

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

## Physics 201 Quiz 6

Feb 18, 2013

### Word Problems

Show all your work and circle your final answer. (Ten points each.)

1. Starting with an initial speed of  $5.00 \text{ m/s}$  at a height of  $0.300 \text{ m}$ , a  $1.50\text{-kg}$  ball swings downward and strikes a  $4.60\text{-kg}$  ball that is at rest, as the drawing shows. (a) Using the principle of conservation of mechanical energy, find the speed of the  $1.50\text{-kg}$  ball just before impact. (b) Assuming that the collision is elastic, find the velocities (magnitude and direction) of both balls just after the collision. (c) How high does each ball swing after the collision, ignoring air resistance?

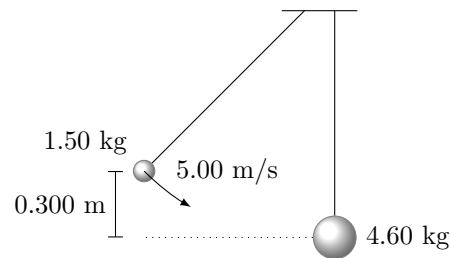


Figure 1: Problem 7.39

- 2.** A 6000-kilogram truck traveling north at 5.0 m/s collides with a 4000-kilogram truck moving west at 15 m/s. If the two trucks remain locked together after impact, with what speed and in what direction do they move immediately after the collision?