

Algebra 1      3.5

Recognize arithmetic sequences

Relate arithmetic sequences to linear functions

sequence

term

arithmetic sequence  $+$

common difference  $(d)$

whiteboards

$$a_1 + (n-1)(\text{rule})$$

$\uparrow$   
 $d$

**Example 2 Find the Next Term**

Find the next three terms of the arithmetic sequence 15, 9, 3, -3, ... .

-9, -15, -21

$$y = 15 + (n-1) \cdot (-6)$$

### KeyConcept $n$ th Term of an Arithmetic Sequence

The  $n$ th term of an arithmetic sequence with first term  $a_1$  and common difference  $d$  is given by  $a_n = a_1 + (n - 1)d$ , where  $n$  is a positive integer.

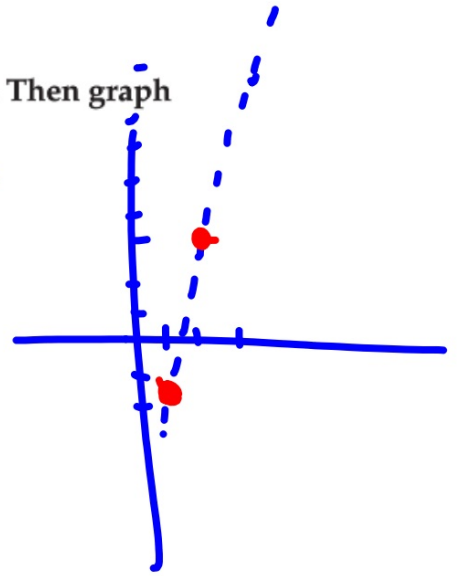


Write an equation for the  $n$ th term of each arithmetic sequence. Then graph the first five terms of the sequence.

↓ ↓ ↓ ↓  
19. -2, 3, 8, 13, ...

$$y = -2 + (n-1) \cdot 5$$

1	-2
2	3
3	8
4	13
5	18



Write an equation for the  $n$ th term of each arithmetic sequence. Then graph the first five terms of the sequence.

5. 15, 13, 11, 9, ...

, ...

$$y = 15 + (n-1) \cdot -2$$

1	15
2	13
3	11
4	9
5	7

Can you buy  $\frac{1}{2}$  of a stamp? (discrete)  
Can you buy a negative number of stamps?



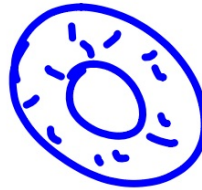
### Real-World Example 4 Arithmetic Sequences as Functions

**INVITATIONS** Marisol is mailing invitations to her quinceañera. The arithmetic sequence  $\$0.42, \$0.84, \$1.26, \$1.68, \dots$  represents the cost of postage.

a. Write a function to represent this sequence.

Stamps

1	42
2	84
3	1.26
4	1.68



b. Graph the function and determine the domain.

---

ICE WS