

## [ Law of Universal Gravitation ]

Book - Ch. 12

## [ Law of Universal Gravitation ]

- F – gravitational force
- G – gravitational constant
- $m_1$  – mass of 1<sup>st</sup> object
- $m_2$  – mass of 2<sup>nd</sup> object
- d - distance

$$F = G \frac{m_1 m_2}{d^2}$$

$$G = 6.67 \times 10^{-11} \frac{N \cdot m^2}{kg^2}$$

## [ Example (Familiar?) ]

- What is force of gravity between you and the earth? Your mass – 65 kg. Earth's mass -  $5.9736 \times 10^{24}$  kg. Earth's radius -  $6.371 \times 10^6$  m.

## [ "Factor" Questions ]

- What happens to the force as you increase the mass?
- What happens to the force as you increase the distance between two objects?
  - Explains why you weigh less at higher altitude

[ Example - Mass ]

- What happens to the force of gravity if you double on of the masses? Triple?

[ Example - Distance ]

- What happens to the force of gravity if you double the distance? Triple?
  
- Look familiar??