1 **Gravity and Motion**

- λAll objects fall to Earth at an acceleration of 9.8m/s/s due to gravity
- λAir resistance (fluid friction) can slow down
- λDepends on *size and shape.*

2 **Net Force**

- λNet force on falling body = gravity + air resistance
- λIf net force not zero - falls
- λTerminal velocity = when acceleration stops

3 **Free Fall**

- λOnly if gravity and no other forces are acting on objects
- λEx. In vacuum no air resistance
- λOrbiting objects also in free fall
- λGravity: centripital force

4 **Projectile Motion**

- λQuicklab p. 458
- λCurved path of object projected (thrown) near Earth's surface
- λCurved path
- λEx: Space shuttle, leaping frog, football, etc.

5 **Projectile Motion & Gravity**

- λHorizontal motion constant
- λVertical motion (gravity)
- λTogether form curved path
- λSec. Rev. p. 458

6 **Newton's Laws of Motion**

- λ1st Law: Inertia - object stays at rest or in motion unless acted on by unbalanced force

λUnbalanced force on sliding objects = FRICTION

λ mass = inertia

7 ❑ **Newton's 2nd Law**

λAcceleration depends on *mass* and *force*

λ *a = F/m or F = m • a*

Acceleration due to gravity on freely falling object = 9.8m/s/s

8 ❑ **Newton's 3rd Law**

λFor every action there is an = but opposite reaction *or*

λWhen 1 object exerts a force on a 2nd object, the 2nd exerts an =, but opposite force on the 1st *or*

λForces work in pairs

9 ❑ **Momentum**

λ momentum - the harder it is to stop a moving object

λMomentum = mass X velocity

λ (p) = m x v (p = momentum)

λMomentum is conserved (transferred not destroyed)

λ3rd Law