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1. What are the dimensions of the largest rectangular garden that can be fenced off with 100 ft of fencing material?
2. A $216 \mathrm{~m}^{2}$ rectangular pea patch is to be enclosed by a fence and divided into three equal parts by two fences parallel to one of the sides. What is the least amount of fencing required for the project?
3. You are planning to make an open rectangular box from an 8 in . x 10 in . piece of cardboard by cutting squares from the corners and folding up the sides. What are the dimensions of the box of largest volume you can make this way?
4. You are designing a poster to contain 100 square inches of text with a margin of 5 inches for each side. What overall dimensions will minimize the amount of paper used?
5. Two sidewalks intersect at a right angle. Starting from the intersection, one person jogs along one sidewalk at $12 \mathrm{ft} / \mathrm{sec}$. A second person starting from 150 ft away from the intersection jogs towards the intersection at $18 \mathrm{ft} / \mathrm{sec}$. At what time is the distance between the two joggers minimized?
