

## GUIDELINES FOR OPTIMIZATION

- 1. Draw a diagram and assign variables.**
- 2. Write down a primary equation for the quantity to be minimized or maximized.**
- 3. Express the primary equation in terms of one variable by making use of a secondary equation.**
- 4. Determine the domain of the primary equation.**
- 5. Find the desired minimum or maximum.**

## PROBLEM (LEVEL II)

**Eight feet of wire is to be used to form a square and a circle. How much of the wire should be used for each figure to enclose the maximum area?**

For discussion purposes, use  $x$  to denote the side of the square and  $r$  for the radius of the circle.

Show that the area, as a function of  $x$ ,

$$\text{is given by } A(x) = x^2 + \pi \left( \frac{4 - 2x}{\pi} \right)^2.$$