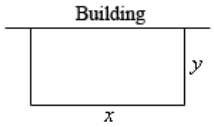
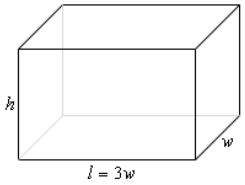
Optimization WS – Additional Problems

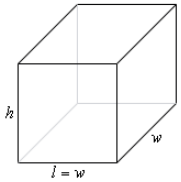
1. We need to enclose a field with a fence. We have 500 feet of fencing material and a building is on one side of the field and so won't need any fencing. Determine the dimensions of the field that will enclose the largest area.



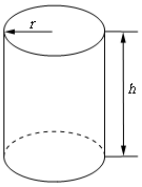
2. We want to construct a box whose base length is 3 times the base width. The material used to build the top and bottom cost \$10/ft^2 and the material used to build the sides cost \$6/ ft^2. If the box must have a volume of 50 ft^3 determine the dimensions that will minimize the cost to build the box.



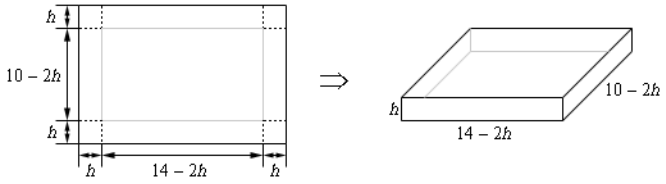
3. We want to construct a box with a square base and we only have 10 m^2 of material to use in construction of the box. Assuming that all the material is used determine the maximum volume that the box can have.



4. A manufacturer needs to make a cylindrical can that will hold 1.5 liters of liquid. Determine the dimensions of the can that will minimize the amount of material used in its construction. (Hint: 1 liter = 1000 cm^3)



5. We have a piece of cardboard that is 14 inch by 10 inches and we're going to cut out the corners as shown and fold up the sides to form a box, also shown below. Determine the height of the box that will give a maximum volume.



6. A printer need to make a poster that will have a total area of 200 in^2 and will have 1 inch margins on the sides, a 2 inch margin on the top and a 1.5 inch margin on the bottom. What dimensions will give the largest printed area?