

## Chapter 3 HW

Review Questions: 3, 11, 12, 18, 24

Exercises: 1, 4, 24, 27, 44

Problems: 3, 9, 11

Additional:

A. Krystina (34 kg) climbs a 12-foot ladder.

- a) What is the potential energy of Krystina when she is standing at the top?
- b) How much work was done to climb the ladder?
- c) If it took 3 seconds to climb to the top, how much power was required?
- d) When Krystina falls off the ladder, what amount of kinetic energy does she have 10% of the way down?
- e) How much work will Krystina do on the head of her 5 foot mom who standing next to the ladder?

B. A utility bill shows that you used 720 kWh last month. How many Joules were used? Are you being billed for power or energy?

C. Why might a wine glass survive a fall onto a carpeted floor but not onto a concrete floor?

D. Two skiers go to the top of a 50 meter high mountain. David takes the steep route while Teresa takes the less steep route. If both skiers have the same mass and energy is conserved, who will reach the bottom first? How fast will David be traveling? How fast will Teresa be traveling?

**Bonus (4 Points possible):** What will change if David has twice the mass Teresa has? Why?