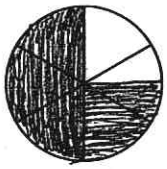
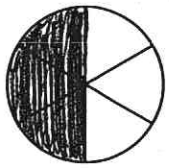
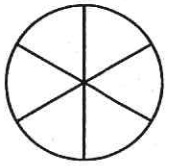
STANDARD: HS.P.E.38_____ HS.P.E.45_____ HS.P.E.46_____ Thursday

Name: Answer Key Period: _____ Date: 2-9-12

HS.P.E.**38-45-46** Assessment

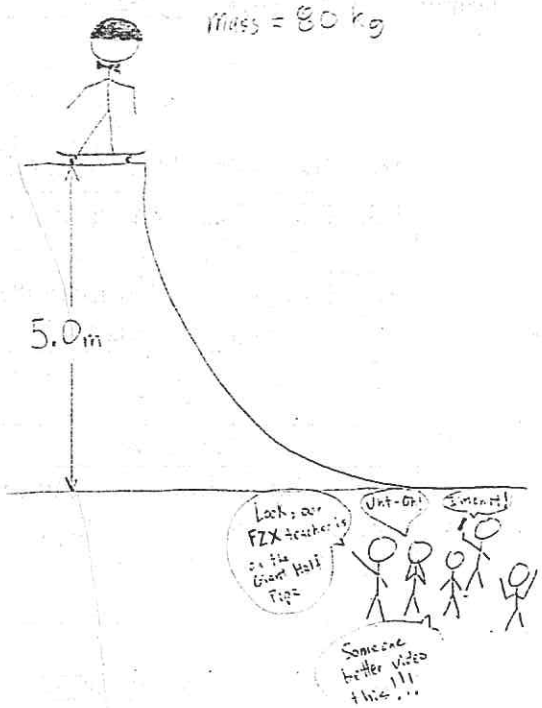
U_g = Gravitational Potential Energy **U_s** = Elastic Potential Energy **KE** = Kinetic Energy

HS.P.E.38	I can use words, diagrams, pie charts, and bar graphs to represent the way the type and total amount of energy in a system changes (or doesn't change).	
HS.P.E.46	I can identify multiple snapshots (states) to analyze the energy for a system in a given situation	

HS.P.E.46 In each box below, calculate the missing values for U_g, K.E., and Total Energy.		HS.P.E.38 For each position of the diver, draw a pie chart that represents the amounts & types of energies at each position.
1 U_g = 40,000 J K.E.= 0 J Total Energy= 40,000 J		■ = U_g □ = KE 100%  0%
2 U_g = 30,000J *K.E.= 10,000 J Total Energy= 40,000J		75%  25%
3 *U_g = 20,000 J K.E.= 20,000J Total Energy= 40,000J		50%  50%
4 U_g = 10,000J K.E.= 30,000 J Total Energy= 40,000J		25%  75%
5 *U_g = 0 J K.E.= 40,000J Total Energy= 40,000J		0%  100%

HS.P.E.45	I can use the conservation of energy to solve problems.	

SHOW ALL WORK & Use the diagram of a physics on a skateboard ramp answer the following questions:



a. What is the U_g of the physics teacher at the top of the ramp?

$U_g = mgh$

$U_g = (80kg)(9.8\frac{m}{s^2})(5m)$

$U_g = 3920J$

$U_g = ?\ J$

$m = 80kg$

$g = 9.8\frac{m}{s^2}$ [or $10\frac{m}{s^2}$]

$h = 5m$

b. What is the KE of the physics teacher at the top of the ramp?

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

$KE = \frac{1}{2}(80kg)(0\frac{m}{s^2})$

$KE = 0\ J$

$KE = ?$

$m = 80kg$

$V = 0\frac{m}{s}$

c. What will be the U_g of the physics teacher when he gets to the **bottom** of the ramp?

$U_g = mgh$

$U_g = ?$

$m = 80kg$

$g = 9.8\frac{m}{s^2}$

$h = 0m$

$U_g = mgh$

$U_g = (80kg)(9.8\frac{m}{s^2})(0m)$

$U_g = 0\ J$

d. What will be the KE of the physics teacher when he gets to the **bottom** of the ramp?

$KE_{Bottom} = U_{g\,TOP} = 3920\ J$

e. What will be the **velocity** of the physics teacher when he gets to the bottom of the ramp?

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

$KE = 3920\ J$

$m = 80kg$

$V = ?\ \frac{m}{s}$

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

$3920\ J = \frac{1}{2}(80kg)(v^2)$

$\frac{3920\ J}{40} = \frac{40v^2}{40}$

$\sqrt{v^2} = \sqrt{98}$

$V = 9.899\frac{m}{s}$ or $9.9\frac{m}{s}$