

$$d \quad v_i \quad \rightsquigarrow \quad \mu$$

$$d = v_i t + \frac{1}{2} a t^2$$

$$v_f = v_i + a t$$

$$\cancel{v_f}^2 = v_i^2 + 2 a d$$

$$\frac{-v_i^2}{2d} = a \rightsquigarrow F = \frac{m v_i^2}{2d}$$

$$F_f = \mu F_N$$

$$F_f = \mu m g$$



$$\frac{\cancel{-m v_i^2}}{2d} = \mu \cancel{m g}$$

$$\frac{-v_i^2}{2d} = \mu g$$

$$\frac{-v_1^2}{2d} = \mu g$$

$$\frac{-v_1^2}{2gd} = \mu$$

$F d$

$$\mu mgd = \frac{1}{2}mv^2$$