Names:

Group #: \_\_\_\_\_

1. A woman has a farm that is adjacent to a river. Suppose she wants to build a rectangular pen for her cows with 900 feet of fencing. If one side of the pen is the river (her cows will not swim away), what is the area of the largest pen she can build?

2. A rectangular plot of land is to be fenced in using two types of fencing. Two opposite sides will use heavy-duty fencing selling for \$3 a foot. The two remaining sides will use standard fencing selling for \$2 a foot. How much of the heavy-duty and standard fencing should be used so that the greatest area can be fenced in at a cost of \$6,000?

3. A box with an open top is to be constructed from a 10 inch by 16 inch piece of cardboard by cutting squares of equal sides length from the corners and folding up the sides. Find the dimensions of the box of largest volume that can be constructed.