

Newton's Laws of Motion-Centripetal Motion: Objectives and Vocabulary

By referring to the various handouts, notes, lab activities and homework covered during this unit, then at the end of this unit of study, each student should be able to:

At the end of this unit of study, each student should know:

1. Newton's Laws of Motion and Momentum:

a-define each of Newton's laws and explain how each one helps us to understand the way the world around us works.

b-use given information to calculate the amount of force, acceleration or mass using $F=ma$.

c-define and calculate the momentum of objects using $p=mv$.

d-explain how the Law of Conservation of Momentum helps us to understand what happens when objects collide with each other.

2. Roller coaster:

a-know where on a roller coaster a rolling marble has its greatest speed and why.

b-define potential and kinetic energy and the factors that determine them.

c-determine if an object has more or less potential/kinetic energy when given information about the objects.

d-explain the Law of Conservation of Energy and how it applies to everyday situations.

3. Marble Launcher:

a-the effect of launch angle and speed on how far a projectile can travel.

b-estimate how far a marble will travel under given conditions.

4. Projectile and Circular Motion

a-explain why projectiles follow a curved path on the Earth.

b-explain why an object thrown horizontally from the same height at the same time as an object dropped vertically, will hit the ground at the same time.

c-define centripetal acceleration and centripetal force.

Vocabulary:

Newton's 1st law of motion

Potential energy

Newton's 2nd law of motion

Law of Conservation of Energy

Newton's 3rd law of motion

Projectile Motion

Momentum

Circular Motion

Law of Conservation of Momentum

Centripetal acceleration

Kinetic energy

Centripetal force