

# Inertial Reference Frames

An inertial reference frames is:

- A frame of reference (coordinate system) that is not accelerated  
**... or put simply, a frame of reference in which Newton's Laws of motion hold.**

Examples:

**Frame of reference**

**Inertial?**

- Ground
- A car traveling at constant speed in a straight line
- A car that is accelerating
- A car going around a corner at constant speed

Yes\*

Yes\*

No\*\*

No\*\*

\* for most applications, considering those as inertial reference frames is ok. However, the earth is rotating, thus, they are just close approximations of an inertial reference frame. In some situations, we have to account for the rotation of the earth, for example to explain the Coriolis force.

\*\* Just think about what happens to an apple on the dashboard