Name _____
Period __ **Date** _____

UNIT VI Energy: Worksheet 1 Pie Charts

Use pie charts to analyze the energy changes in each situation given.

- Designate your choice of system both with a dotted line and with words. Choose your system so that the energies involved are <u>internal</u> (within the system).
- Carefully label the pies to correspond with the positions of the objects given. (A, B, C, etc.)
- The pies should be accurately divided and labeled with the energy storage mechanisms involved.
- Neglect air resistance.
- Fill in the blanks for each energy storage mechanism with either constant, increasing, decreasing, or none.

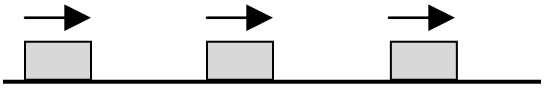
1. A wind-up Bunny is fully wound and at rest.

System = _____

E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

2. A box slides across a frictionless floor with constant velocity.

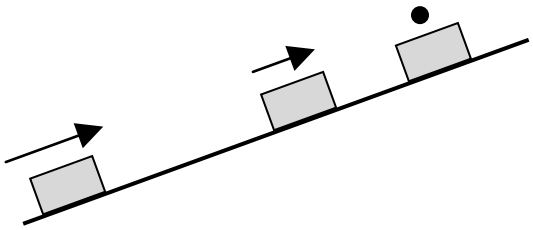
System = _____



E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

3. A box slides to a stop up a frictionless incline.

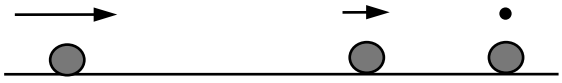
System = _____



E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

4. A ball rolls to a stop on the floor.

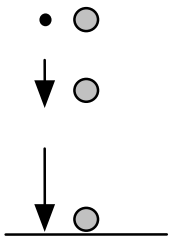
System = _____



E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

5. A ball is held above the ground, and then is dropped so it falls straight down. (Restrict your analysis from just after the ball is dropped to just before it hits the ground.)

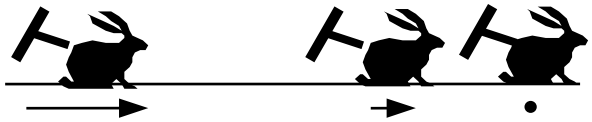
System = _____



E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

6. A wind-up Bunny is wound up, then "walks" across a table and comes to a stop.

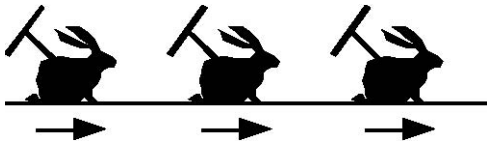
System = _____



E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

7. The Bunny is wound up and moving along at a constant speed.

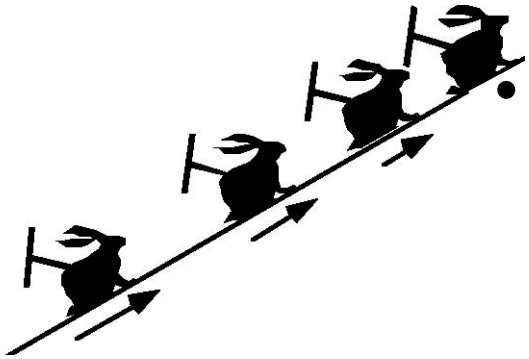
System = _____



E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

8. The Bunny is wound up and slowing to a stop as it moves up an incline.

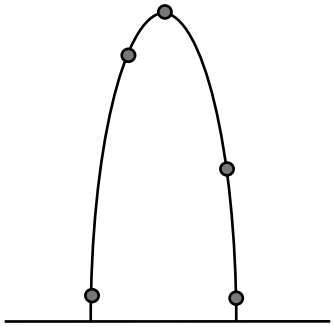
System = _____



E_k = _____
E_g = _____
E_e = _____
E_{diss} = _____

9. A baseball is thrown straight up in the air and then falls straight back down. Place velocity vectors beside each corresponding baseball in the drawing, and do a pie for each position.

System = _____



E_k = _____

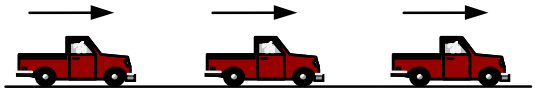
E_g = _____

E_e = _____

E_{diss} = _____

10. A truck is driven down the street at constant velocity.

System = _____



E_k = _____

E_g = _____

E_e = _____

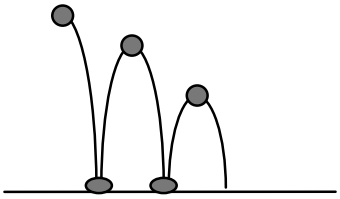
E_{diss} = _____

E_{gas} = _____

11. A superball is dropped vertically and bounces straight up and down. Do a pie chart for each position of the ball shown.

System = _____

$\vec{v} = 0$ at top and at bottom



Notice that the super ball is squished at the bottom

E_k = _____

E_g = _____

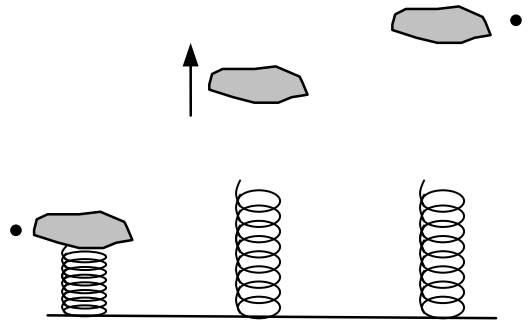
E_e = _____

E_{diss} = _____

Why does the ball not bounce as high each time? Where did the energy "go"?

12. An object rests on a coiled spring, and is then launched upwards. Assume an ideal spring.

System = _____



E_k = _____

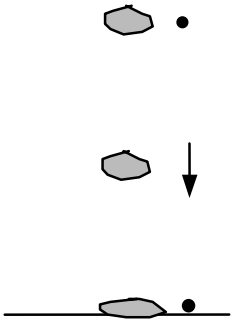
E_g = _____

E_e = _____

E_{diss} = _____

13. A piece of clay is dropped to the floor.

System = _____



E_k = _____

E_g = _____

E_e = _____

E_{diss} = _____

14. Create your own, school appropriate, situation. Draw a diagram with at least three positions and put velocity arrows or dots for each position.

System = _____

E_k = _____

E_g = _____

E_e = _____

E_{diss} = _____