Solving Quadratics
Factoring

Common Core Georgia Performance Standards

MCC9–12.A.SSE.2

MCC9–12.A.CED.1★

MCC9–12.A.REI.4b

Introduction

Recall that a factor is one of two or more numbers or expressions that when multiplied produce a given product. We can **factor** certain expressions by writing them as the product of factors.

The **Zero Product Property** states that if the product of two factors is 0, then at least one of the factors is 0. After setting a quadratic equation equal to 0, we can sometimes factor the quadratic expression and solve the equation by setting each factor equal to 0.

Guided Practice 5.2.2

Example 1

Factor $x^2 - 8x + 15$.

Example 2

Solve $8x^2 - 8 = -x^2 + 56$ by factoring.

Example 3

Solve $x^2 + 8x = 20$ by factoring.

Example 5

Solve $7x^2 + 63x - 70 = 0$.

Practice 5.2.2: Factoring

Factor each expression completely.

1. $-8a^2 + 40a$

2. $y^2 - 7y + 12$

3. $4z^2 + 12z + 9$

For problems 4–7, solve each equation by factoring.

4. $x^2 - 75 = -10x$

5. $10r^2 = 400r$

6. $3x^2 + 15x + 12 = 0$

7. $2x^2 + 5x + 3 = 0$

Use the given information to solve problems 8–10. Determine whether your answers are reasonable and explain why or why not.

8. The income in dollars for a school talent show can be expressed by $100p - 5p^2$, where p is the ticket price. What ticket price(s) will result in an income of \$0?

9. A rectangular carpet has an area of $x^2 + 6x - 16$ square feet. Find the width of the carpet if the length is $x + 8$ feet.

10. The altitude of a triangle is 3 inches longer than its base. The area of the triangle is 20 square inches. Find the length of the base of the triangle.

Closing: How does the zero product property help us solve a quadratic equatoin? Find a quadratic equation with zeros x=2 and x=4.