Family Letter

Dear Student and Family Members,

Our next chapter in mathematics deals with solving quadratic equations. Quadratic equations involve the square of the main variable and can be written in the form $ax^2 + bx + c = 0$, where a, b, and c are constants.

Quadratic equations are an important topic in mathematics and science. They are used to describe the movement of objects in space, such as the motion of basketballs, automobiles, satellites, and rockets. They are also used to determine the shapes of radar antennae, satellite dishes, and mirrors used in telescopes.

We will learn and practice three important methods for solving quadratic equations: solving perfect squares, solving equations by factoring, and using the quadratic formula.

- We will learn to recognize perfect square quadratics, which are equivalent to a simple linear expression multiplied by itself:

$$x^2 + 4x + 4 = (x + 2)(x + 2) = (x + 2)^2$$
$$4x^2 - 12x + 9 = (2x - 3)(2x - 3) = (2x - 3)^2$$

- Another important method is solving quadratic equations by factoring. This is useful when a quadratic equation is equivalent to the product of two different linear expressions:

$$x^2 - 8x + 15 = (x - 5)(x - 3)$$
$$2x^2 - 8x - 10 = (2x + 2)(x - 5)$$

- A third method is to use the quadratic formula. The quadratic formula is useful because it can be used to solve any quadratic equation written in the form $ax^2 + bx + c = 0$, not just those that are perfect squares or easily factored.

Vocabulary Along the way, we'll be learning about two new vocabulary terms:

factoring **trinomial**

What can you do at home?

Knowledge of quadratic equations will allow your student to master one of the most important topics in algebra. The work is abstract, but the power that comes from mastery will help students in all their future algebraic work. Encourage your student to show you the problems we are working on and to explain the methods he or she is learning to use.