Name:

Physics 11
M. Lam

Kinetic Energy and Potential Energy

Block:

1. A 60.0 kg boy is skating with a speed of 4.0 m/s. What is his kinetic energy?

2. What is the potential energy of a 7.26 kg bowling ball lifted 85 cm above the ground?

3. A 15 g rock is 40 m above the ground and is falling at a speed of 24 m/s.
    a) What is the kinetic energy of the rock?
    b) What is the potential energy of the rock?

4. How much kinetic energy is required to accelerate a 1500 kg car from
    a) rest to a speed of 10 m/s?
    b) 10 m/s to 20 m/s?
    c) 20 m/s to 30 m/s?

5. Two objects are lifted to the same height h above the ground. Object A has a mass m and Object B has a mass $4m$.
    a) Compare the potential energy of Object A to the potential energy of object B.
    b) Suppose you wanted to lift one of the objects higher so they would both have the same potential energy. Which object would you lift higher and how much higher would you lift it?

6. Ryan and Alex have the same mass. Ryan is running at twice the speed of Alex. How does Ryan's kinetic energy compare to Alex's?

7. A 10.0 kg watermelon is thrown vertically upwards with an initial velocity of 7.0 m/s.
    a) What is the initial kinetic energy of the watermelon?
    b) Use kinematics to determine the maximum height the watermelon reaches.
    c) What is the potential energy of the watermelon at its peak? Compare this to the initial kinetic energy.