

POTENTIAL & KINETIC ENERGY WS 2

Name _____

1. A ball with a mass of 10.0kg is lifted to a height of 2.00m above the ground. The ball is then allowed to fall to the ground. Disregard any friction force while answering these questions.

A) Calculate the **potential energy** of the ball when raised to 2.00m above the ground.

B) How much **kinetic energy** does the ball have when held 2.00m above the ground.

C) How much **kinetic energy** does the ball have just when it reaches the ground?
How do you know?

D) Calculate the velocity of the ball just when it reaches the ground.

2. A ball is raised to a height of 30.0m above the ground. What would its velocity be when it has fallen to a height of 15.0m above the ground. ***You must solve this as a conservation of energy problem, and can do it in one step!***

3. A ball with a mass of 5.00kg is put at the top of the ramp shown below, which is 3.00m high. Again, disregard any frictional force.

$$m = 5.00\text{kg}$$

$$h = 3.00\text{m}$$

- A) Calculate the **potential energy** the ball has at the top of the ramp.
- B) If the ball fell from the top, straight down the right side, what would its **kinetic energy** be the instant it reaches the ground? How do you know?
- C) How much **potential energy** would the ball have at the ground after falling in Ques. 3B? How do you know?
- D) If the ball rolled down the ramp on the left above, how much **potential energy** would it have at the bottom of the ramp? How do you know?
- E) How much **kinetic energy** would the ball have at the bottom of the ramp after rolling down it? How do you know?
- F) How do your answers to Ques. 3B and 3E compare to each other? Why is this so?