Gravity and Motion Review (pages 666-669)

KEY CONCEPTS

WHAT DETERMINES THE STRENGTH OF THE FORCE OF GRAVITY BETWEEN TWO OBJECTS?

WHAT TWO FACTORS COMBINE TO KEEP THE MOON AND EARTH IN ORBIT?

Key Terms

- Force
- Gravity
- Law of universal gravitation
- Mass
- Weight
- Inertia
- Newton's first law of motion

Gravity Review

- What is gravity?
  - Force of attraction between all objects.
- What does Newton's Law of Universal Gravitation state?
  - Newton's Law of Universal Gravitation states that every object in the universe attracts every other object.
- What is the unit for gravity?
  - Force of gravity is measured in units called newtons.
- The strength of the force of gravity depends on what 2 factors?
  - Mass and distance.

Mass

- Why don't you notice the force of attraction between you and a book in your hand?
  - Earth's gravity is so massive, it exerts a much greater force on you than the book.
- What is weight?
  - The force of gravity on an object.
- Why would you weigh less on the moon than on the Earth?
  - The moon's mass is about 1/6 the mass of the Earth, so the pull of its gravity is 1/6.

Distance

- Strength of gravity is affected by the distance between the two objects
- What happens to the force of gravity as the distance between 2 objects increases?
  - The force of gravity decreases.

Inertia and Orbital Motion

- If the Earth and the sun are constantly pulling on each other because of gravity, why doesn't the Earth fall into the sun? or the Moon fall into Earth?
  - Another force, inertia, acts on the objects.
- What is inertia?
  - The tendency of an object to resist a change in its motion.
- Give an everyday example of inertia
  - Ex. Moving forward in a car when it stops.
- What is Newton's First Law of Motion?
  - An object at rest will stay at rest and an object in motion will stay in motion with a constant speed and direction unless acted on by a force.

Orbital Motion

- Why do Earth and the Moon remain in their orbits?
  - Inertia and gravity combine to keep the Earth and the moon in their orbits. Inertia keeps them moving ahead and gravity pulls on them preventing them from moving in a straight line. They are continually falling.
- What would happen to the moon without Earth's gravity?
  - The moon would move off into space in a straight line.
- What would happen to the moon if it were not moving in orbit?
  - The moon would crash into the Earth.