

Energy

Name _____

Concept:

- 1) What type of energy involves motion?
- 2) What is the equation for that type of energy?
- 3) In order to double your speed how much energy will you need?
- 4) In order to triple your speed how much energy will you need?
- 5) What type of energy requires height in relation to the earth?
- 6) What is the equation for this type of energy?
- 7) How much energy is needed to double the height?
- 8) How much energy is needed to triple the height?
- 9) Are there any other types of energy? What are they?
- 10) How is work and energy related?
- 11) Is work equal to the energy or the change in energy?
- 12) What does it mean to say that energy is conserved?
- 13) What is the unit for energy?

Exercises:

- 14) Mass = 1000kg, Velocity = 40 m/s. Find the Kinetic energy.
- 15) Mass = 50 kg, KE = 8000 J. Find the velocity.

- 16) $KE = 6 \text{ KJ}$, velocity = 10 m/s. Find the mass.
- 17) Height = 50 m, mass = 40 kg Find the Potential Energy due to gravity.
- 18) mass = 100 kg, the Potential Energy due to gravity = 6000 J. Find the height.

Problems:

- 19) You drop a 50 kg rock from the height of 6.0 meters. What was the Kinetic Energy of the Rock initially and just before it hit the ground? What was the Potential Energy of the rock initially and as it hit the ground? What was the final velocity of the rock?
- 20) You set off some fireworks for the Fourth of July. If the fireworks have an initial velocity of 23 m/s, how high will it go?
- 21) What is the potential energy of a penny (4.3 grams) at the top of the Empire State Building in New York City (Height = 323.0 m). What is the pennies Kinetic Energy just as it hits the ground? How fast will it be going as it hits the ground? (assume no air resistance)
- 22) You throw a ball straight up into the air. If the ball (mass = .275 kg) goes to a height of 38.0 meters. How much Potential Energy does the ball have at it's maximum height. How much Kinetic Energy did you use in throwing the ball and what velocity was the ball going as you caught it? (assume no air resistance)
- 23) A roller coaster starts from a height of 47 m. and ends at a height of 2.0 m. What is the speed of the rider's at the bottom of their ride?