

This Worksheet will be collected at the end of your recitation section on **Thursday, November 10th**.

4.7. Applied Optimization

1. A cable is to be run from a power plant on one side of a river 900 meters wide to a factory on the other side, 3000 meters downstream. The cost of running the cable under the water is \$ 5 per meter, while the cost over land is \$ 4 per meter. What is the most economical route over which to run the cable?

2. A rectangular storage container with an open top is to have a volume of 40 m^3 . The length of its base is twice the width. Material for the base costs \$15 per square meter. Material for the sides costs \$4 per square meter. Find the cost of the materials for the cheapest such container.

3. During the summer months, Terry makes and sells necklaces on the beach. Last summer, he sold the necklaces for \$10 each and his sales averaged 20 per day. When he increased the price by \$1, he found that the average decreased by two sales per day.

a) Find the demand function, assuming that it is linear. That is, find a linear function $p(x)$ that describes the price per necklace as a function of average daily sales x .

b) If the material for each necklace costs Terry \$6, what should the selling price be to maximize his profit?

Questionnaire:

Below are a few questions which are completely optional, and are meant to benefit you. Please only fill out what you feel comfortable with.

1. Is there anyone in class that you'd like to be grouped with next week?

2. Did you feel you worked well with your group this week?

3. Any other comments?

Grading Rubric:

Attendance: /20

Participation: /20

Completeness: /60