LESSON 3.13

Exercise Set A

MM1A1f Recognize sequences as functions with domains that are whole numbers.

Write the first six terms of the sequence.

1. $a_n = 2n$

2. $a_n = n + 4$

3. $a_n = 3 - n$

4. $a_n = n^2 - 2$

5. $a_n = (n + 1)^2$

6. $a_n = -1^n$

7. $a_n = (-2)^n$

8. $a_n = \frac{2}{n}$

9. $a_n = \frac{n}{3n + 1}$

For the sequence, describe the pattern, write the next term, and write a rule for the *n*th term.

10. 4, 6, 8, 10, . . .

11. 3, 1, −1, −3, . . .

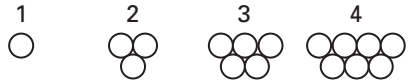
12. −3, −24, −81, −192, . . .

13. 1, 7, 17, 31, . . .

14. $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \ldots$

15. $-\frac{1}{2}, -\frac{4}{2}, -\frac{9}{2}, -\frac{16}{2}, \ldots$

16. **Multiple Choice** Which rule gives the total number of circles in the *n*th figure of the pattern shown?



A. $a_n = 3n$ **B.** $a_n = n + 1$ **C.** $a_n = 2n - 1$ **D.** $a_n = \frac{n(n + 1)}{2}$

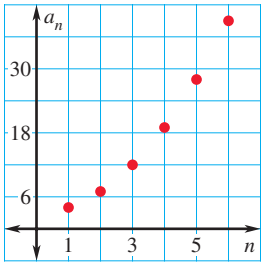
Match the sequence with the graph of its first 6 terms.

17. $a_n = n^2 + 3$

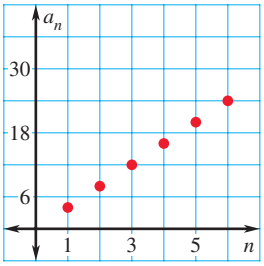
18. $a_n = 2(n + 1)$

19. $a_n = 4n$

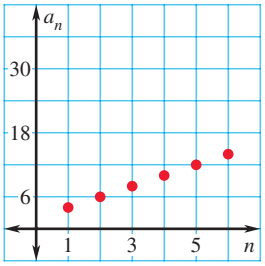
A.



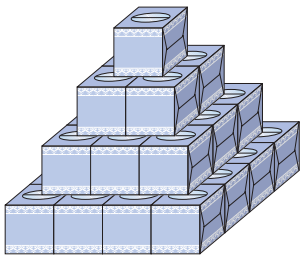
B.



C.



20. **Multiple Representations** A grocery store employee stacks tissue boxes six layers tall. The top four layers are shown.



a. Making a Table Copy and complete the table.

Layer, *n*	1	2	3	4
Number of boxes, a_n	?	?	?	?

b. Writing a Rule Write a rule for the number of tissue boxes in each layer.

c. Drawing a Graph Graph the function from part (b) using the domain 1, 2, 3, 4, 5, 6.

UNIT 3

LESSON 3.13

Exercise Set B

MM1A1f Recognize sequences as functions with domains that are whole numbers.

Write the first six terms of the sequence.

1. $a_n = -5n$

2. $a_n = 2n^2 + 3$

3. $a_n = 8 - n^2$

4. $a_n = \frac{3 - 2n}{n}$

5. $a_n = n^2(n - 1)$

6. $a_n = (-1)^n(n + 1)$

Find the indicated term of the sequence.

7. $a_n = n(n^2 + 1); a_{10}$

8. $a_n = (-1)^n(3n - 5); a_{25}$

9. $a_n = \frac{-(n + 1)}{n^3 + 1}; a_{12}$

For the sequence, describe the pattern, write the next term, and write a rule for the *n*th term.

10. 7, 19, 31, 43, . . .

11. $-2, 4, -6, 8, \ldots$

12. $-\frac{3}{2}, -\frac{9}{3}, -\frac{27}{4}, -\frac{81}{5}, \ldots$

13. **Error Analysis** *Describe* and correct the student's error in writing a rule for the *n*th term of the sequence $1, -4, 9, -16, \ldots$.

You can write the terms as $(-1)^{1+1}(1^2)$, $(-1)^{2+1}(2^2)$, $(-1)^{3+1}(3^2)$, $(-1)^{4+1}(4^2)$.
So, $a_n = (-1)^n(n^2)$. ✗

Graph the sequence.

14. $-1, -3, -5, -7, -9, \ldots$

15. 0, 3, 8, 15, 24, . . .

16. $\frac{2}{1}, \frac{3}{3}, \frac{4}{5}, \frac{5}{7}, \frac{6}{9}, \ldots$

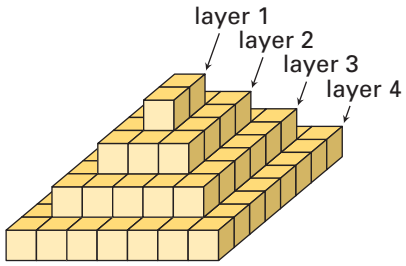
In Exercises 17–19, tell whether the statement is *true* or *false*. If it is false, explain why.

17. The domain of a sequence consists only of whole numbers.

18. The range of a sequence consists only of whole numbers.

19. An input of a sequence may be paired with more than one output.

20. **Building Blocks** A child stacks building blocks as shown at the right.



a. Write the number of blocks in each layer that are visible from the front view of the solid. Repeat for the side view and top view.

b. Write a rule for the number of building blocks a_n visible in each layer n from each view in part (a).

UNIT 3