



Flipping Physics Lecture Notes:
Introduction to Free Body Diagrams or Force Diagrams

Free Body Diagram (FBD) or Force Diagram is a diagram that shows all the forces acting on an object or a “body” that is singled out from or “freed” from a group of objects.

- Center of Mass: The location at which we consider all the mass of an object to be concentrated.
 - We will more precisely define center of mass in a later lesson.
- Force Normal, F_n
 - The force normal to or perpendicular to and caused by a surface.
 - Always a push. (Surfaces can't pull.)
- Force Applied, F_a
 - The force applied on an object by a different object or person.
- Force of Friction, F_f
 - Parallel to and caused by a surface.
 - Tries to prevent an object from moving or slows down an object.
 - We will define the Force of Friction in greater detail in later lessons.
- Forces are vectors and the arrow lengths in the Free Body Diagrams correspond to the magnitude of those force vectors.
 - In other words, if the Force Applied is 20 N and the Force of Friction is 10 N, then the length of the force applied vector arrow should be twice the length of the force of friction vector arrow.

