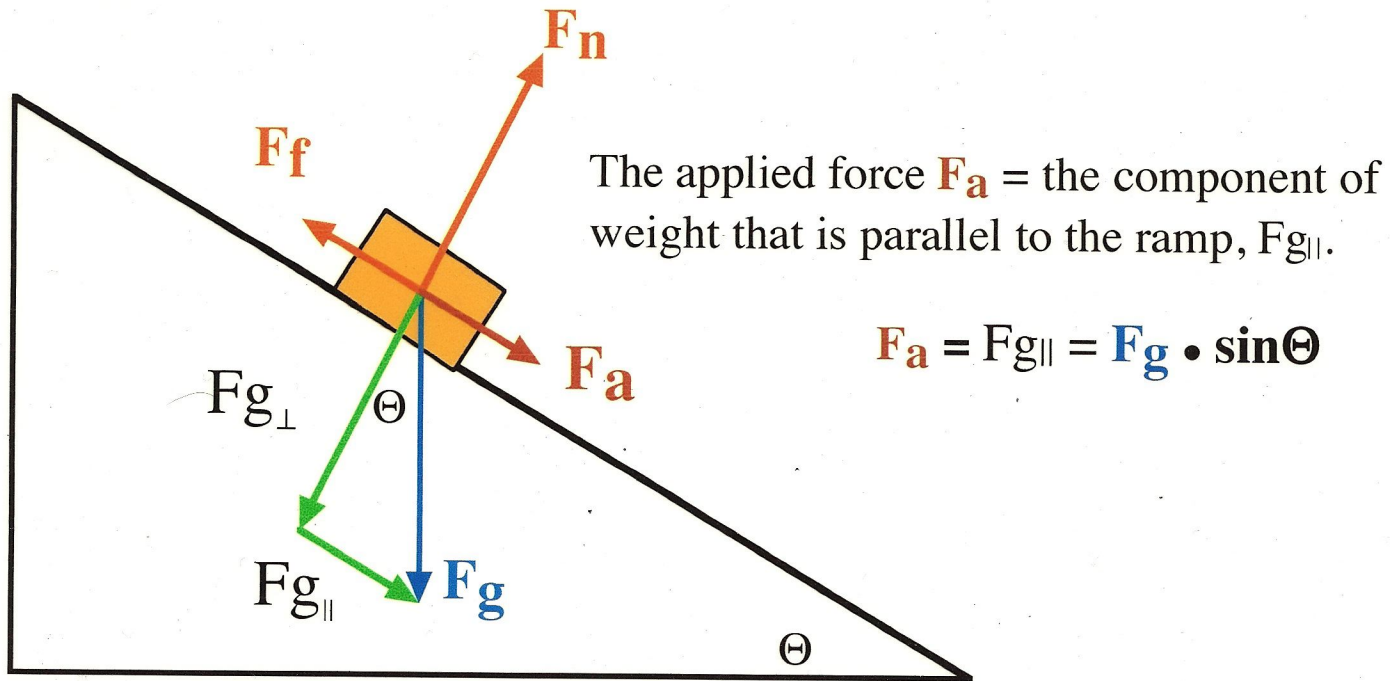


Coefficient of friction for a block on a ramp.

Given: the block slides down the ramp at constant velocity due to a component of its gravitational *weight*, $F_{g\parallel}$.

By similar triangles, both angles Θ are equal.



The frictional force F_f is equal and opposite to F_a as long as the box slides with constant velocity

$$F_f = F_a = F_{g\parallel} = F_g \cdot \sin\Theta$$

The normal force F_n is equal in magnitude to the component of gravity that is perpendicular to the ramp $F_{g\perp}$

$$F_n = F_{g\perp} = F_g \cdot \cos\Theta$$

$$\mu = \frac{F_f}{F_n} = \frac{F_{\parallel}}{F_{\perp}} = \tan\Theta$$