1. State the law of conservation of energy and explain how energy can be converted.

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2. Complete the following table.

Type of Energy	Potential Energy (E$_p$)	Kinetic Energy (E$_k$)
Formula	$E_p =$	$E_k =$
Definition of terms	m = g = h=	m = v =
Practice Problem	What is the potential energy of a 0.500kg baseball dropped from a height of 1.2 m?	Calculate the kinetic energy of a 25 kg go kart traveling at a speed of 20 m/s.
Calculations and ANSWER		

3. Complete the diagram of a pendulum below by specifying what type of energy is present at each position of the pendulum swing.

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2.

3.

4.

5.
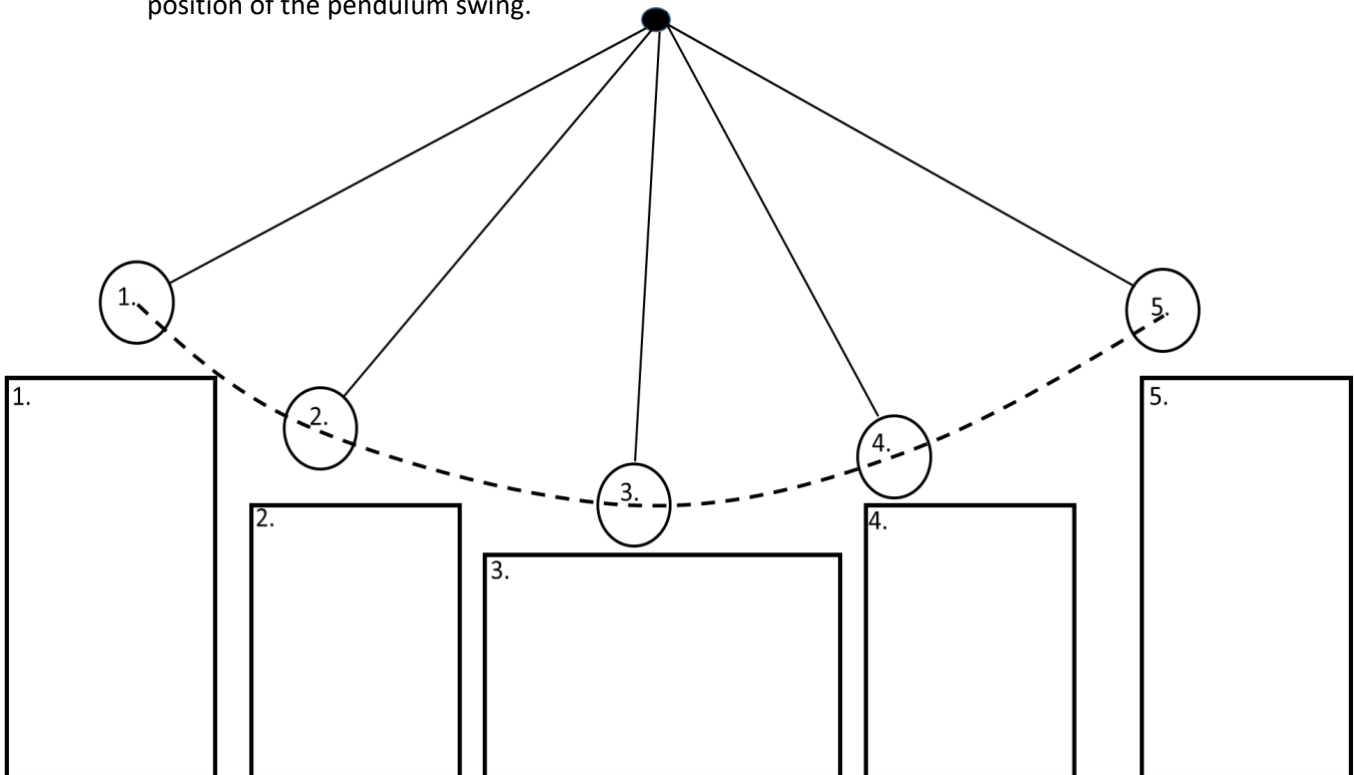
4. In any energy conversion energy is lost and the object will eventually stop. Explain how energy is lost by the pendulum as it swings. Types of energy loss?

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5. Calculate the potential energy of a 78 kg person standing on the 10th floor of an office building. **(HINT: 3 meters per floor)**

6. Calculate the kinetic energy of a 0.145 kg baseball thrown at a speed of 9.0 m/s.

7. Calculate the energy of a professional baseball player throwing a 0.1456 kg baseball at a speed of 45 m/s.

CHALLENGE QUESTIONS:

8. How high could a 78 kg pole vaulter running at a speed of 11.1 m/s launch himself if ALL his kinetic energy is converted in potential energy?

9. Explain why in reality not ALL kinetic energy would be converted into potential energy. Make sure to include the forms of energy that the "lost" kinetic energy is converted into.