

Sequence Step Lab

Build each term from the one before it.

HIGH SCHOOL • MA.912.LT.1

MA.912.LT.1 "Apply recursive methods to solve problems."

NAME _____

DATE _____

PART 1: PRACTICE

A recursive rule tells you how to find a new term from an earlier term. Start with the given first term and apply the rule one step at a time. Write each term in order so you can use it to find the next term.

WORKED EXAMPLE

Given $a_1 = 17$ and $a_n = a_{(n-1)} + 9$, find a_4 .

1. $a_2 = 17 + 9 = 26$

2. $a_3 = 26 + 9 = 35$

3. $a_4 = 35 + 9 = 44$

Answer: $a_4 = 44$

PRACTICE 6 problems

1 Given $s_1 = 8$ and $s_n = s_{(n-1)} + 3$, find s_3 .

ANSWER _____

2 Given $t_1 = 80$ and $t_n = t_{(n-1)} / 2$, find t_3 .

ANSWER _____

3 Given $u_1 = 5$ and $u_n = u_{(n-1)} - 7$, find u_2 .

ANSWER _____

4 Given $v_1 = -3$ and $v_n = 5v_{(n-1)}$, find v_3 .

ANSWER _____

5 Given $w_1 = 96$ and $w_n = w_{(n-1)} / 2$, find w_5 .

ANSWER _____

6 Given $x_1 = -1$ and $x_n = x_{(n-1)} + 8$, find x_5 .

ANSWER _____

APPLY IT Show your work

1

Part 2: Apply. At the end of the first week, Jordan has 13 reward points in a gaming app. Jordan earns 5 more points each later week. How many points does Jordan have at the end of the third week?

WORK SPACE

ANSWER _____

2

Maya is saving for concert tickets. Her savings is \$90 after the first week, and she adds \$15 each later week. How much money does Maya have after the fifth week?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Part 3: Challenge. Given $h_1 = 6$ and $h_n = 2h_{(n-1)} + 1$, find h_5 . Show each term you use.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Given $s_1 = 8$ and $s_n = s_{(n-1)} + 3$, find s_3 .	$s_3 = 14$
2	Given $t_1 = 80$ and $t_n = t_{(n-1)} / 2$, find t_3 .	$t_3 = 20$
3	Given $u_1 = 5$ and $u_n = u_{(n-1)} - 7$, find u_2 .	$u_2 = -2$
4	Given $v_1 = -3$ and $v_n = 5v_{(n-1)}$, find v_3 .	$v_3 = -75$
5	Given $w_1 = 96$ and $w_n = w_{(n-1)} / 2$, find w_5 .	$w_5 = 6$
6	Given $x_1 = -1$ and $x_n = x_{(n-1)} + 8$, find x_5 .	$x_5 = 31$

PART 2 • APPLY IT

1. **23 points** Let $p_1 = 13$ and $p_n = p_{(n-1)} + 5$. The terms are 13, 18, and 23.
2. **\$150** Let $m_1 = 90$ and $m_n = m_{(n-1)} + 15$. Continuing the sequence through the fifth term gives 150.

CHALLENGE

 $h_5 = 111$

Accept correctly listed intermediate terms and equivalent notation for recursive rules. For word problems, accept the numerical answer only if the correct unit is included.