**Friction**

Friction is a reaction force that resists \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Friction’s direction is always

Friction is caused by

Friction can be calculated by

µ - The Coefficient of Friction

 The coefficient of friction is an experimentally determined value that is based on

 All surfaces have two coefficients of friction:

µs µk

Ex 4: A book is being pushed into a wall with a force of 30N. The book has a mass of 2.5kg. What does the coefficient of static friction of the wall have to be to keep the book in place?

Ex 3: The coefficients of friction on a particular table are µs=0.34 and µk=0.15. A 500g box is on the table.

1. What is the minimum force required to start the box moving?
2. What force is required to keep the box moving at a constant velocity?

Ex 2: A 300kg bear is sitting on the ground. The ground has µs=0.42. Stupid Steve pushes the bear with a 1000N force.

1. Does the bear move?
2. What is the force of friction actually being applied?

Ex 1: An 8kg box is being shoved along the ground with a 70N force. The coefficient of kinetic friction is µk=0.34.

1. Draw a FBD
2. Find the force of friction.