

Wednesday Feb. 15, 2006

In Lecture quiz #4, Physics 131

Name: \_\_\_\_\_

A projectile sits on a launch pad, on top of an explosive charge which explodes at time  $t=0$ . The projectile goes straight up 100 m, and falls back to earth, landing on a spring. It compresses the spring and comes to rest. Circle the right answers.

1. The work done on the projectile by the explosive charge is [(a) *less than* (b) *equal to* (c) *greater than*] zero.
2. The work done on the projectile by the earth's gravity is [(a) *less than* (b) *equal to* (c) *greater than*] zero.
3. The work done on the projectile by the spring is [(a) *less than* (b) *equal to* (c) *greater than*] zero.

**Answers**

1. (c) greater than 0. The force is upwards and the motion is upwards.
2. (b) equal to 0. The force is always downwards. The motion is equal parts up and down.
3. (a) less than 0. The force is upwards and the motion is downwards.

**Remember:**  $W = \text{force} \times \text{distance component in the direction of the force}$   
(or  $\text{distance} \times \text{force component in the direction of the displacement.}$ )