Physics

Sem Exam - Problem Review

1. A ski jumper has a speed of 11.5mph as she starts down the ramp in the diagram at right. Find the **maximum height** she will attain during the jump.

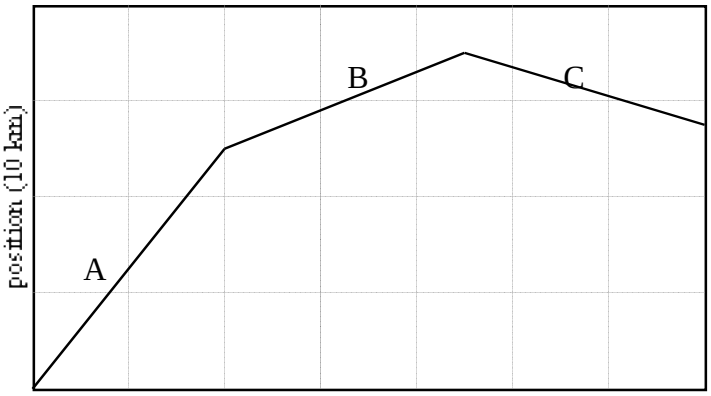
2. Two bumper cars weighing 100lb and 80lb collide head-on with speeds of 12mph and 16mph. Find their speeds directly after they collide.

3. A 2.0 kg cannon ball is launched from a cliff side at an angle of 10° above the horizontal with a initial speed of 100 mph. Find the range of the shot if the cliff is 45.0 ft above the ground (Hint: you can check your answer with your Projectile Spreadsheet.

4. At what value <u>above the Earth's surface</u> would the value of **g** be one half that at the surface?

5. Travelling at 16.1m/s the driver of an automobile suddenly slams on the brakes amd locks the wheels. If the coefficient of friciton between the tires and the road is 0.88 how far does the car skid before coming to a halt? [HINT: remember *physics is fun*]

6. A bus makes a trip according to the position-time graph below. What is the average velocity of the bus on each interval? Where does the bus have maximum speed? Where is the bus accelerating? What is the acceleration? Draw a velocity vs. time graph to correspond with this graph.



7. In the picture at right, M_1 = 660 g and M_2 = 300 g. Ignoring friction, find the acceleration of the system.