Today we learn about… _____!

In its various forms and interactions between types!

_____ is defined as the ability to do _____!

- Energy comes in various forms…
- Some is being used immediately, some is stored.
- Stored energy is called Potential Energy, as it has the potential to do work at a later time.
- There are many types of P.E. The most common three are called:
- _____P.E. which is energy stored in chemical bonds. e.g. ATP, ADP bond energies, exothermic/endothermic
- _____P.E. which is energy stored in the form of mass.
- _____P.E. which is energy stored in height.

When we say P.E. in this class, we mean Gravitational P.E.

The factors involved are the Weight (m x g) and Height

The formula is then: $P.E. = mgh$

Unit would be Nm or J (Same as Work!)

A 8.732 kg bowling ball is on a 1.23 m table. How much work would be done on your foot if it fell?

PE = mgh

How fast was the ball traveling when it crushed your foot? To measure that we need to know about immediate energy!

Energy of _____ is one type of immediate energy called: _____Energy!

This is concerned with motion, so the factors involved here will be... Velocity and Mass

The formula becomes:

- $K.E. = mv^2 / 2$
- When the ball falls,the NRG doesn't disappear, it changes to another form!
- This happens with all energy forms!

So when the ball falls...

- What happens to the amount of height it has?
- The amount of PE?
- What happens to its velocity?
- So what happens to its KE?
- We lose PE and gain an equal amount of KE in its place!
- We get the all important equation:

$$\Delta KE = \Delta PE = \Delta W$$

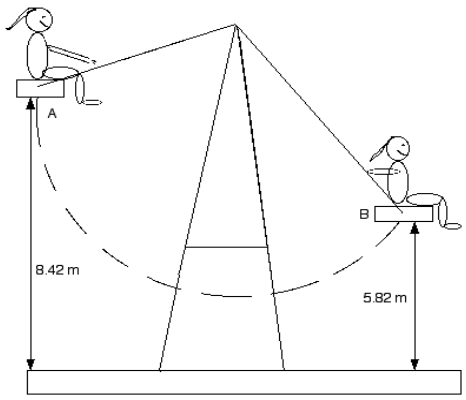
- Remembering…We had a 8.732 kg bowling ball on a 1.23m table. If it falls on your foot, the PE turned to KE, so PE lost = KE gained or $mgh = mv^2/2$

Marc's 742 kg car was going 14.4 m/s down the street when it runs out of gas. How much energy does his car still have? How far up a hill can he coast?

We know: 742 kg = Mass 14.4 m/s =Velocity

Height = ? Energy type = Kinetic!

Maxinne swings her 42 kg mass from point A to point B. How fast is her swing moving there?



•Which height would we use?

•Neither!

•It's the LOSS of height that results in a gain of speed!

Here she didn't lose all of it, just 8.42 - 5.82 =

2.6 m lower.

That would make us how much faster?

How much work was needed to get her to point A in the first place?

- The work turned into PE, so 42(9.81) 8.42 = _____ J