

PHYS-2010: General Physics 1
Dr. Luttermoser's Classes
Sample Problems for Exam 1

1. An object is dropped from rest at a certain height. When it is 42.6 m above the ground, it is traveling at 22.4 m/s downward. (a) How fast is the object moving when it hits the ground? (b) What was its height when it was dropped? (c) How long was it in the air before it hit the ground?

2. A ball is throw horizontally off of the top of a 122 m tall building. It hits a second building a horizontal distance of 214 m from where the ball was thrown at a height of 96.2 m above the ground. (a) How long in time did it take for the ball to travel this distance? (b) How fast was the ball thrown?

3. A plane is traveling horizontally at a constant speed of 56.7 m/s . It drops a package which lands 612 m “downstream” from where it was dropped. (a) How long did it take to reach the ground? (b) How high is the plane? (c) At what speed does the package hit the ground?

4. A block hangs motionless from two ropes as shown in the diagram below. The tension on rope 1 is 212 N. The angles the ropes make with the ceiling are $\theta_1 = 43.8^\circ$ and $\theta_2 = 36.8^\circ$. (a) What is the tension on rope 2? (b) What is the weight of the block? (c) What is the mass of the block? (Show all work including a free-body diagram!)

