

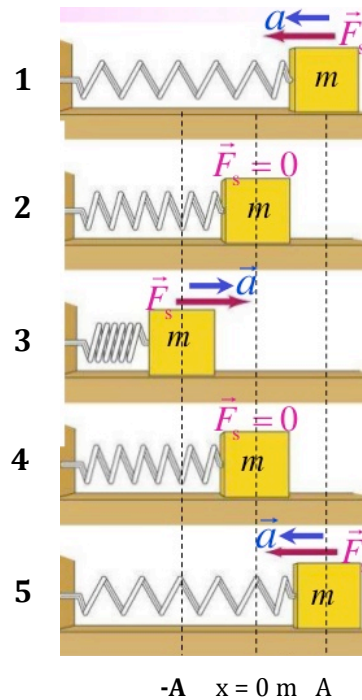
Name: _____

Class Period: _____

Honors Physics: SHM Energy of a Spring Homework

Conceptual Questions:

1. On the image provided to the right label frames 1 – 5 with the kind or kinds of energy represented.
2. What does it mean that energy is conserved?



Mathematical Questions

3. A massless spring is placed horizontally on a table with a 0.450 kg mass attached. The spring has a spring constant of $k = 29.4$ N/m. The spring is compressed by 0.180 m and then released, allowing the mass to oscillate back and forth.
 - A. What is the amplitude of the spring?
 - B. At what locations does the spring-mass system have only one type of energy? What energy does it have at these locations?
 - C. Using one of the locations from part B, find the maximum amount of energy in the spring mass system?
 - D. What is the velocity of the spring-mass system at $x = 0.100$ m?

***See Back for Final Question**

4. A 3.00 kg box begins from rest and is dropped from a height of 4.50 m onto a spring. The spring compresses 0.20 m upon impact, coming to rest at the bottom. Use conservation of energy to find the spring constant (k)