

Chapter 5 of MHR (Page 152)



Isaac Newton

(1642-1727)

**Read the intro to the chapter on pg. 154.**

# Inertia and Newton's First Law

## NEWTON'S FIRST LAW — THE LAW OF INERTIA

An object at rest or in uniform motion will remain at rest or in uniform motion unless acted on by an external force.

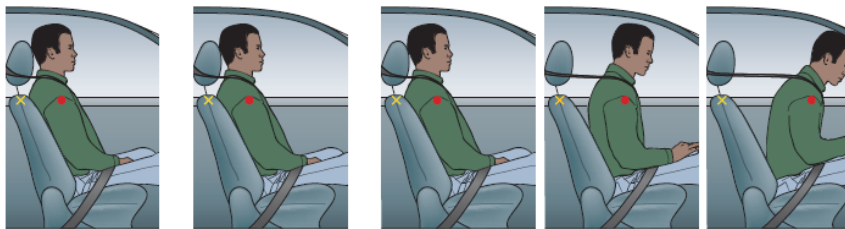
A few demos:

Close read MHR: Pg 154 - 155

## INERTIAL AND NON-INERTIAL FRAMES OF REFERENCE

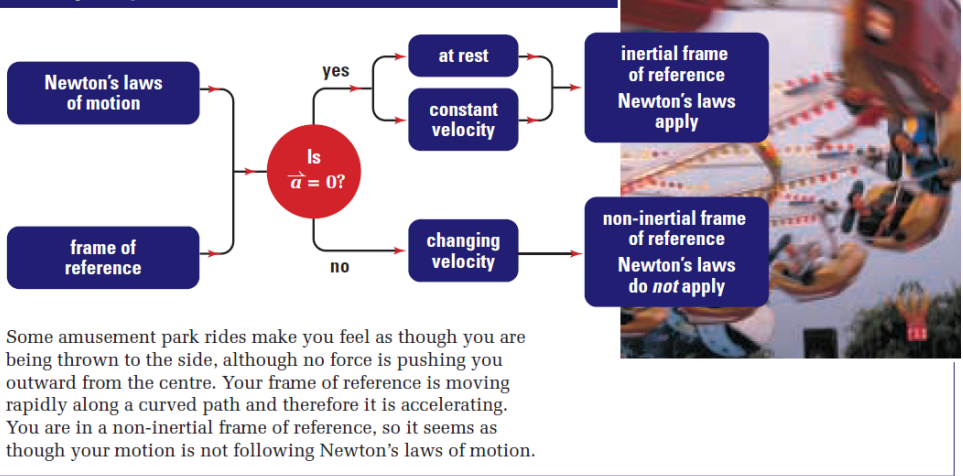
An inertial frame of reference is one in which Newton's laws of motion are valid. Inertial frames of reference are at rest or in uniform motion, but they are not accelerating.

A non-inertial frame of reference is one in which Newton's laws of motion are not valid. Accelerating frames of reference are always non-inertial. (rotating frames of reference are accelerating)



Relative to inside the car, what force caused the passenger to accelerate forward?

### Concept Organizer



Close read MHR Pg. 156 - 157, conceptual problems on page 158.

## 5.3

# Reaction Forces and Newton's Third Law

**NEWTON'S THIRD LAW**

For every action force on object B due to object A, there is a reaction force, equal in magnitude but opposite in direction, due to object B acting back on object A.

$$\vec{F}_{A \text{ on } B} = -\vec{F}_{B \text{ on } A}$$

A few qualitative examples.

Close read MHR Pg. 177 - 179, conceptual problems page 179.

## Attachments

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forces-1d\_all.jar