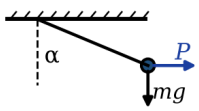
Day 344	A Level Maths: B Tier 10-a-day
1 The mass X g of a flour bag is normal with mean 75, s.d. 4. Find, to 3 s.f., the probability a value is (a) less than 83, (b) between 83 and 85.	
2 A sledge of mass 2 kg is pulled along rough horizontal ground by a horizontal force of 11.84 N. It accelerates at 2 m s^{-2}. Take g = 9.8 m s^{-2}. Find the coefficient of friction between the sledge and the ground.	
3 A and B are independent events with P(A) = 0.3 and P(A ∪ B) = 0.58. (a) Find P(B). (b) Find P(A' ∩ B').	
4 Find the binomial expansion of $(4 + 2x)^5$ in ascending powers of x, up to and including the term in x^3.	
5 A particle of mass 3 kg hangs in equilibrium on a light string inclined at α to the vertical, held by a horizontal force P N, as shown. tan α = $\frac{12}{5}$. Take g = 9.8 m s^{-2}. Find the tension in the string and the value of P. 	

Day 344	A Level Maths: B Tier 10-a-day
6 A curve has parametric equations $x = t^2$, $y = t^3$. Find $\frac{dy}{dx}$ in terms of t, and the equation of the tangent at $t = 1$.	
7 A geometric series has first term 4 and common ratio 3. Find the smallest value of n for which the sum of the first n terms exceeds 10000.	
8 For small θ (in radians), find an approximation of the form $1 + p\theta + q\theta^2$ for $\sin 2\theta + \cos 4\theta + 3\tan\theta$.	
9 The line segment AB is a diameter of a circle, where A is $(-6, 4)$ and B is $(-2, 0)$. Find an equation of the circle in the form $(x - a)^2 + (y - b)^2 = k$.	
10 A sector of a circle has radius 14 cm and arc length 7 cm. Find (a) the angle of the sector in radians, (b) the area of the sector.	