Module 7 Lesson 5
Share 1 - 2

Examine your table from TT 3. In that part of the activity, you were asked to write the second equation for each of three different systems according to specific criteria. In this section you will work with a partner (if possible) to analyze similar systems. You will look for patterns that may help you to identify the number of solutions for any system of linear equations.

Study the three different systems in TT 3. Pay particular attention to how the coefficients of corresponding terms in the equations of each system relate to each other.

1. Following are several linear systems. Classify each system as System A, System B, or System C according to the system from TT 3 to TT 5 that it most resembles. Record the rationale for how you classified each system.

$3x+5y=10$ $6x+10y=20$	$x+4y=6$ $2x+8y=3$	$4x-2y=9$ $4x-2y=-9$
$2x-3y=6$ $2x+3y=6$	$9x-6y=27$ $3x-2y=9$	$4x+5y=10$ $8x+15y=30$
$6x+4y=30$ $3x+2y=30$	$x-3y=4$ $10x-3y=4$	$2x-3y=9$ $3x-4.5y=13.5$

Verify that the systems you have classified together all have a common number of solutions. For example, if you discover that one system has infinitely many solutions, be sure that the other systems with which this system is classified also has infinitely many solutions.

Study the systems in each group for patterns.

2. Write a statement or construct a table or graphic organizer describing how you can, without rearranging the equations into slope-intercept form, identify the number of solutions of a linear system by examining the coefficients of its equations. Be specific about how you can identify systems with one solution, no solutions, and infinitely many solutions.