# Quadratic Word Problems Extra Practice

1. In a newspaper contest a problem is posed. The last two numbers for a combination to open a safe add up to 44. As an additional clue, the product of the two numbers is a maximum. What are the two numbers?

2. Studies have shown that 500 people attend a high school basketball game when the admission price is $2.00. In the championship game admission prices will increase. For every $0.2 increase 20 fewer people will attend. What price will maximize receipts?

3. Mark wants to fence a rectangular lot of land along a shore of a lake. Only three sides must be fenced, since the lake will form the fourth side. Mark has 100 m of fencing, and he wants the lot of the land to have an area of 500 m^2. Find the dimensions of the lot of the land to the nearest tenth of a meter.

4. A cattle farmer wants to build a rectangular fenced enclosure divided into three rectangular pens, as shown in the diagram below. A total length of 120 m of fencing material is available.

 Find the overall dimensions of the enclosure that will make the total area a maximum. Explain and justify your reasoning.

5. Three consecutive even integers are such that the square of the third is 76 more than the square of the second. Find the three integers.

6. Determine the values of two positive numbers whose sum is 80 and whose product yields a maximum.

7. A 135-kg steer gains 3.5 kg/day and costs 80 cents/day to keep. The market price for beef cattle is $1.65'kg, but the price falls by 1 cent/day. When should the steer be sold to maximize profit?

8. A suspension bridge is built with its cable hanging between two vertical towers in the form of a parabola. The towers are 400 m apart and rise 100 m above the horizontal roadway, while the center point of the cable is 10 m above the roadway. Introduce the coordinate system as shown.
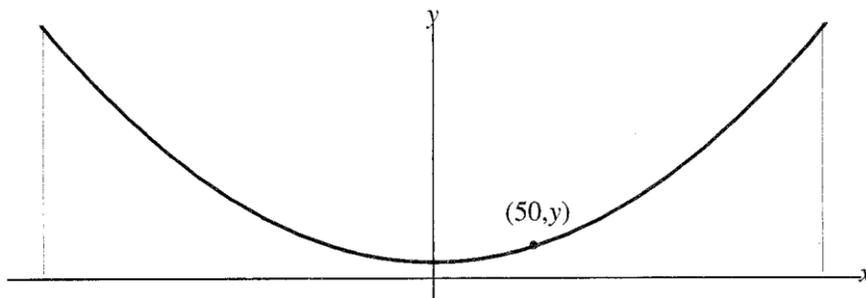
(a) Find the equation of the parabola in the given coordinate system.
(b) Find the height above the roadway of a point 50 m from the center of the span.

Answers:
1) 22 and 22   2) $3.50   3) 5.6 m by 88.8 m   4) 15 m by 30 m
5) Even integers are 16, 18, and 20   6) 40 and 40   7) 52 days

8) (a) $y = \dfrac{9x^2}{4000} + 10$ (b) 15.625 m