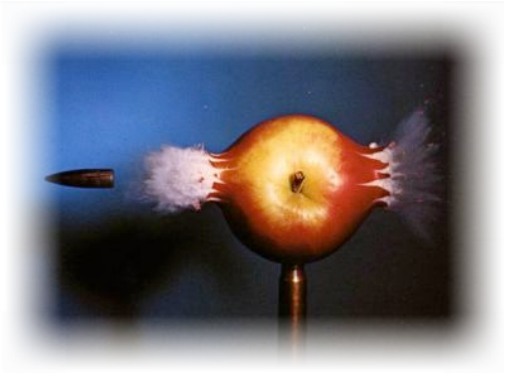
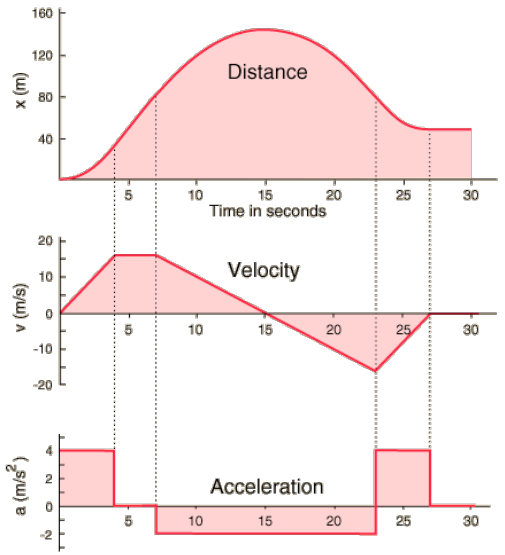
Motion





Important Equations:

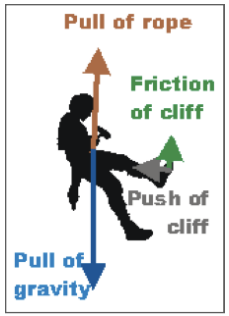
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

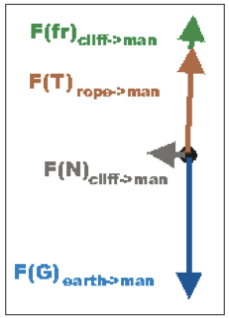
Momentum = Mass x Velocity

$$\text{Acceleration} = \frac{\text{Final Velocity - Initial Velocity}}{\text{Time}}$$

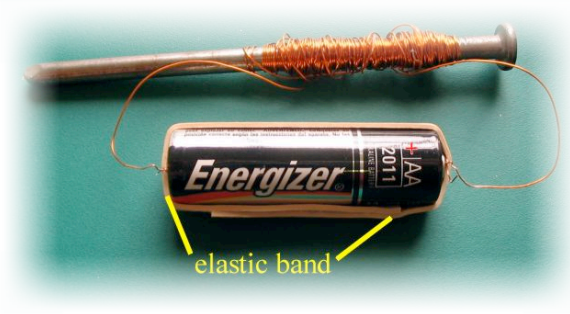
Forces

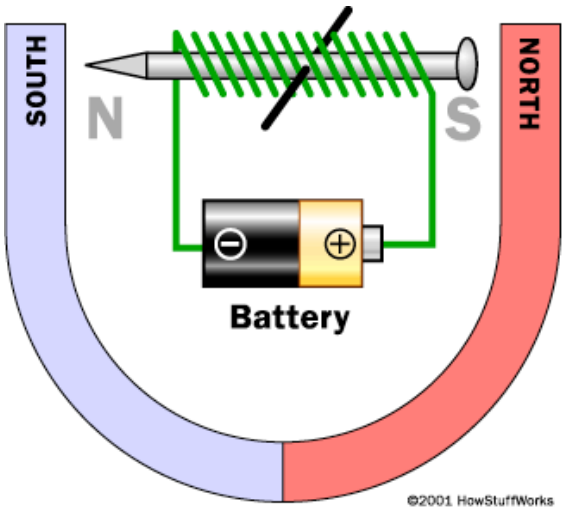
Force = Mass x Acceleration





Electromagnets





PSSA Example Questions:

Topic Statement

Motion and force are part of our daily lives. Motion and force are just two words, but they effect our entire universe, and the way that we live. Almost everything we do involves motion and force, such as sports, acting, writing, eating (YUM!), etc. The point is, without motion and force nothing could be.

Questions

1.) According to the principle of conservation of momentum,

a. in a closed system, an object's momentum before a collision will equal its momentum after the collision.

b. the amount of momentum of all the objects in the universe is constant.

c. in an open system, the total amount of momentum of the objects is conserved.

d. in a closed system, the speed of any two colliding objects will remain constant.

Explanations/ Answers

The answer is b. According to the principle of conservation of momentum, **the amount of momentum of all the objects in the universe is constant**. This principle can be used to predict the motion of objects, especially during collisions. For example, if a moving object strikes a stationary object, it is possible to predict the motion of the objects. Knowing the principle of conservation of momentum, we know the moving object will stop, and the stationary object should begin moving, because the momentum is transferred from one object to another.

2.) Electromagnets are created using

a. uncharged and insulated wire wrapped around a piece of iron

b. insulated wire wrapped around a piece of plastic

c. charged and uninsulated wire wrapped around a piece of steel

d. charged and insulated wire wrapped around a piece of iron

The answer is d. A magnetic field is created around a wire when it has an electrical current running through it. Coiling a wire concentrates this field. Wrapping the coil around an iron core greatly intensifies the strength of the magnetic field.