29:006 EXAM 1 FORMULAS

1 km = 1000 m 1 m = 100 cm 1 mm = 0.001 m 1 kg = 1000 g		
acceleration due to gravity on earth = g = 10 m/s^2		
weight (w) = mass (m) $\times$ g , w = m $\times$ g		
Net force (F_{Net}) = mass (m) $\times$ acceleration (a), F_{Net} = m $\times$ a		
avg velocity = $\frac{\text{distance}}{\text{time}}$	d = v t for a = 0	acceleration = $\frac{\text{velocity change}}{\text{time}}$
Distance an object falls from rest in time t: d = ½ $\times$ g $\times$ t^2		
Speed an object acquires after falling from rest for a time t: v = g $\times$ t		
time (t) to travel a distance (d) at an acceleration a: $t = \sqrt{\frac{2d}{a}}$		
present velocity (v) = initial velocity (v_0) + acceleration (a) $\times$ time (t) v = v_0 + a $\times$ t		
time (t) for a ball thrown up with initial velocity v_0 to reach its highest point: t = initial velocity / g, $t = \frac{v_0}{g}$		
Maximum height (h) an object reaches if thrown vertically up with velocity v_0: $h = \frac{v_0^2}{2g}$		
initial velocity v_o that an object thrown vertically up requires to reach a height h: $v_0 = \sqrt{2 \times g \times h}$		
time (t) for an object starting from rest to fall a distance h: $t = \sqrt{\frac{2h}{g}}$		
momentum = mass $\times$ velocity = m (kg) $\times$ v (m/s), p = m $\times$ v		
Work (W in Joules) = Force (F in N) $\times$ distance (d in m) = F $\times$ d		
Kinetic Energy (J) = ½ m v^2		
Gravitational Potential Energy (Joules) = m (kg) $\times$ g (m/s^2) $\times$ height (m) GPE = m g h = w h		
Centripetal acceleration $a_{cent} = \frac{(\text{velocity})^2}{\text{radius}} = \frac{v^2}{r}$	Centripetal force F_c = m a_{cent}	Torque (N m) = Force (N) x lever arm (m)