Projectile Energy Group Problems

1. Assume mechanical energy is conserved. A 13 kg projectile is dropped from rest at a height 49 meters on a planet where g = 12 m/s/s. What is the impact speed of the projectile in m/s?

2. Assume mechanical energy is conserved. A projectile is launched at an unknown upward angle at 36 m/s from a cliff at height 80 meters on a planet where g = 16 m/s/s. What is the impact speed of the projectile in m/s?

3. Assume mechanical energy is conserved. A projectile is launched upward from a spring. The energy stored within the spring was initially 2000 Joules and its kinetic energy at height 3 meters is 40 Joules. What is the projectile's mass in kg? g = 9 m/s/s

4. Assume mechanical energy is conserved. A projectile is launched at an unknown angle from the top of a cliff at height 12 meters. The object has 18 Joules of kinetic energy at launch and 200 Joules of kinetic energy just before it impacts the ground at height 0 meters. What is the mass of the projectile in kg? g = 8 m/s/s

5. Assume mechanical energy is conserved. A 13 kg projectile is launched at an unknown angle from the bottom of a cliff. The object has 1870 Joules of kinetic energy at launch and 45 Joules of kinetic energy just before it impacts the top of the cliff. What is the height of the cliff top in meters? g = 10 m/s/s

6. Assume mechanical energy is conserved. A 21 kg mass is dropped from rest at a height of 78 meters on a planet where g = 7 m/s/s. What is the impact speed of the projectile in m/s?