**Student Number** **NAME:**

## Formula Sheet

$$\vec{r} = \vec{r_0} + \vec{v_0 t} + \frac{1}{2}\vec{a}t^2 \qquad \vec{v_f} = \vec{v_0} + \vec{a}t$$

$$v_f^2 = v_0^2 + 2\vec{a} \cdot \Delta\vec{r}$$

$$x = \frac{v_0^2}{g}\sin 2\theta_0 \qquad y = \frac{v_0^2}{2g}\sin^2\theta_0$$

$$y = x\tan\theta_0 - \frac{g}{2v_0^2\cos^2\theta_0}x^2$$

$$\vec{F} = m\vec{a} \qquad F = \frac{mv^2}{r}$$

$$f_k = \mu_k N \qquad f_s \leq \mu_s N$$

$$\vec{W} = m\vec{g}$$

## Constants

$$g = 9.81 m\, s^{-2}$$