Energy Transformation – worksheet

We learned that **Energy**
- can be either Potential Energy (PE) or Kinetic Energy (KE)
- is measured in Joules (J)
- comes in 7 forms:
  - Mechanical (from moving objects)
  - Chemical (chemical bonds in a substance)
  - Thermal (heat energy)
  - Electromagnetic (travels through space as waves)
  - Sound (travels through air or other matter as waves)
  - Nuclear (from nuclear reactions)
  - Electrical (electricity)

We also learned that energy can neither be created or destroyed – only transformed. This is the *Law of Conservation of Energy*. The amount of energy in the universe is constant.

Apply what you have learned to answer the following questions:

1. A moving object has
   - A. kinetic energy
   - B. potential energy
   - C. both kinetic and potential energy
   - D. neither kind of energy

2. The energy stored inside a battery is
   - A. kinetic energy
   - B. potential energy
   - C. both kinetic and potential energy
   - D. neither kind of energy

3. In the picture below, in which position does the ball have the greatest potential energy?

   ![Diagram](image)

   A. 1  B. 2  C. 3  D. 4
4. The purpose of a nuclear power plant is to transform nuclear energy into electricity. This is done in steps starting with a nuclear reaction which generates heat to produce steam. The steam in turn is used to turn a generator which finally produces electricity. Which answer best illustrates these energy transformation?
   A. nuclear → mechanical → chemical → electrical
   B. thermal → nuclear → mechanical → electrical
   C. mechanical → thermal → nuclear → electrical
   D. nuclear → thermal → mechanical → electrical

5. What energy transformation(s) take(s) place when you strike and light a match?
   A. chemical to nuclear energy
   B. mechanical to thermal energy
   C. chemical to thermal and electromagnetic energy
   D. electromagnetic to potential energy

6. PHOTOSYNTHESIS transforms electromagnetic energy from the Sun into
   A. mechanical energy
   B. thermal energy
   C. chemical energy
   D. electrical energy

7. Answering your cell phone transforms the chemical energy in its battery into
   A. electromagnetic (light) energy
   B. electrical energy
   C. sound energy
   D. all the above

8. Which of the pictures below illustrates the transformation of electrical to thermal energy?

   A. 
   B. 
   C. 
   D.