

# Assignment

## Write

Describe a zero of a function in your own words.

## Remember

The general form of a linear function is  $f(x) = ax + b$ , where  $a$  and  $b$  are real numbers and  $a \neq 0$ . In this form, the  $a$ -value is the leading coefficient which describes the steepness and direction of the line. The  $b$ -value describes the  $y$ -intercept.

The factored form of a linear function is  $f(x) = a(x - c)$ , where  $a$  and  $c$  are real numbers and  $a \neq 0$ . In this form, the  $a$ -value is the slope and the value of  $x$  that makes the factor  $(x - c)$  equal to zero is the  $x$ -intercept.

## Practice

Determine whether the table of values represents a linear function. If so, write the function.

1.

$x$	$y$
-2	$5\frac{2}{3}$
0	5
2	$4\frac{1}{3}$
4	$3\frac{2}{3}$

2.

$x$	$y$
-5	-27
0	-2
5	20
10	48

For each scenario, write a linear function in factored form and in general form. Then sketch a graph and label the  $x$ - and  $y$ -intercepts. Finally, answer each question.

3. Carlos prints and sells T-shirts for \$14.99 each. Each month 5 T-shirts are misprinted and cannot be sold. How much money will he earn if he prints 22 T-shirts? How many T-shirts will he need to sell to earn \$200?
4. Mei paints and sells ceramic vases for \$35 each. Each month she typically breaks 3 vases in the kiln. How much money will she earn if she sells 17 ceramic vases? How many ceramic vases will she need to sell to earn \$600?
5. Emilio builds and sells homemade wooden toys for \$12 each. The festival he is attending charges \$50 to set up his booth. How much money will he earn if sells 35 wooden toys? How many wooden toys will he need to sell to earn \$250?

## Stretch

A pretzel manufacturer has two production lines. Line A produces a variety of pretzel that is sold for \$2.40 per bag. Line A typically produces 3 bags per day that do not meet company standards and cannot be sold. Line B produces a variety of pretzel that is sold for \$3.60 per bag. Line B typically produces 4 bags per day that do not meet company standards and cannot be sold. Line A produces 3 times as many bags as Line B each day.

Write a linear function that represents the total number of bags the lines can produce combined.

## Review

1. Determine whether each relationship shows a constant difference. If so, write the linear function that represents the relationship.

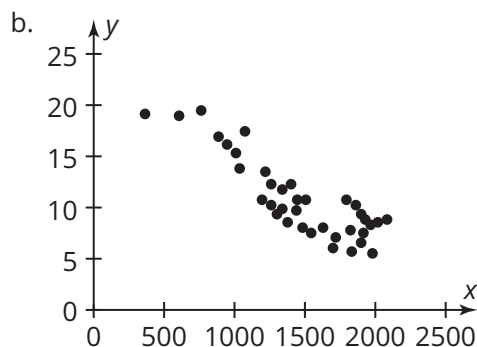
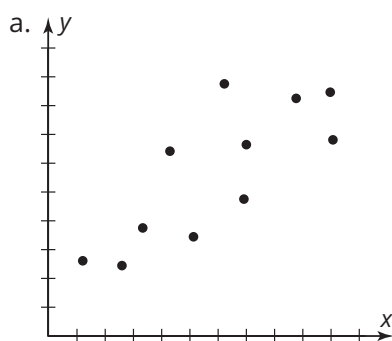
a.

$x$	$y$
2	9
3	11
4	13
5	15

b.

$x$	$y$
1	2
2	1
3	$\frac{1}{2}$
4	$\frac{7}{2}$

2. Determine whether the points in each scatter plot have a positive association, a negative association, or no association. Explain your reasoning.



3. Solve each equation.

a.  $\frac{1}{3}x + 2 = 11$

b.  $-5p - 12 = 19$