

Phys 10154 - Fall 2006 - Exam #6A

Be sure to answer with the proper units and significant figures. Indicate your answers clearly with boxes. **SHOW ALL WORK.** Even if your answer is correct, I will deduct points if I can't see how you solved the problem. Both problems are worth 50 points.

1. Car A (1500-kg) is moving South at 43 m/s, and car B (2200-kg) is moving in a direction 34° North of East at 17 m/s. The cars collide and car A moves off in a direction 22° South of East at a speed of 23 m/s.

What is the magnitude and direction of the velocity of car B after the collision?

How much kinetic energy is lost in the collision?

2. A 2.80-kg block slides across a frictionless table with a speed of 4.50 m/s. It collides elastically with a 6.40-kg block initially at rest. The 6.40-kg block is connected to a massless vertical string, and so it acts like the weight on the end of a pendulum, as shown in the diagram below.

To what maximum height, h , does the 6.40-kg block rise after the collision?

