

Name _____

3-6B Lesson Master

Questions on SPUR Objectives
See Student Edition pages 215–219 for objectives.

VOCABULARY

Fill in the Blanks In 1 and 2, refer to the recursive formula in the box at the right.

$$\begin{cases} a_1 = 3 \\ a_n = a_{n-1} + 5 \text{ for integers } n \geq 2 \end{cases}$$

1. a_1 is the _____ of the sequence.
2. a_{n-1} is the _____ of the sequence.

SKILLS Objective D

3. The first two terms of a sequence are 2 and 2. Each term after the second term is the sum of the previous two terms. Write the next 6 terms.

In 4 and 5, give the first five terms of the sequence defined by the recursive formula.

4. The first term is 100. Each term after the first is one half of the previous term.

5. The first term is -1. Each term after the first is 1 more than the cube of the previous term.

In 6–9, give the first six terms of the sequence defined by the recursive formula. The formula is given for integers $n \geq 2$.

6.
$$\begin{cases} s_1 = 5 \\ s_n = s_{n-1} + 6 \end{cases}$$

7.
$$\begin{cases} a_1 = -8 \\ a_n = a_{n-1} + 2 \end{cases}$$

8.
$$\begin{cases} a_1 = 6 \\ a_n = 2a_{n-1} \end{cases}$$

9.
$$\begin{cases} t_1 = 1 \\ t_n = (-1)^n t_{n-1} \end{cases}$$

Multiple Choice In 10 and 11, determine the correct recursive formula (for integers $n \geq 2$) for the given sequence.

10. 3, 12, 48, 192, 768, ... _____

A
$$\begin{cases} s_1 = 3 \\ s_n = 3s_{n-1} + 3 \end{cases}$$

B
$$\begin{cases} s_1 = 3 \\ s_n = 4s_{n-1} \end{cases}$$

C
$$\begin{cases} s_1 = 3 \\ s_n = 4s_{n-1} + 3 \end{cases}$$

11. 1, 4, 9, 16, 25, 36, ... _____

A
$$\begin{cases} s_1 = 1 \\ s_n = (s_{n-1})^2 \end{cases}$$

B
$$\begin{cases} s_1 = 1 \\ s_n = s_{n-1} + 3 \end{cases}$$

C
$$\begin{cases} s_1 = 1 \\ s_n = s_{n-1} + 2n - 1 \end{cases}$$

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In 12–14, a sequence is given. Write a recursive definition a. in words and b. in algebraic notation.

12. 891, 297, 99, 33, 11, . . .

a. _____

b.

13. 1, -5, -11, -17, -23, . . .

a. _____

b.

USES Objective L

14. Becky invested \$5000 in a savings account that pays 4% compounded annually. She plans to withdraw \$100 at the end of each year. The recursive formula at the right gives her account balance at the end of the n th year.

$$\begin{cases} s_0 = 5000 \\ s_n = 1.04s_{n-1} - 100 \text{ for integers } n \geq 1 \end{cases}$$

a. Give the account balance at the end of year 1. _____

b. Give the account balance at the end of year 3. _____

c. By how much will Becky’s investment have increased after 5 years? _____

15. Tim received \$20 from his parents on his first birthday, \$25 on his second birthday, \$30 on his third birthday, and so on.

a. Write a recursive formula for this situation.

b. How much did Tim receive on his tenth birthday? _____

c. Find the total amount of money Tim’s parents had given him for his ten birthdays. _____