find (a) the angle of the sector in radians, (b) the area of the sector.	
3 A box of mass 5 kg rests on a rough horizontal floor, with coefficient of friction 0.6. A horizontal force of 24 N is applied to the box. Take $g = 9.8$ m s^{-2}. Determine whether the box moves. Find the friction force, or the acceleration if it moves.	
4 Large data set: mean temperature (°C) at Heathrow has mean 20, sd 4. Outliers are more than 3 sd from the mean. Are the values 31 and 9 outliers?	
5 Solve $\sin 2x = 3 \sin x$ for $0 \leq x \leq 360°$, giving answers to 1 d.p. where necessary.	

Day 227 **A Level Maths: B Tier 10-a-day**

6 Simplify $\sqrt{72} + \sqrt{2} - \sqrt{50}$, giving your answer in the form $k\sqrt{2}$.

7 A block of mass 10 kg is held on a rough plane ($\tan\alpha = \frac{4}{3}$, $\mu = 0.5$) by a force P N up the plane, as shown.
Take $g = 9.8$ m s^{-2}. The block is about to move down the plane. Find P.



8 Express $9\cos\theta + 12\sin\theta$ in the form $R\cos(\theta - \alpha)$, where $R > 0$ and $0 < \alpha < 90°$. Give α to 1 d.p.

9 A curve has parametric equations $x = t - 3$, $y = -t^2 + 2t - 1$.
The line $y = x - 4$ meets the curve at two points.
Find the coordinates of these points.

10 The random variable X is normally distributed. $P(X < 72.5) = 0.0668$ and $P(X > 85) = 0.1587$.
Find the mean and standard deviation (3 s.f.).