FORCE concepts

1. For free-body-diagrams, draw only the forces acting on the object in question.
2. Newton’s First Law: for objects at rest or moving at constant velocity, the net force is zero. Σ**F** = 0
3. For Newton’s Second Law: a net unbalanced force produces acceleration; Σ**F** = m**a** Σ**F**x= m**ax** Σ**Fy**= m**ay**
4. The normal force and the gravitational force are not an action-reaction pair.
5. Static friction (fs ≤µsFN) exists between two surfaces when motion is impending; kinetic friction (fk =µkFN ) occurs when two surfaces are in relative motion. In either case, the friction forces are proportional to the normal force.
6. For inclined planes, the minimum coefficient of static friction µs = tan Ɵ.
7. When solving problems using Newton’s Laws of Motion, kinematic equations are sometimes used.

v = v0 + at

x = x0 +vot + $\frac{1}{2}$at2

v2 = vo2 + 2a(x-x0)

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