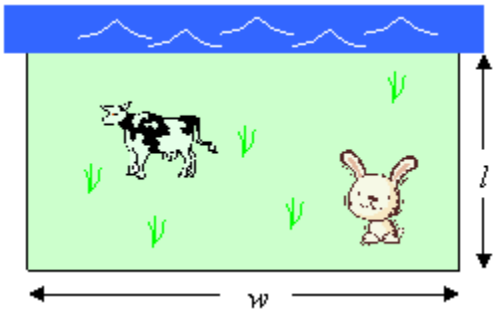
4-2 Max/Min Practice

$$\textit{Max/Min } x - value = h = \frac{-b}{2a}\textit{, when } y = ax^2 + bx + c$$

1. Your factory produces lemon-scented candles. You know that each unit is cheaper, the more you produce. But you also know that costs will eventually go up if you make too many candles, due to the costs of storage of the overstock. The guy in accounting says that your cost for producing *x* thousands of units a day can be approximated by the formula $C = 0.04x^2 - 8.504x + 25302$. Find the daily production level that will <u>minimize</u> your costs.

2. 800 feet of fencing is available for a rectangular pasture alongside a river, where the river acts as one of the sides. (So there are only three sides which require fencing.) Find the dimensions which yield the <u>greatest</u> area.



3. A small business' profits over the last year have been related to the price of the only product. The relationship is $R(p) = -0.4p^2 + 64p - 2400$, where R is the revenue measured in thousands of dollars and p is the price of the product measured in dollars. What price would <u>maximize</u> the revenue?

4. A lifeguard has 75m of rope to section off the supervised area of the beach. What is the <u>largest</u> rectangular swimming area possible?