

## Lesson 3.1 • Linear Equations and Arithmetic Sequences

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

1. Find an explicit formula for each recursively defined arithmetic sequence.

a.  $u_0 = 5$

$$u_n = u_{n-1} + 8 \quad \text{where } n \geq 1$$

c.  $u_0 = 18.25$

$$u_n = u_{n-1} - 4.75 \quad \text{where } n \geq 1$$

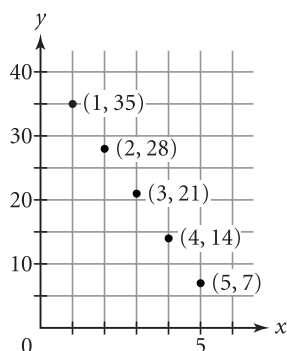
b.  $u_0 = 4.5$

$$u_n = u_{n-1} + 3.2 \quad \text{where } n \geq 1$$

d.  $u_0 = 0$

$$u_n = u_{n-1} + 100 \quad \text{where } n \geq 1$$

2. Refer to the graph of the sequence.



- a. Write a recursive formula for the sequence. What is the common difference? What is the value of  $u_0$ ?
- b. What is the slope of the line through the points? What is the  $y$ -intercept?
- c. Write the equation of the line that contains these points.
3. For each sequence, find  $n$  so that  $u_n$  has the specified value.
- a.  $u_n = 4 + 5n$   
 $u_n = 79$
- b.  $u_0 = 88$   
 $u_n = u_{n-1} - 7.5 \quad \text{where } n \geq 1$   
 $u_n = -84.5$
4. Find the slope of each line.
- a.  $y = 5 + 3x$
- b.  $y = 10 - x$
- c.  $y = 0.6x - 0.8$
- d.  $y = \frac{2}{5} - \frac{4}{5}x$
- e.  $y = 12.5$
- f.  $y = 7 + x$
5. Write an equation in the form  $y = a + bx$  for each line.
- a. The line that passes through the points of an arithmetic sequence with  $u_0 = 11$  and a common difference of 9
- b. The line that passes through the points of an arithmetic sequence with  $u_0 = -7.5$  and a common difference of  $-12.5$