MAFS.912.A-REI.4.11 Also assesses MAFS.912.A-REI.4.10	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. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
Item Types	Equation Editor – May require creating a value, an equation, or an expression. GRID – May require identifying points where $f(x) = g(x)$. Hot Text – May require dragging labels to a graph or dragging and dropping numbers and symbols to complete a solution. Matching Item – May require choosing ordered pairs that are solutions of a function. Multiple Choice – May require selecting a value or an expression from a list. Multiselect – May require selecting multiple values. Open Response – May require creating a written response. Table Item – May require completing missing cells in a table.
Clarifications	Students will find a solution or an approximate solution for $f(x) = g(x)$ using a graph. Students will find a solution or an approximate solution for $f(x) = g(x)$ using a table of values. Students will find a solution or an approximate solution for $f(x) = g(x)$ using successive approximations that give the solution to a given place value. Students will justify why the intersection of two functions is a solution to $f(x) = g(x)$. Students will verify if a set of ordered pairs is a solution of a function.
Assessment Limits	In items where a function is represented by an equation, the function may be an exponential function with no more than one translation, a linear function, or a quadratic function.

	In items where a function is represented by a graph or table, the function may be any continuous function.
Stimulus Attributes	Items may be set in a mathematical or real-world context. Items may use function notation. Items must designate the place value accuracy necessary for approximate solutions.
Response Attributes	Items may require the student to complete a missing step in an algebraic justification of the solution of $f(x) = g(x)$. Items may require the student to explain the role of the x-coordinate and the y-coordinate in the intersection of $f(x) = g(x)$. Items may require the student to explain a process. Items may require the student to record successive approximations used to find the solution of $f(x) = g(x)$.
Calculator	Neutral

Sample Item	Item Type
	Equation Editor

Cora is using successive approximations to estimate a positive solution to $f(x) = g(x)$, where $f(x) = x^2 + 13$ and $g(x) = 3x + 14$. The table shows her results for different input values of x.

x	$f(x)$	$g(x)$
0	13	14
1	14	17
2	17	20
3	22	23
4	29	26
3.5	25.25	24.5

Use Cora's process to find the positive solution, to the nearest tenth, of $f(x) = g(x)$.