1. Potential energy results from an object’s \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_.

2. Does an unstretched rubber band or uncompressed spring have potential energy?

3. Objects that can be compressed or stretched and return to their original shape have what form of potential energy when compressed or stretched?

4. Where does the elastic potential energy in a stretched rubber band come from?

5. A roofing contractor is standing at the edge of a roof, carrying a package of shingles. Where did his gravitational potential energy come from?

6. Gravitational potential energy, like all forms of energy, is measured with what SI unit?

7. Gravitational potential energy (SI unit: j**oule**, symbol **J**) equals an object’s **weight** (SI unit **Newtons**; symbol **N**) times its **height** (SI unit: **meters**; symbol **m**) above the ground (or other surface). Imagine Wile E. Coyote carrying a big rock that weighs 1,000 Newtons to the top of a cliff that’s 100 meters high. He sets it on the edge of the cliff and waits to push it off, hoping to smash Roadrunner on the road down below. What is the gravitational potential energy of the rock as it sets on the edge of the cliff?

**Weight** of rock: \_\_\_\_\_ **N** \* **Height** of rock: \_\_\_\_\_\_\_ **m** = **Gravitational Potential Energy** \_\_\_ **J**

8. If Wile E. Coyote himself weighs 300 N, what is his Gravitational Potential Energy on that same cliff?

9. As usual, nothing goes right for poor old Wile E. Coyote. He pushes the rock off the cliff, and he falls off at the same time. Also, as usual, the laws of physical science aren’t obeyed in cartoons, so Wile E. Coyote hits the ground first, and the rock smashes him on the head. In the **REAL WORLD**, if the heavy rock and the not-so-heavy Coyote fell from the same height at the same time, and neither one had any air resistance on the way down, what would happen?

a. The heavier rock would hit the ground first.

b. The not-so-heavy coyote would hit the ground first.

c. Both would hit the ground at the same time.

10. Which would hit the ground with more ***force*** and make a deeper crater in the ground? Why? (Hint: look at your answers to questions 7 and 8).

a. Both would hit with the same force and make the same size crater in the ground.

b. The rock, because it had more gravitational potential energy when it fell, had more kinetic energy when it hit the ground.

c. The rock, because it weighs more and fell faster.