



Flipping Physics Lecture Notes:
Introduction to Static and Kinetic Friction
by Bobby

Friction:

- A force that tries to prevent two surfaces from sliding relative to one another.
- Is caused by two surfaces rubbing against one another.
- The symbol for the Force of Friction is \vec{F}_f .
- Is a vector and therefore has both magnitude and direction.
- Static:
 - “lacking in movement, action, or change”.
 - surfaces do not slide relative to one another.
- Kinetic:
 - “of, relating to, or resulting from motion”.
 - surfaces do slide relative to one another.
- Is not dependent on surface area.
 - As surface area increases, pressure decreases and Force of Friction remains the same.

$$P = \frac{F}{A}$$

- Direction:
 - \parallel to surfaces
 - Opposes sliding/motion
 - Independent of \vec{F}_a

Comment from mr.p:

Newton's Third Law states: $\vec{F}_{12} = -\vec{F}_{21}$: for every force object 1 exerts on object 2, there is an equal but opposite force object 2 exerts on object 1.

In Bobby's example, the force of friction he talks about is the force of friction the ramp exerts on the block, which is up the incline. There is also a force of friction the block exerts on the ramp, which is down the incline. These two different forces of friction form a Newton's Third Law Force Pair. They are equal in magnitude, opposite in direction, and act on two different objects.