FRICIONAL FORCES

- Frictional force (Force of friction) is produced when 2 surfaces of bodies are in contact.
- Frictional forces:
  *) Static frictional force
  *) Kinetic frictional force
- Frictional force is directly proportional to the normal force:

  \[ f_s \propto N \]

  \[ f_s = \mu_s \ N \]
1. A block of mass $m$ resting on a table

The weight of the block: $W = m \cdot g$

The normal force: $N = W$

Static frictional force: $f_s = 0$

Pada kondisi seperti ini, tidak terdapat gaya gesek.
2. A block of mass \( m \) is applied with a small horizontal force \( F \).

- \( f_s \) may increase in line with the force \( F \).

- So, \( f_s \) is called “Self-adjusting force”.

\[
v = 0, \quad F = f_s < \mu_s N
\]
3. A block of mass $m$ just start to move when applied with a small horizontal force.

- If $f_s$ reach maximum value.
- The block just start to move.
4. A block of mass $m$ is moving with constant velocity when applied with a horizontal force.

- The block is moving with a constant velocity of $v$
- $f_k = \mu_k N$
\[ f_s = W \sin \theta \]

\[ f_s = \mu_s \ N \quad \Rightarrow \quad N = W \cos \theta \]

\[ \mu_s = \frac{W \sin \theta}{W \cos \theta} = \frac{\sin \theta}{\cos \theta} \]

\[ \mu_s = \tan \theta \]