LESSON MAKER PRO

Repeat and Reach

Use repeated rules to build answers.

HIGH SCHOOL · MA.912.LT.1.1

MA.912.LT.1.1 "Apply recursive and iterative thinking to solve problems."

NAME _____ DATE _____

BUILD TERMS STEP BY STEP

A recursive rule tells you how to get each new value from the value before it. Iteration means repeating that rule and using each result as the next input. Keep the terms in order so you can track every repeat.

WORKED EXAMPLE

Start at 6. Add 5 each time. Write the first four terms.

1. Start: 6
2. Add 5: 11
3. Add 5: 16
4. Add 5: 21

Answer: 6, 11, 16, 21

PRACTICE 6 problems

1 A sequence starts at 9. Each new term is 8 more than the term before it. Write the first four terms.

ANSWER _____

2 A sequence starts at 10. Each new term is 3 times the term before it. Write the first three terms.

ANSWER _____

3 Write a recursive rule for the sequence 12, 20, 28, 36, ...

ANSWER _____

4 A sequence starts at 24. Subtract 7 to get each new term. What is the value after 3 repeats?

ANSWER _____

5 Given $a_1 = 14$ and $a_{(n+1)} = 3a_{(n)}$, find a_4.

ANSWER _____

6 Write a recursive rule for the sequence 20, 60, 180, ...

ANSWER _____

APPLY IT Show your work

1 You have $40 in a concert fund. You add $15 each week for 8 weeks. What is the total amount in the fund after 8 weeks?

WORK SPACE

ANSWER _____

2 A gaming tournament score begins at 24 points. At the end of each winning round, the score is tripled. If you win 3 rounds, what is your score?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A sequence starts at 8. Each new term is 3 times the term before it, minus 2. Find the value after 4 repeats. Then explain why every term in the sequence is even.

WORK SPACE AND ANSWER

ANSWER KEY

Repeat and Reach

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A sequence starts at 9. Each new term is 8 more than the term before it. Write the first four terms.	**9, 17, 25, 33**
2	A sequence starts at 10. Each new term is 3 times the term before it. Write the first three terms.	**10, 30, 90**
3	Write a recursive rule for the sequence 12, 20, 28, 36, ...	**$a_1 = 12$; $a_{(n+1)} = a_{(n)} + 8$**
4	A sequence starts at 24. Subtract 7 to get each new term. What is the value after 3 repeats?	**3**
5	Given $a_1 = 14$ and $a_{(n+1)} = 3a_{(n)}$, find a_4.	**378**
6	Write a recursive rule for the sequence 20, 60, 180, ...	**$a_1 = 20$; $a_{(n+1)} = 3a_{(n)}$**

PART 2 · APPLY IT

1. **$160** Start with 40 and add 15 eight times. 40 + 8(15) = 160.
2. **648 points** Triple the score once for each round. 24 × 3 × 3 × 3 = 648.

CHALLENGE

568. The starting value is even. Three times an even number is even, and subtracting 2 keeps the result even.

Accept equivalent recursive notation or clear verbal rules that state the starting value and repeated operation. For the challenge, accept any correct explanation that shows an even value remains even after multiplying by 3 and subtracting 2.