

# MASS AND INERTIA

In linear (translational) cases, the inertia is called **mass** . The unit is (kg). The larger the mass, the tougher it is to push something to move or to slow something down. In rotational cases, the inertia is called **moment of inertia** . The unit is (kg·m<sup>2</sup>). The larger the Inertia, the tougher it is to swing a wheel up to fast spinning or to slow down the spinning.

# MASS

THE MEASURE OF QUANTITY OF INERTIA OF AN OBJECT.

MASS IS THE MEASURE OF INERTIA.

SCALAR QUANTITY

MAGNITUDE ONLY

KILOGRAM (SI UNIT)

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The tendency of an object to resist changes in its state of motion varies with mass. **Mass is that quantity that is solely dependent upon the inertia of an object.** The more inertia that an object has, the more mass that it has.

# Inertia & Mass

**What is mass?**

**Mass is the amount of matter in an object.**

**A bowling ball has more mass than a tennis ball.**

**The greater the mass of an object the greater its inertia.**

**Mass is the measurement of inertia.**

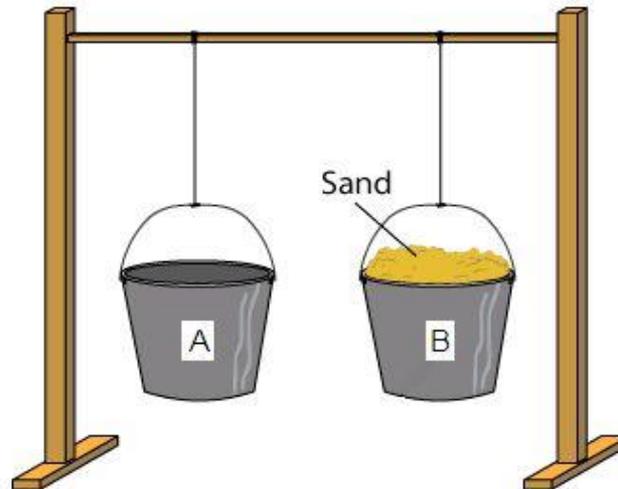
# *Mass & Inertia*

- ❖ *Mass is the amount of matter in an object.*
- ❖ *Objects with more mass weigh more than objects with less mass.*
- ❖ *Inertia is the tendency of an object to resist a change in motion. Inertia increases as the mass of an object increases.*

# **Definition of Inertia**

An object will continue in its state of motion until acted on by an outside force.

- Inertia is related to an object's mass
- Mass is actually a measure of inertia
  - An object with a small mass has less inertia
  - An object with a greater mass has more inertia
- Which object would be easier to change the motion of?



# Mass and Inertia

**Objects with more mass have more inertia than an object with a smaller mass.**

