LESSON MAKER PRO

Sequence Signals

Find the change, then predict what comes next.

HIGH SCHOOL · F.IF.C.10

F.IF.C.10 "Describe the behavior of a sequence."

NAME _____ DATE _____

SPOT THE PATTERN

A sequence is an ordered list of terms. An arithmetic sequence adds the same amount each time. A geometric sequence multiplies by the same amount each time. Use the change to describe the sequence and predict later terms.

WORKED EXAMPLE

Describe the change and find the fifth term.

SEQUENCE

Term	1	2	3
Value	13	18	23

1. 18 - 13 = 5
2. 23 - 18 = 5, so the sequence increases by 5 each term.
3. Fourth term: 23 + 5 = 28. Fifth term: 28 + 5 = 33.

Answer: The sequence increases by 5 each term. The fifth term is 33.

PRACTICE 4 problems

1 3, 7, 11, 15, ... Describe the change and find the next term.

ANSWER _____

2 81, 27, 9, 3, ... Describe the change and find the next term.

ANSWER _____

3 50, 43, 36, 29, ... Describe the change and find the next term.

ANSWER _____

4 2, 8, 32, 128, ... Describe the change and find the next term.

ANSWER _____

APPLY IT Show your work

1 A student's video gets the total views shown at the end of each day. If the pattern continues, how many views will it have at the end of day 5? Describe the change.

VIDEO VIEWS

Day	1	2	3
Total views	40	80	160

ANSWER _____

2 A gift card has $78 left after week 1, $66 after week 2, and $54 after week 3. If this pattern continues, how much is left after week 5? Describe the change.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A geometric sequence has first term 64 and third term 16. Its common ratio is positive. Find the ratio and fifth term. Explain whether the sequence increases or decreases.

WORK SPACE AND ANSWER

ANSWER KEY

Sequence Signals

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	3, 7, 11, 15, ... Describe the change and find the next term.	**Increases by 4 each term; 19.**
2	81, 27, 9, 3, ... Describe the change and find the next term.	**Multiplies by 1/3 each term, so it decreases; 1.**
3	50, 43, 36, 29, ... Describe the change and find the next term.	**Decreases by 7 each term; 22.**
4	2, 8, 32, 128, ... Describe the change and find the next term.	**Multiplies by 4 each term, so it increases; 512.**

PART 2 · APPLY IT

1. **640 views; the total doubles each day.** The totals multiply by 2 each day. Days 4 and 5 have 320 and 640 views.
2. **$30; the balance decreases by $12 each week.** Subtract $12 for each new week. The balances after weeks 4 and 5 are $42 and $30.

CHALLENGE

The ratio is 1/2 because multiplying 64 by 1/2 twice gives 16. The fifth term is 4, and the sequence decreases because each term is half the one before it.

Accept equivalent descriptions of the change, such as “subtracts 7” for “decreases by 7.” In the challenge, the positive-ratio condition rules out -1/2.