1 A tour operator charters an airplane with a 200-passenger capacity. If 200 passengers agree to go, the price will be $400 per passenger. For each passenger under 200, the price will rise $20 per passenger. How many passengers must go to give the operator the greatest revenue? In this case what will each passenger pay for the fare?

2 An orange grower finds that the average yield is 120 bushels per tree when 50 trees are planted in the grove. For each additional tree planted, the average yield per tree decreases by 2 bushels. How many trees should be planted to maximize the total yield for the orchard?

3 An alligator farmer has a budget of $5,400 to spend on fencing for a rectangular enclosure next to a straight river, which forms one of the enclosure’s sides. The enclosure is open on the river side so that the rare homing alligators can access the river at will.

The situation is complicated by the fact that he must use fencing costing $4 per yard along the side opposite the river side, but he can use fencing costing only $3 per running yard on the other two sides.

Show steps in determining the dimensions of the largest-area enclosure he can build on his fencing budget.