

Pattern Detectives

Spot rules that add or multiply.

GRADE 5 • TEKS 5.4.D

5.4.D "recognize the difference between additive and multiplicative numerical patterns given in a table or graph;"

NAME _____

DATE _____

FIND THE RULE

An additive pattern adds or subtracts the same amount each time. A multiplicative pattern multiplies or divides by the same number each time.

WORKED EXAMPLE

Look at points A, B, C, and D from left to right. Is the pattern additive or multiplicative? What is the rule?



1. Find the change from A to B: $8 - 2 = 6$.
2. Check the next changes: $14 - 8 = 6$ and $20 - 14 = 6$.
3. The same amount, 6, is added each time.

Answer: Additive pattern, add 6 each time.

PRACTICE 6 problems

- 1** Look at points A, B, and C from left to right. Is the pattern additive or multiplicative? What is the next term?



ANSWER _____

- 2** Look at points A, B, C, and D from left to right. Is the pattern additive or multiplicative? What is the next term?



ANSWER _____

- 3** Look at the pattern: 81, 27, 9, 3, _____. Is it additive or multiplicative? What is the next term?

ANSWER _____

- 4** Look at the pattern: 11, 18, 25, 32, _____. Is it additive or multiplicative? What is the next term?

ANSWER _____

- 5** Look at the pattern: 4, 16, 64, _____. Is it additive or multiplicative? What is the next term?

ANSWER _____

- 6** Look at the pattern: 100, 90, 80, 70, _____. Is it additive or multiplicative? What is the next term?

ANSWER _____

APPLY IT Show your work

- 1** Maya records the number of stickers she earns on her reading app. Use the table. Is her pattern additive or multiplicative? How many stickers will she have on Friday if the pattern continues?

MAYA'S STICKERS

Day	Stickers
Monday	13
Tuesday	18
Wednesday	23
Thursday	28

ANSWER _____

- 2** In a coding game, Jalen earns 7 points on Level 1, 21 points on Level 2, and 63 points on Level 3. His points follow the same rule each level. Is the pattern additive or multiplicative? How many points will he earn on Level 4?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The table shows points earned by two game-design test groups. For each group, name the kind of pattern and its rule. Then find each group's points in Round 5.

TEST GROUP POINTS

Round	Group A	Group B
1	9	4
2	15	12
3	21	36
4	27	108

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Look at points A, B, and C from left to right. Is the pattern additive or multiplicative? What is the next term?	Multiplicative, multiply by 3; 135
2	Look at points A, B, C, and D from left to right. Is the pattern additive or multiplicative? What is the next term?	Additive, add 9; 45
3	Look at the pattern: 81, 27, 9, 3, _____. Is it additive or multiplicative? What is the next term?	Multiplicative, divide by 3; 1
4	Look at the pattern: 11, 18, 25, 32, _____. Is it additive or multiplicative? What is the next term?	Additive, add 7; 39
5	Look at the pattern: 4, 16, 64, _____. Is it additive or multiplicative? What is the next term?	Multiplicative, multiply by 4; 256
6	Look at the pattern: 100, 90, 80, 70, _____. Is it additive or multiplicative? What is the next term?	Additive, subtract 10; 60

PART 2 • APPLY IT

- Additive, add 5 stickers each day; 33 stickers** The number of stickers increases by 5 each day. Add 5 to 28 to get 33.
- Multiplicative, multiply by 3; 189 points** Each number is 3 times the number before it. Multiply 63 by 3 to get 189.

CHALLENGE

Group A is additive, add 6, and has 33 points in Round 5. Group B is multiplicative, multiply by 3, and has 324 points in Round 5.

Accept equivalent wording for the rules, such as “plus 7” for “add 7” and “times 3” for “multiply by 3.” Students should identify a constant difference for additive patterns and a constant factor for multiplicative patterns.