Applications of Quadratic Equations

[1]   The sum of two numbers is 20 and the product of the same two numbers is 96. Write and solve a quadratic equation in order to determine the two numbers.

[2]   The sum of two numbers is 21 and the product of the same two numbers is 108. Write and solve a quadratic equation in order to determine the two numbers.

[3]   A rectangle has a perimeter of 200 centimeters and an area of 1,875 square centimeters. Write and solve a quadratic equation in order to determine the length and width of the rectangle.

[4]   A rectangle has a perimeter of 200 centimeters and an area of 1,875 square centimeters. Write and solve a quadratic equation in order to determine the length and width of the rectangle.

[5]   A 4 inch by 6 inch photograph is surrounded by a frame of uniform width. The area of the frame equals the area of the photograph. Determine the width of the frame.

[6]   An 8 inch by 10 inch photograph is surrounded by a frame of uniform width. The area of the frame equals the area of the photograph. Determine the width of the frame.

[7]   A box with a square base and no lid is to be made from a square piece of metal by cutting squares from the corners and folding up the sides. The cut-off squares are 5 cm on a side. If the volume of the box is 100 cm^3, find the dimensions of the original piece of metal.

[8]   A box with a square base and no lid is to be made from a square piece of metal by cutting squares from the corners and folding up the sides. The cut-off squares are 6 cm on a side. If the volume of the box is 192 cm^3, find the dimensions of the original piece of metal.

[9]   If an object is launched from the ground with an initial upward velocity of 24 feet per second then the height h of the object above the ground after elapsed time t is determined by the formula below. Use the formula to determine how long the object is in the air before it returns to the ground.

$$h = 24t - 16t^2$$

[10]   If an object is launched from the ground with an initial upward velocity of 50 feet per second then the height h of the object above the ground after elapsed time t is determined by the formula below. Use the formula to determine how long the object is in the air before it returns to the ground.

$$h = 50t - 16t^2$$