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| We can now solve a quadratic equation by graphing, factoring, completing the square or the quadratic formula. We need to know how to apply these skills and use the most appropriate method in a given situation. |

**Example 1: Path of an Object**

The formula can be used to model the height of a projectile, where g is acceleration due to gravity, which is 9.8m/s2 on Earth, vo is the initial vertical velocity, in metres per second, and ho is the initial height, in metres.

1. Create a model for the height of a toy rocket launched upward at 60m/s from the top of a 3-m platform.
2. How long would the rocket take to fall to Earth, rounded to the nearest hundredth of a second?
3. What is the maximum height of the rocket, rounded to the nearest metre?
4. Over what time interval is the height of the toy rocket greater than 150 m? Round to the nearest hundredth of a second.

**Example 2: Consecutive Numbers**

The product of two consecutive even numbers is 5624. What are the numbers?

**Example 3: Width of a Path**

A rectangular park measures 100 m by 60 m. A path of constant width is to be paved around the perimeter (inside the garden). The mayor wants to be sure that the path does not reduce the area of the grass by more than 10%. What is the maximum allowable width of the path, rounded to the nearest tenth of a metre?

**Example 4: Right Triangle**

One leg of a right triangle is 1 cm longer than the other leg. The length of the hypotenuse is 9 cm greater than that of the shorter leg. Find the length of the three sides.