Section 2.6
Modeling with Functions Guidelines

1. Read the problem carefully.
2. Express the model in words
3. Choose the Variables
4. Set up the Model. Find equations and express all of the other variables in terms of one which you will solve for.
5. Use Algebra or your Calculator to solve the equation.
6. Answer the questions posed in the problem.

Find two numbers whose sum is 30 and whose product is as large as possible.
Find two numbers whose product is 1000 and whose sum is as small as possible.

A farmer has 2400 feet of fence and wants to fence off a rectangular area along a straight river. What are the dimensions of the field of largest area that he can fence in?
A farmer has 2400 feet of fence and wants to fence off a rectangular area divided into 8 smaller areas (using the same fence). What are the dimensions that give the largest total area that he can fence in?

A Norman Window has the shape of a rectangle with a semicircle on top. The Perimeter of the window is to be 30 feet. Find a function that models the area of the window.
Find the dimensions that give the largest possible area for the window.
A baseball stadium holds 55,000 people. With ticket prices at $10 each, average attendance has been 27,000. A market survey shows that for every dollar decrease in price, attendance will increase by 3000. Find a function that models revenue in terms of ticket price. At what price will nobody attend? Maximize the revenue.

A man stands, at point A, on the bank of a river which is 2 miles wide. Point B is on the opposite bank, 7 miles downstream. To get to B, he rows a boat to a point P on the opposite bank then walks the remaining x miles to point B. He can row at 2 mph and walk at 5 mph.
Find a function that models the time needed for the trip.
Where should he land to reach B as soon as possible.
One ship leaves a port going due south at 20 mph. At the same time another ship is 50 miles due east of the port, travelling toward the port at 25 mph. When are the ships the closest to each other? How far apart are they?

Find the dimensions of a coke can that contains 12 fl.oz but has minimum surface area. Does it look like a normal coke can?
Practice Problems to Work on In Class

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