

## Practice Problem Set 2

Practice only - Not to be turned in for grades!

Partial credit may be given even if the final answer is incorrect so please show all work!

### Question 1 (1 point)

A ball is dropped from the top of a tower. It has no kinetic energy to start with. As it falls, its speed increases, and its kinetic energy grows. Since energy can never be created or destroyed, where is this energy coming from?

### Question 2 (3 points)

A cannon sits at the top of a 50 m high cliff and fires a cannonball into the air over the cliff edge at an angle of 30 degrees above the horizontal. The initial velocity of the ball is 20 m/s.

WITHOUT USING ENERGY solve the following question: just before the ball hits the ground below the cliff what is its speed?

### Question 3 (3 points)

The same as question 3 but now do use energy to solve the problem. Which method is simpler?

### Question 4 (3 points)

A 12 kg block is placed on top of a spring, and the spring is compressed by 15 cm. What is the spring constant of the spring? How much energy is stored in the spring when it is compressed?