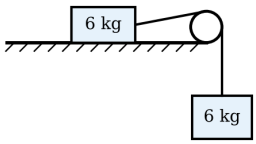
Day 293	A Level Maths: B Tier 10-a-day
1 Solve $\cos 2x = -0.35$ for $0 \leq x \leq 360°$, giving answers to 1 d.p.	
2 Find the term independent of x in the expansion of $(x^2 + \frac{3}{x})^6$.	
3 A has position vector $\begin{pmatrix} -3 \\ 1 \\ 5 \end{pmatrix}$ and B has position vector $\begin{pmatrix} 7 \\ 11 \\ -5 \end{pmatrix}$. The point P lies on AB with AP : PB = 3 : 2. Find the position vector of P.	
4 Bottle volumes are normal, s.d. 12 ml. Set mean 200 ml; 16 bottles have mean 203.2 ml. Test at the 5% level whether the true mean is greater than 200.	
5 Solve $3\cos^2 x - 2\sin x - 3 = 0$ for $0 \leq x \leq 360°$, giving answers to 1 d.p. where necessary.	

Day 293	A Level Maths: B Tier 10-a-day
6 A new car costs £20000. Its value falls by 15% each year. (a) Find its value after 3 years (nearest £). (b) In which year does it first fall below £6000?	
7 X ~ B(12, 0.2) and Y ~ B(9, 0.1) are independent. Find P(X = 2 and Y ≤ 1), to 3 significant figures.	
8 A block of mass 6 kg lies on a rough horizontal table (coefficient of friction 0.5). It is joined by a light string over a smooth pulley to a particle of mass 6 kg hanging freely. Take g = 9.8 m s^{-2}. The system is released. Find the acceleration and the tension in the string. 	
9 A circle passes through A(2, −9) and B(13, −2), and its centre lies on the x-axis. Find the centre and the equation of the circle.	
10 A stone is projected horizontally at 205.8 m s^{-1} from a point high above the ground. Take g = 9.8 m s^{-2}. Find the speed and the direction of motion 20 s later, to 1 d.p. below the horizontal.	