Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Chapter 5 Application Worksheet

1. Find the dimensions of the rectangle if the area = 36 square feet.



2. From 1970 to 1990, the average cost of a new car, C (in dollars), can be approximated by the model

C = 30.5t2 + 4192, where t is the number of years since 1970. During which year was the average cost of a new car $20,000?

**3.** Suppose you are tossing an apple up to a friend on a third-story balcony. After *t* seconds, the height of the apple in feet is given by *h = –*16*t*2 + 38.4*t +* 0.96.Your friend catches the apple just as it reaches its highest point.

Initial height of the apple? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Time it takes to reach maximum height? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maximum height? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Time it takes to reach the ground? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4.** The barber’s profit *p* each week depends on his charge *c* per haircut. It is modeled by the equation . What price should he charge for the largest profit?

**5.** The path of a baseball after it has been hit is modeled by the function *h =* – 0.0032*d*2 + *d +* 3, where *h* is the height in feet of the baseball and *d* is the distance in feet the baseball is from home plate.

Initial height of the baseball? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Distance from home plate when baseball is at maximum height? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maximum height? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Distance from home plate when the ball hits the ground? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Height of baseball when distance from home plate is 12 ft? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6.** A lighting fixture manufacturer has daily production costs of *C =* 0.25*n*2 – 10*n +* 800, where *C* is the total daily cost in dollars and *n* is the number of light fixtures produced. How many fixtures should be produced to yield a minimum cost?

**7.** A model for a company’s revenue is R = -15p2 + 300p + 12,000, where p is the price in dollars of the company’s product.

Revenue when the price is $0? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Price that will maximize revenue? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maximum revenue? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Price when revenue is $0? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Revenue when the price is $7? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. If a rectangle’s length is 6 inches less than its width and the area of the rectangle is 27, what are the dimensions of the rectangle?