**Define the following terms:**

1. Work
2. Kinetic Energy
3. Gravitational Potential Energy
4. Elastic Potential Energy
5. Spring Constant
6. Mechanical Energy
7. Power
8. the ability to do work
9. energy an object has from motion
10. energy an object has from its gravitational position
11. energy an object has from its elastic deformation
12. value of resistance for a spring to be deformed
13. sum of all kinetic and potential energy
14. rate at which energy is transformed

**Multiple Choice**

1. In which of the following sentences is work used in the scientific sense of the word?
   1. Holding a container requires a lot of work.
   2. A student works hard to complete the lab.
   3. Ben pushed but could not do work on the car.
   4. Allie learned that shoveling snow is hard work.
2. A force does work on an object if a component of the force is \_\_\_\_\_\_\_ to the displacement of the object.
   1. perpendicular
   2. parallel
   3. only in the same direction
   4. in the opposite direction only .
3. In which of the following scenarios is no net work done?
   1. A ball accelerates down a hill.
   2. A ball rolls horizontally at a constant speed.
   3. A ball falls onto a flat road.
   4. A ball decelerates as it travels up a hill.
4. Which of the following energy forms is not involved in dribbling a basketball?
   1. kinetic energy
   2. gravitational potential energy
   3. chemical potential energy
   4. elastic potential energy
5. Which of the following equations expresses the work-kinetic energy theorem?
   1. MEi = MEf
   2. W = ΔKE
   3. Wnet = PE
   4. Wnet = ΔKE
6. Gravitational potential energy is always measured in relation to
   1. kinetic energy.
   2. total potential energy.
   3. mechanical energy.
   4. a zero level.
7. Friction converts kinetic energy to
   1. mechanical energy.
   2. nonmechanical energy.
   3. potential energy.
   4. total energy.
8. Friction does 400 J of net work on a moving car. How does this affect the kinetic energy of the car?
   1. The kinetic energy increases by 400 J.
   2. The kinetic energy decreases by 400 J.
   3. The kinetic energy decreases by 160 kJ.
   4. The kinetic energy does not change.
9. Which of the following is not a form of ME?
   1. KE
   2. chemical PE
   3. gravitational PE
   4. elastic PE
10. An egg suspended above the ground has 4.0 J of gravitational PE. The egg is then dropped and falls to the ground. What is the KE of the egg just as it reaches the ground?
    1. 4.0 J
    2. -4.0 J
    3. 0 J
    4. 16 J

**Short Answer:**

1. List two examples of Mechanical and Nonmechanical Energy:
2. Label the energy in the following situations; include more than one if necessary.
   1. a bicycle coasting along a level road
   2. bungee jumper waiting to take their leap
   3. bow prepared to release the arrow

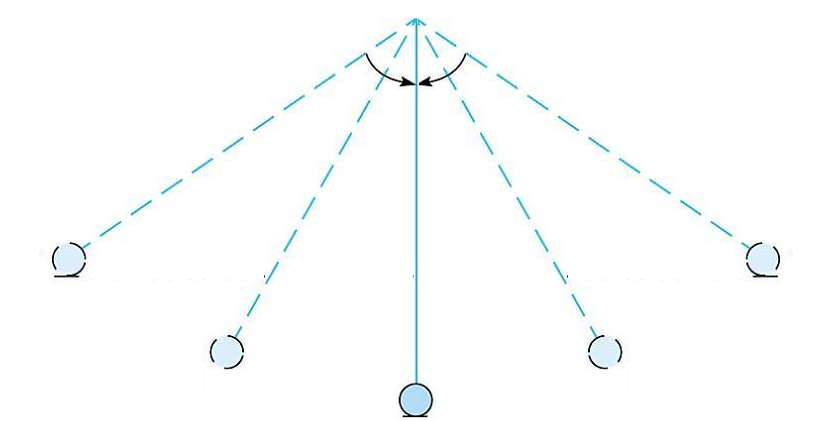
Explain the conservation on Mechanical Energy:

**Fill in the blank:**

1. Kinetic Energy
2. Potential Energy
3. Motion
4. Position
5. Transferred
6. Work
7. Destroyed
8. Displacement
9. Equilibrium
10. Energy includes \_\_\_\_\_\_\_\_\_ which is associated with\_\_\_\_\_\_\_\_\_. Energy also includes \_\_\_\_\_\_\_\_\_which is the energy of \_\_\_\_\_\_\_\_\_. It can be \_\_\_\_\_\_\_\_\_but never created or \_\_\_\_\_\_\_\_\_. Energy has the ability to do \_\_\_\_\_\_\_\_\_which measures force acting over a \_\_\_\_\_\_\_\_\_. Compressing a spring is a form of \_\_\_\_\_\_\_\_\_. If a spring is not stretched / compressed, then there is no Elastic PE stored in it. The spring is then in \_\_\_\_\_\_\_\_\_\_. A theorem in the chapter explains that the net work done on an object is equal to the change in \_\_\_\_\_\_\_\_\_\_\_ of the object.

**Consider the picture and label one location for each question below.**

1. KE is greatest
2. PE is greatest
3. Both KE and PE exist



**Answer 2 of the following problems on a separate sheet of paper:**

1. How much work is done on a bookshelf being pulled 5.00 m at an angle of 37.0° from the horizontal with a force of 43.0 N?
2. Harry jumped into the ocean from the ship, which was 120m above the water’s surface. Assuming he had a mass of 72.0kg, what was his speed at the moment he hit the water? Neglect the air resistance.
3. A 50.0 kg student climbs 5.00 m up a rope at a constant speed. The student’s power output is 200.0 W.
   1. How long does it take the student to climb the rope?
   2. How much work does the student do