

# Assignment

## Write

Explain how you know when an equation has no solution and when it has infinite solutions.

## Remember

To solve an equation, use the Properties of Equality to isolate the variable. A linear equation can have one solution, no solution, or infinite solutions.

## Practice

1. Solve each equation. Write the properties that justify each step in the solution method.

a.  $3x - 8 = -7x + 18$

b.  $-2(4 - x) = 12x - 3$

c.  $\frac{1}{2}(-10x + 4) = -4(-3 + 2x) + 8$

d.  $\frac{(-2x - 4)}{5} + \frac{8}{5} = 3(x - 1)$

e.  $\frac{4}{3}x - 2\left(9 - \frac{1}{3}x\right) = -\frac{7}{3}x + 9$

2. Determine whether each equation has one solution, no solution, or infinite solutions. Explain your reasoning.

a.  $-2(x + 5) = -6x + 4(x - 2)$

b.  $4(0.2x - 1.2) = -0.5x + 3.4$

c.  $\frac{\left(\frac{1}{2}x - 7\right)}{2} = -3x + 4$

d.  $2(x - 4) + x = 3(x - 2) - 2$

e.  $3 - \frac{2}{5}x - \frac{12}{5} = \frac{10 - 2x}{5}$

f.  $6(x - 1) + 21 = 6x + 15$

## Stretch

Consider the equation  $2x - 5(x - 1) = 50$ .

a. Solve the equation for  $x$ .

b. Chen was asked to solve the inequality:  $2x - 5(x - 1) < 50$ . She gave an answer of  $x < -15$ .

Substitute in any value for  $x$  less than  $-15$  to determine if Chen is correct. If not, determine the correct solution.

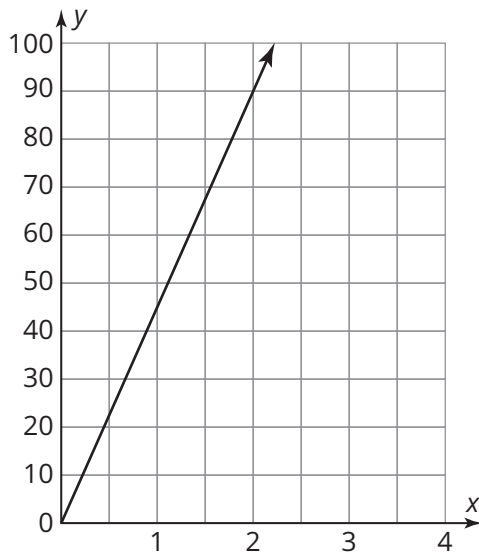
## Review

1. Determine whether the table of values represents a linear function. If it does represent a linear function, write the function. If it does not represent a linear function, explain why.

$x$	$f(x)$
-2	4
-1	1
0	0
1	1

2. Nelson grows tomatoes and sells them at a nearby farmer's roadside stand. He sells them for \$2.50 each. The farmer charges him \$15 a day to use the stand. Write a linear function in factored form and general form that represents the amount of money,  $M$ , Nelson will make from selling  $x$  tomatoes.
3. Clean Green Landscapers uses a graph to show what they charge, and Sunshine Landscaper lists what they charge in a table.

**Clean Green Landscapers**



**Sunshine Landscaper**

0.5	\$25
1	\$50
1.5	\$75
2	\$100
2.5	\$125

- a. Each representation shows a functional relationship between quantities. Label the quantities and their units in the table and on the graph.
- b. Let  $C(x)$  represent the function for Clean Green Landscapers, and let  $S(x)$  represent the function for Sunshine Landscapers. Which function has a steeper slope? Explain how you know.
4. Evaluate the function  $f(x) = 0.4x^2 - 3x - 8$  for the value  $x = -2$ .
5. The cost to install  $x$  number of central air conditioning units for a company is given by the function  $C(x) = \frac{4000x + 1300}{3}$ . Use the function to determine the cost to install 45 air conditioners.