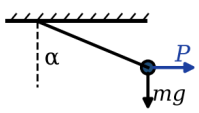
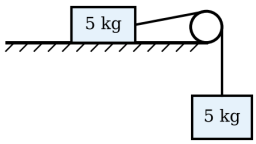
Day 180	A Level Maths: B Tier 10-a-day
1 A sector of a circle has area 42.35 cm^2 and angle 0.7 radians. Find (a) the radius, (b) the perimeter of the sector.	
2 A circle has centre (5, 2) and passes through the point $(-1, 6)$. Find an equation of the circle.	
3 A bag has 3 red and 9 blue counters; two are taken without replacement. (a) Find P(same colour). (b) Given they are the same colour, find P(both red).	
4 A circle has equation $x^2 + y^2 - 4x + 10y + 13 = 0$. Find the coordinates of its centre and its radius.	
5 A particle of mass 6 kg hangs in equilibrium on a light string inclined at α to the vertical, held by a horizontal force P N, as shown. $\tan\alpha = \frac{12}{5}$. Take $g = 9.8$ m s^{-2}. Find the tension in the string and the value of P. 	

Day 180	A Level Maths: B Tier 10-a-day

6 Solve $\frac{dy}{dx} = \frac{6y}{x}$ for $x > 0$,
given that $y = 2$ when $x = 1$.

7 A block of mass 5 kg lies on a rough horizontal table (coefficient of friction 0.1). It is joined by a light string over a smooth pulley to a particle of mass 5 kg hanging freely.
Take $g = 9.8$ m s^{-2}.
The system is released. Find the acceleration and the tension in the string.



8 Given that each component fails independently with probability 0.1, find the least number of components needed for the probability of at least one success to exceed 0.9.

9 Solve $2\sin^2 x + 3\sin x + 1 = 0$ for $0 \leq x \leq 360°$, giving answers to 1 d.p. where necessary.

10 A circle passes through A(8, −4) and B(−7, 1), and its centre lies on the x-axis. Find the centre and the equation of the circle.