# QUADRATIC WORD PROBLEMS

Integer Problems

1. When the square of a certain number is diminished by 9 times the number the result is 36. Find the number.
2. A certain number added to its square is 30. Find the number.
3. The square of a number exceeds the number by 72. Find the number.
4. Find two positive numbers whose ratio is 2:3 and whose product is 600.
5. The product of two consecutive odd integers is 99. Find the integers.
6. Find two consecutive positive integers such that the square of the first is decreased by 17 equals 4 times the second.
7. The ages of three family children can be expressed as consecutive integers. The square of the age of the youngest child is 4 more than eight times the age of the oldest child. Find the ages of the three children.
8. Find three consecutive odd integers such that the square of the first increased the product of the other two is 224.

Height Problems

1. After t seconds, a ball tossed in the air from the ground level reaches a height of h feet given by the equation **$h = 144t - 16t^2$**.
   a. What is the height of the ball after 3 second?
   b. What is the maximum height the ball will reach?
   c. Find the number of seconds the ball is in the air when it reaches a height of 224 feet.
   d. After how many seconds will the ball hit the ground before rebound?
2. A rocket carrying fireworks is launched from a hill 80 feet above a lake. The rocket will fall into lake after exploding at its maximum height. The rocket's height above the surface of the lake is given by
   $h = -16t^2 + 64t + 80$.

   a. What is the height of the rocket after 1.5 second?
   b. What is the maximum height reached by the rocket?
   c. How long will it take for the rocket to hit 128 feet?
   d. After how many seconds after it is launched will the rocket hit the lake?
3. A rock is thrown from the top of a tall building. The distance, in feet, between the rock and the ground t seconds after it is thrown is given by **$d = -16t^2 - 4t + 382$.** How long after the rock is thrown is it 370 feet from the ground?
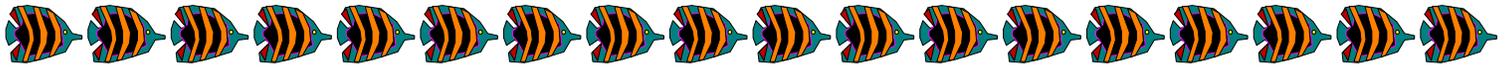
Geometric Problems

1. The ratio of the measures of the base and the altitude of a parallelogram is 3:4. The area of the parallelogram is 1,200 square centimeters. Find the measure of the base and altitude of the parallelogram.
2. In a trapezoid, the smaller base is 3 more than the height, the larger base is 5 less than 3 times the height, and the area of the trapezoid is 45 square centimeters. Find, in centimeters, the height of the trapezoid.
3. If the length of one side of a square is tripled and the length of an adjacent side is increased by 10, the resulting rectangle has an area that is 6 times the area of the original square. Find the length of a side of the original square.
4. The length of a rectangle is 7 units more than its width. If the width is doubled and the length is increased by 2, the area is increased by 42 square units. Find the dimensions of the original rectangle.
5. The side of one square is 2 centimeters longer than the side of the second square. If the sum of their areas is 100cm², find the length of the side of each square.
6. A ladder is resting against the wall. The top of the ladder touches the wall at a height of 15 feet. Find the distance from the wall to the bottom of the ladder if the length of the ladder is one foot more than twice its distance from the wall.
7. Two cars leave an intersection. One car travels north; the other travels east. When the car traveling north had gone 24 miles, the distance between the cars was four miles more than three times the distance traveled by the car heading east. Find the distance between the cars at that time.
8. The following picture shows the shape of a certain grass patch. If the area of the patch is 80m2, find k.

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k

5   2k+1

k