

Vertical Progression:

7 th Grade	<p>7.EE.B Solve real-life and mathematical problems using numerical and algebraic expressions and equations.</p> <ul style="list-style-type: none"> ○ 7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations to solve problems by reasoning about the quantities. ○ 7.EE.B.4.b Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.
8 th Grade	<p>8.EE.C Analyze and solve linear equations and pairs of simultaneous linear equations.</p> <ul style="list-style-type: none"> ○ 8.EE.C.8.a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. ○ 8.EE.C.8.b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. <i>For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.</i>
Algebra 1	<p>ELG.MA.HS.A.11: Represent and solve equations and inequalities graphically.</p> <ul style="list-style-type: none"> ○ A-REI.10 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). ○ 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.* [all function types listed except for exponential and logarithmic] ○ A-REI.12 Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.
Algebra 2	<p>ELG.MA.HS.A.11: Represent and solve equations and inequalities graphically.</p> <ul style="list-style-type: none"> ○ 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.* [all function types listed]

Students will demonstrate command of the ELG by:

- Plotting ordered pairs that satisfy an equation.
- Determining and explaining why the boundary line should be solid or dashed.
- Choosing a test point to determine if the point is a solution.
- Determining which half plane to shade when graphing linear inequalities
- Graphing multiple inequalities on the same coordinate plane and determining the solution region.
- Finding the coordinates of the points where the graphs of two functions intersect.

Vocabulary:

- Boundary
- Dependent variable
- half-plane
- independent variable
- linear inequality
- no solution
- parallel
- slope
- substitution
- system of equations

Sample Instructional/Assessment Tasks:

1) Standard(s): A-REI.12

Source: PARCC Algebra 1 PBA Practice Test

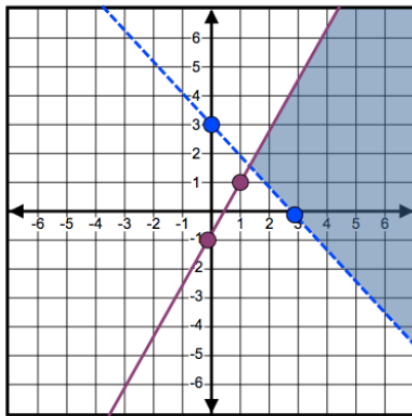
Item Prompt

Graph the solution to the system of inequalities:

$$x + y \leq 6$$

$$x + 2y \leq 8$$

Correct Answer(s)



2) Standard(s): A-REI.11

Source: PARCC Algebra 1 EOY Practice Test

Item Prompt

When the solutions to each of the two equations shown are graphed in the xy -coordinate plane, the graphs of the solutions intersect at a point.

$$y = x^2 - 2x - 5$$

$$y = x^3 - 2x^2 - 5x - 9$$

What is the y -coordinate of the point of the intersection?

Correct Answer(s)

$$y = 3$$