

Dec 13 - CP

CLT Describe conservation of energy in terms of Potential Energy and Kinetic Energy

Test Thursday or Friday

Warm up

An 8 kg Bowling Ball is rolling at 7m toward a hill. If no friction, how high will the ball go up the hill?



$$PE_1 + KE_1 = PE_2 + KE_2$$

$$\frac{1}{2}mv^2 = mgh$$

$$\frac{1}{2}(8kg)\left(\frac{7m}{s}\right)^2 = mgh$$

$$\frac{196 kg m^2 s^{-2}}{8kg(9.8 m) s^2} = h = \frac{196}{8 \cdot 9.8} = 2.5 m$$

$W = F \cdot d$  (Nm or Joules)

Power =  $\frac{\text{work}}{\text{time}}$   $\frac{\text{Joules}}{\text{sec}} = \text{watt}$

Momentum  $p = mv$

$$m_1v_1 + m_2v_1 = m_1v_2 + m_2v_2$$

$$m_1v_1 + m_2v_1 = (m_1 + m_2)v_2$$

Velocity  
Boy + Girl

Collisions Elastic + inelastic  
Recall (shooting a gun)

$$m_1v_1 + m_2v_2 = 0$$

$$m_1v_1 = -m_2v_2$$

PE  $mgh$   
KE  $\frac{1}{2}mv^2$

$$PE_1 + KE_1 = PE_2 + KE_2$$

Conservation of Energy

Pendulums

what affects the period?  
(length)

$$T = 2\pi \sqrt{\frac{L}{g}}$$

