Name:_____

Potential vs. Kinetic Energy

Directions: Determine the best match between basic types of energy and the description provided. Put the correct letter in the blank.

_____1. A skier at the top of the mountain

_____2. Gasoline in a storage tank

_____3. A race-car traveling at its maximum speed

_____4. Water flowing from a waterfall before it hits the pond below

_____5. A spring in a pinball machine before it is released

_____6. Burning a match

_____7. A running refrigerator motor

(a) Kinetic Energy

(b) Potential Energy

(c) Both forms of Energy

Definitions of Energy.

Directions: Write down the definition for each of the following terms after reading the article.

ENERGY:

KINETIC ENERGY:

POTENTIAL ENERGY:

Directions: Determine the type of energy for each form (Kinetic, Potential, or Both) and give an example.

Form	Definition	Type (KE, PE, or Both)	Example (for each type if both)
Mechanical (motion) energy	An object's movement creates energy		
Thermal (heat) energy	The vibration and movement of molecules		
Radiant energy	Electromagnetic waves		
Electrical energy	Movement of electrons		
Chemical energy	Stored in bonds of atoms and molecules		
Nuclear energy	Stored in the nucleus of an atom; released when nucleus splits or combines		
Sound energy	Vibration of waves through material		
Gravitational energy	Energy of position or height		

Name:_____

Kinetic and Potential Energy Calculations

1. If we know the total energy in a system is 30 J, and we know the PE is 20 J. What is the KE?_____

Circle the one with more Potential energy and briefly explain why.

2. A 25 kg mass or a 30 kg mass at the top of a hill?
3. A car at the top of the hill or the bottom of a hill?
4. A plane on the ground or a plane in the air?
5. A full plane or an empty plane (both are flying)?

Circle the one with more Kinetic energy and briefly explain why.

6. A 25 kg mass or a 30 kg mass going 5 m/s.
7. Two 10 kg masses, one going 75 m/s, one going 45 m/s.
8. A car at rest or a car rolling down a hill.
9. A heavy bike or a light bike.

For the following questions……..PE or KE?

____ A car is traveling 45 mph.
____ A rock is on a ledge 5 meters high.
____ A car is resting at the top of a hill.
____ A ball is thrown into the air and is still moving.
____ A ball rolling on the ground.

Calculations (Use your formulas and show ALL of your work)

1. A 4 kg rock is rolling 10 m/s. Find its kinetic energy.

2. A 8 kg cat is running 4 m/s. How much kinetic energy does it have?

3. A 4 kg bird is flying with a velocity of 4 m/s . What is its kinetic energy?

4. Find the work done by a 25 N force applied for 6 meters.

5. Calculate the potential energy of a 5 kg object sitting on a 3 m ledge

6. A rock is at the top of a 20 meter tall hill. The rock has a mass of 10 kg. How much potential energy does it have?

7. CHALLENGE QUESTION: How high up is a 3 kg object that has 300 joules of energy?

8. CHALLENGE QUESTION: A rolling ball has 18 joules of kinetic energy and is rolling 3 m/s. Find its mass.