

PHYSICS
REVIEW: NEWTON'S 2nd LAW; FRICTION; ETC.

TEST DATE: _____

VOCABULARY:

force

Newton (N)

mass

kilogram

acceleration

weight

"g"

applied force

net force

inertia

terminal velocity

static friction

kinetic friction

coefficient of friction; μ_s ; μ_k

normal force

limiting angle of repose

limiting angle of kinetic friction

$$F = ma$$

$$W = mg$$

$$g = 9.8 \text{ m/s/s} = 10 \text{ m/s/s}$$

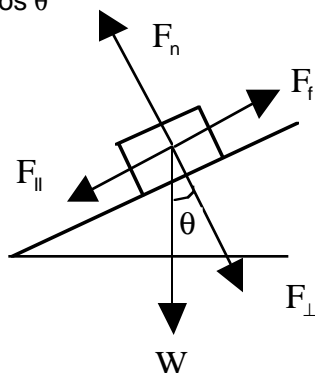
$$F_f = \mu F_n \quad \text{or} \quad \mu = \frac{F_f}{F_n}$$

CONCEPTS; SKILLS; ETC.

- mass and force are DIFFERENT!
- weight is the force of gravity on an object
- mass remains the same everywhere; weight may vary from place to place
- an object standing still has no acceleration; therefore it has no NET force acting on it; therefore forces along x axis must balance and forces along y axis must balance; it is in static equilibrium
- an object moving at CONSTANT speed has no acceleration; therefore it has no NET force acting on it; therefore forces along x axis must balance and forces along y axis must balance; it is in dynamic equilibrium
- **Newton's 1st Law:** An object in motion will remain in motion in a straight line with constant speed unless acted upon by an unbalanced (or net, or "outside") force; an object at rest will remain at rest unless acted upon by an unbalanced (or net, or "outside") force. (Law of Inertia)
- **Newton's 2nd Law:** $F = ma$
- **Newton's 3rd Law:** For every action there is an equal and opposite reaction
- NASA method for determination of mass of astronaut

$$F_{\perp} = W \sin \theta$$

$$F_{\parallel} = W \cos \theta$$



consider the SYSTEM

use NET force and TOTAL mass

