Conservation of Energy 3

1. You hold a ball of clay above a table and then drop it. It splats on the table without bouncing. What happened to the potential energy the ball had while you were holding it?

- 2. You are carrying a heavy bag of lime with a constant speed at a constant height. You get very tired, yet you are doing essentially no work on the bag. How can this be so?
- 3. What is meant by the term "potential energy?" Why do some forces have a potential energy associated with them, e.g. gravity, and others do not, e.g. friction?

- 4. Starting from rest, a skier slides down a 1000 m long hill that has a constant base angle of 15°. The coefficient of friction between the skier and the snow is 0.2. At the bottom of the hill, the ground is level, and the skier slows to a stop in a distance d. a. At the bottom of the hill, how fast is the skier going?

b. What is the distance d?

ABRHS PHYSICS

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5. A mass is released from a height H on an inclined plane with base angle 50° and coefficient of friction of 0.25. The mass slides down the incline, and then onto a flat frictionless track with a loop-the-loop of radius 15 cm. What must be the minimum height H so that the mass just barely makes the loop-the-loop? (Assume the mass is much smaller than the radius of the loop.)



6. A 50 gram mass is attached to a spring. The spring is compressed 9 cm. The mass and spring are on a horizontal table, and there is a coefficient of friction of 0.3 between the mass and the table. The spring is released, and the mass slides a total of 24 cm before stopping. What was the spring constant of the spring?



Answers: 4. a) 36.2 m/s b) 328 m 5) 0.4	'8 m 6) 8.9 N/m
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