

# Frogs, Fleas, and Painted Cubes Overview

## Investigation One - Introduction to Quadratic Relationships

**A.RP.08.01b**

Identify and represent quadratic functions using tables, graphs, and equations

**A.PA.08.02**

For basic functions, e.g., simple quadratics, direct and indirect variation, and population growth, describe how changes in one variable affect the others

**A.PA.08.03b**

Represent basic functions using tables, graphs, and formulas

**A.RP.08.06b**

Use words "parabolas" and "roots"

## Investigation Two - Quadratic Expressions

**A.FO.08.08a**

Factor simple quadratic expressions with integer coefficients,

e.g.  $x^2 + 6x + 9$ ,  $x^2 + 2x + 3$ ,  $x^2 - 4$

**A.RP.08.05a**

Relate quadratic functions in factored forms to their graphs and vice versa

**A.RP.08.05c**

Note that solutions of a quadratic equation are the x-intercepts of the corresponding quadratic function

**A.RP.08.06a**

Graph factorable quadratic functions, finding where the graph intersects the x-axis and the coordinates of the vertex

**A.RP.08.06b**

Use words "parabola" and "roots"

**A.FO.08.08b**

Solve simple quadratic equations, e.g.  $x^2 = 16$  or  $x^2 = 5$  (by taking square roots),  $x^2 - x - 6 = 0$ ,  $x^2 - 2x = 15$  (by factoring); verify solutions by evaluation

## Investigation Three - Quadratic Patterns of Change

No GLCEs in this Investigation

## Investigation Four - What is a Quadratic Function?

**A.FO.08.09**

Solve applied problems involving simple quadratic equations

**A.RP.08.01d**

*\*\*Identify and represent other simple functions including cubics ( $y = a^3$ ) using tables, graphs, and equations*

**N.ME.08.01b**

Understand the meaning of a cube root and its connection to the volume of a cube

**N.FL.08.05b**

*\*\*Estimate to solve problems with cube roots using calculators*