

## Precalculus 115, section 3.1a Modeling

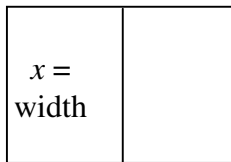
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**terminology:** “in terms of” = “with respect to” = “as a function of”

Example A: Find a function that models the area of a circle  $A$  in terms of its circumference  $C$ .

Example B: A farmer has 900 feet of fencing with which to build a pen for his animals, and being a frugal sort doesn't want to buy any more fencing. He needs two pens, but can build them adjacent to each other, sharing one side as in the diagram to the left. Find the dimensions that will give the maximum area.

$y$  = overall length



Example C: Taylor and Pat are each going home from a rendezvous at their meeting tree. Taylor walks north at 4 mph. Pat jogs east at 7 mph. First find a function that models the distance  $D$  between the two with respect to the amount of time  $t$  (in hours) that has passed. Then, assuming that they can still communicate by shouting as long as they are less than 100 yards apart, determine how long it will be before they can no longer communicate.

Example D: An isosceles triangle has a perimeter of 12 inches. Find a function that models its area  $A$  in terms of the length of its base  $b$ .