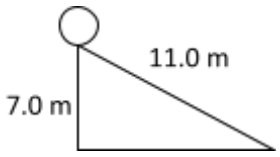
Name: _____ Physics 11

Problem Set 3.7
Heat

1. How much heat is needed to raise the temperature of 462 g of water from 24.0 ^{o}C to 80.0 ^{o}C?

2. How much heat is required to raise the temperature of 462 g of copper from 24.0 ^{o}C to 80.0 ^{o}C?

3. A 3.0 kg ball rolls down from the top of a ramp as shown. If the ball is moving at 10.0 m/s at the bottom, how much energy was lost due to friction (thermal energy)?



4. A 1.00 g raindrop traveling at 40.0 m/s strikes the surface of 100 g of water in a glass. How much will the water's temperature change if we assume that:
   i) all of the raindrop's kinetic energy is transformed into thermal energy, and
   ii) the raindrop and the glass of water's temperatures are initially the same

5. **A 0.240 kg chunk of carbon is heated to 215 ^{o}C and quickly placed into 0.275 kg of water that has a temperature of 12 ^{o}C. What will the final temperature of the water be?**

Answers: 1) 108 kJ 2) 10.1 kJ 3) 56 J 4) 0.0019 °C or K 5) 39 °C or K