

Core Content

Cluster Title: Represent and solve equations and inequalities graphically.	
Standard A.REI.11: Explain why the x -coordinates of the points where the graphs of the equations $y=f(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Approximate solutions to systems of two equations using graphing technology. Approximate solutions to systems of two equations using tables of values. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$. Be able to express that when $f(x) = g(x)$, the two equations have the same solution(s). 	
Supports for Teachers	
Critical Background Knowledge	
<ul style="list-style-type: none"> Understanding that the graph of an equation in two variables is the set of all its solutions plotted on a coordinate plane (I.A.REI.10) Constructing a table of values for a given system by hand and using technology (II.A.REI.7, I.A.REI.5,6) 	
Academic Vocabulary	
system of equations, intersection, approximation, root, zero, solution	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> Use non-linear function examples from other disciplines to develop problems of interest to students. 	<ul style="list-style-type: none"> "A Surprisingly Radical Problem," <i>Mathematics Teacher</i>, September 2012
Sample Formative Assessment Tasks	
Skill-Based Task: How many liters of a 70% alcohol solution must be added to 50 L of a 40% alcohol solution to produce a 50% alcohol solution?	Problem Task: Graph the following functions in the same viewing window: $f(x) = 2^x$, $g(x) = 10^x$, $h(x) = e^x$ Determine their common point of intersection and explain what that point represents in terms of the functions.