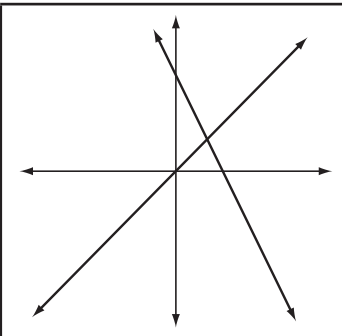
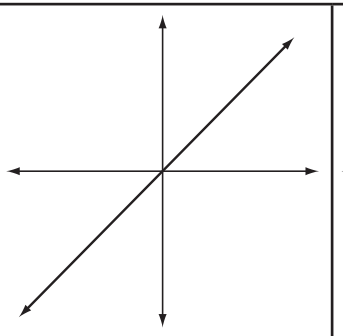
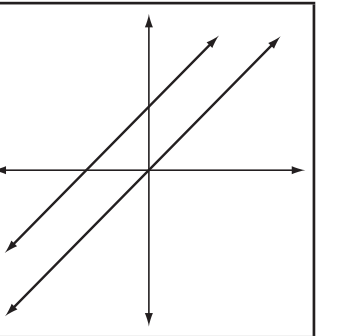


Not all linear systems have exactly one solution. If the lines coincide, then there are infinitely many solutions. If the lines are parallel and never intersect, then there is no solution. Based on their solutions, systems are classified as **consistent** (at least one), **inconsistent** (none), **independent** (exactly one), or **dependent** (infinitely many).

graph			
solutions	one	infinitely many	none
classification	consistent and independent	consistent and dependent	inconsistent

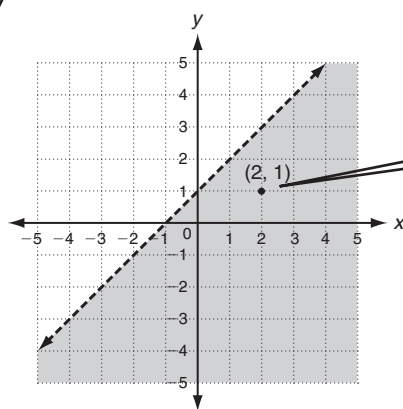
A **linear inequality** in two variables is similar to a linear equation, but the equal sign is replaced with an inequality ($>$, $<$, \geq , or \leq). Similarly, a **solution of a linear inequality** is any ordered pair that makes the inequality true.

Linear inequalities are graphed first with a dashed or solid boundary line. Then you shade above or below the line to show all of the points that satisfy the inequality. The graph of a linear inequality is called a **half-plane**.

Graphing a Linear Inequality Solved for y (slope-intercept form)		
Boundary	\leq or \geq (equal to)	Solid
	$>$ or $<$ (not equal to)	Dashed
Shading	$>$ or \geq (greater than)	Above
	$<$ or \leq (less than)	Below

linear inequality: $y < x + 1$

The inequality is not equal, so the line is dashed.
The inequality is less than, so shade below.



Every point in the half-plane is a solution to the inequality.

$$\begin{array}{r|l} y < x + 1 \\ 1 & < 2 + 1 \\ 1 & < 3 \checkmark \end{array}$$

A **system of linear inequalities** is a set of two or more linear inequalities containing two or more variables. The **solution of a system of linear inequalities** consists of all the ordered pairs that satisfy all of the linear inequalities. Graphically, the solution occurs where the half-planes of the linear inequalities intersect, or the overlapping shaded regions.

For additional resources, visit go.hrw.com and enter the keyword MA7 Parent.