

## Core Content

<b>Cluster Title: Solve systems of equations.</b>
<b>Standard A.REI.7:</b> Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. (For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$ .)
<b>Concepts and Skills to Master</b>
<ul style="list-style-type: none"> <li>Solve a simple system consisting of a linear equation and a quadratic equation (i.e., parabolas and circles) in two variables graphically.</li> <li>Solve a simple system consisting of a linear equation and a quadratic equation (i.e., parabolas and circles) in two variables algebraically.</li> <li>Recognize that the solutions of a system that includes a unit circle centered at the origin and a line with a <math>y</math>-intercept of 0 are points on a unit circle.</li> </ul>

## Supports for Teachers

<b>Critical Background Knowledge</b>	
<ul style="list-style-type: none"> <li>Know that a quadratic <b>function</b> is a vertical parabola and a quadratic equation can be a parabola or any conic section.</li> <li>Understand what a system is and the nature of the solutions.</li> <li>Solve systems (Sec. I: A.REI.6).</li> </ul>	
<b>Academic Vocabulary</b>	
quadratic function, unit circle, system of equations	
<b>Suggested Instructional Strategies</b>	<b>Resources</b>
<ul style="list-style-type: none"> <li>Find the intersection of a line with a <math>y</math>-intercept of 0 and a unit circle centered at the origin with a solution that is a fraction. The solution will be a point on the unit circle that corresponds to a right triangle and the trigonometric ratios.</li> </ul>	
<b>Sample Formative Assessment Tasks</b>	
<b>Skill-Based Task:</b> Find the intersection of the circle with a radius of 1 centered at the origin and the line $y = -3(x - 2)$ . Show your work both graphically and algebraically.	<b>Problem Task:</b> For a system consisting of a linear equation and a quadratic equation, how many possible solutions are there? Give an example for each possibility and include the graph and system.