3.1 Graph Systems of Equations

TEKS a.5, a.6, 2A.3.A, 2A.3.B

QUESTION How can you solve a system of linear equations using a graphing calculator?

In Lesson 3.1, you learned to *estimate* the solution of a linear system by graphing. You can use the *intersect* feature of a graphing calculator to get an answer that is very close to, and sometimes *exactly* equal to, the actual solution.

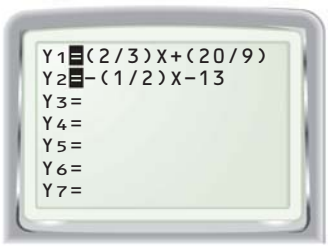
EXAMPLE Solve a system

Use a graphing calculator to solve the system.

$6x - 9y = -20$ Equation 1
$2x + 4y = -52$ Equation 2

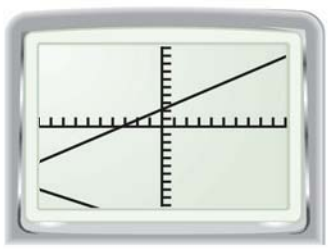
STEP 1 *Enter equations*

Solve each equation for y. Then enter the revised equations into a graphing calculator.



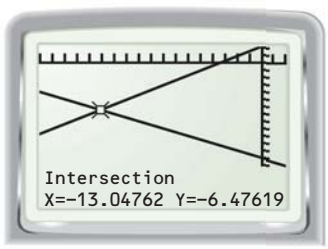
STEP 2 *Graph equations*

Graph the equations in the standard viewing window.



STEP 3 *Find the solution*

Adjust the viewing window, and use the *intersect* feature to find the intersection point.



▶ The solution is about $(-13.05, -6.48)$.

PRACTICE

Solve the linear system using a graphing calculator.

1. $y = -x + 2$
$y = 2x - 5$

2. $y = -2x + 15$
$y = 5x - 4$

3. $-9x + 7y = 14$
$-3x + y = -17$

4. $-11x - 6y = -6$
$4x + 2y = 10$

5. $5x + 8y = -48$
$x + 3y = 27$

6. $-2x + 16y = 56$
$4x + 7y = -35$

7. VACATION Your family is planning a 7 day trip to Texas. You estimate that it will cost \$275 per day in San Antonio and \$400 per day in Dallas. Your budget for the 7 days is \$2300. How many days should you spend in each city?

8. MOVIE TICKETS In one day, a movie theater collected \$4600 from 800 people. The price of admission is \$7 for an adult and \$5 for a child. How many adults and how many children were admitted to the movie theater that day?