**Noteguide on Conservation of Energy - Videos K from Chapter 5**

**Video K - Introduction to Conservation of Energy**

**Part 1** - What is the basic concept behind Conservation of Energy? What are two other ways to frame it?

Basic Concept:

Another way:

Another way:

Giant Formula: Fd + mgh + 1/2mv2 = Fd + mgh + 1/2mv2

Be sure to note how to tell which side the Fd is on (it has to do with speeding up and slowing down)

**Example:** A 250 kg cart going 4.5 m/s rolls down a 1.75 m tall hill. What is the velocity of the cart at the bottom?



Fd + mgh + 1/2mv2 = Fd + mgh + 1/2mv2

Listen carefully to the explanation - specifically -

Why is there no Fd in the whole problem?

How do we know there is KE (1/2mv2) at the top? How do we know there is PE (mgh) at the top?

How do we know that there is only KE at the bottom?

**Look at least at the first two example problems:**

**Example 1** - An 890 kg cart rolling 6.2 m/s along a level surface hits a 3.6 m long puddle that exerts 3200 N of average retarding force. What is the cart’s velocity after this?



Fd + mgh + 1/2mv2 = Fd + mgh + 1/2mv2

**Example 2** - A 350 kg cart is going 4.6 m/s. For what distance must a person exert a forward force of 53 N so that when the cart gets to the top of a 1.8 m tall hill it is going 2.4 m/s?



Fd + mgh + 1/2mv2 = Fd + mgh + 1/2mv2