Video Notes for Recognizing Force

Central Question:

- How do you go about conducting a force analysis to determine the forces acting upon an object?

Definition of Force:

Forces are pushes or pulls that act upon an object as the result of its interaction with the surroundings

Two Categories of Force Interaction

- Non-Contact or Field Forces
  Interaction occurring between two objects even when they don't physically touch.
  Examples: Gravity, Electrical, and Magnetic

- Contact Forces
  Interactions occurring as the result of the physical contact of two objects.
  Examples: Sitting in a chair: the chair and your butt push against each other.
  Stand on the floor: your feet and the floor push against each other.

Two Questions to Ask of an Object

1. Is there a planet, a charge, or a magnet near the object? (This allows you to recognize non-contact forces.)
2. Is the object contacting anything in its surroundings?

Force Types

1. **Force of Gravity (F_{grav})**
   The Earth and objects on or near it interact with each other; this interaction results in the Earth pulling down upon the object.

2. **Tension Force (F_{tens})**
   Force transmitted to an object through a a string, rope, cable, or wire whenever it is secured and held tight.

3. **Normal Force (F_{norm})**
   The interaction between two pressed-together surfaces results in a force on each object.
   Examples: Sitting in a chair; standing on a floor; leaning against a wall.

4. **Friction Force (F_{frict})**
   Sliding friction: force between two surfaces as they slide across each other.
   Static friction: force between two stationary surfaces as they attempt the onset of motion.

5. **Air Resistance Force (F_{air})**
   Force exerted by on an object by air particles whenever there is a relative motion between the object and surrounding air.
   Always present on any moving object; but most noticeable for fast-moving objects.

6. **Applied Force (F_{app})**
   The force is the force of a person or thing pushing or pulling on an object.
   Example: pushing a referigerator across the kitchen floor.
   Somewhat of a catch-all type to account for forces not accounted for by other force types.