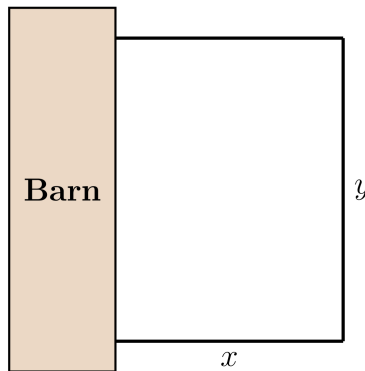


Optimization

In this lesson, we will explore optimization problems and solve two examples relating to area and perimeter.

Optimization problems ask us to maximize or minimize a quantity. For example, we might want to maximize area or minimize cost. We call this quantity the **objective function**. Conditions that the variables must satisfy are called **constraints**.

Example 1: A farmer has 1200 feet of fencing and wants to enclose a rectangular field, with one side of the rectangle up against the barn. No fence is needed for that side. What are the dimensions of the field with maximum area?



1) Label variables, identify constraints and objective:

2) Write objective as a function of one variable:

3) Optimize the objective function:

Example 2: Of all rectangles with area 100, which one has minimum perimeter?

1) Label variables, identify constraints and objective:

2) Write objective as a function of one variable:

3) Optimize the objective function: