Grade 4 Math

Patterns and Input-Output Tables

Follow the rule, build the pattern, explain what you notice.



Number and tile patterns

Growing, shrinking and two-step rules

Inputs, outputs and charts from stories

12 practice pages and 12 matching worked keys

Georgia's K-12 Mathematics Standards
4.PAR.3.1 | 4.PAR.3.2

26 pages | Print at 100% | Answer keys included

TOUCHSTONE STANDARDS

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Georgia's K-12 Mathematics Standards

4.PAR.3 Generate and analyze patterns, including those involving shapes, input/output diagrams, factors, multiples, prime numbers, and composite numbers.

4.PAR.3.1 Generate both number and shape patterns that follow a provided rule.

4.PAR.3.2 Use input-output rules, tables, and charts to represent and describe patterns, find relationships, and solve problems.

Students are not expected to determine the rule but instead are expected to extend the pattern or complete a pattern.

Patterns are limited to 8 elements.

Students should be able to identify features of the pattern that were not explicit in the rule itself.

Students should be able to explain, informally, why a pattern will continue to develop as it does.

Students should be able to analyze numerical patterns and use input-output tables and charts to represent patterns, find relationships and solve authentic problems.

Page map: practice / key

3 / 15	Follow the Rule	4.PAR.3.1
4 / 16	Growing and Shrinking	4.PAR.3.1
5 / 17	Shape Patterns	4.PAR.3.1
6 / 18	What Else Do You Notice?	4.PAR.3.1
7 / 19	Two-Step Rules	4.PAR.3.1
8 / 20	Input-Output Tables	4.PAR.3.2
9 / 21	Which Rule Fits?	4.PAR.3.2
10 / 22	Charts from Stories	4.PAR.3.1
11 / 23	Pattern Stories	4.PAR.3.1
12 / 24	Make Your Own	4.PAR.3.1
13 / 25	Pattern Code	4.PAR.3.1, 4.PAR.3.2
14 / 26	Mixed Review	4.PAR.3.1, 4.PAR.3.2

Use the sequence or select pages. Students use the given rule, not a guessed rule.
Shape pages show four starting stages. Tile grids use 0.25-inch squares.
Any correct strategy earns full credit. Drawings may vary when the counts match.
Keys include worked checks. Answers without commas are also correct.
The code page spells ROW; its Spotlight looks up 113 as E.
Follow Touchstone Standards on TPT for new resources. After use, share an honest review.

Print check: this line is 2 inches. Print at Actual Size / 100%.

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What Else Do You Notice?

Name _____ Print at 100%

Complete the tables. Check every true statement and explain one.

Strategy Spotlight

Rule: add 10. Start 13.

13 + 10 = 23
23 + 10 = 33
33 + 10 = 43

1 Rule: add 6. Start 14.

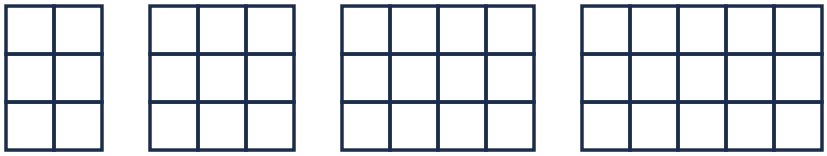
1st	2nd	3rd	4th	5th	6th
14	**20**				

☐ A. Every count is even.
☐ B. Every count is odd.
☐ C. Every term is greater than 10.

2 Start with 3 rows of 2 tiles. Add 1 column of 3 tiles at each stage.

Rule: add 3. Start 6.

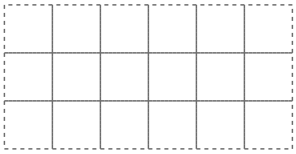
Stage 1 Stage 2 Stage 3 Stage 4



☐ A. All counts are multiples of 3.
☐ B. Every count is odd.
☐ C. Every count is at least 6.

1st	2nd	3rd	4th	5th
6	**9**	**12**	**15**	

Draw stage 5.



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Answer Key: What Else Do You Notice?

Name _____ Print at 100%

Complete the tables. Check every true statement and explain one.

Strategy Spotlight

Rule: add 10. Start 13.

13 + 10 = 23
23 + 10 = 33
33 + 10 = 43

1 Rule: add 6. Start 14.

1st	2nd	3rd	4th	5th	6th
14	**20**	**26**	**32**	**38**	**44**

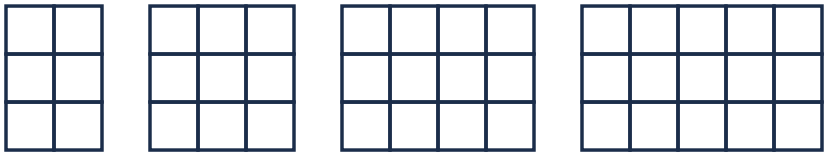
- [x] A. Every count is even.
- [ ] B. Every count is odd.
- [x] C. Every term is greater than 10.

38 + 6 = 44
Add an even amount: even stays even.

2 Start with 3 rows of 2 tiles. Add 1 column of 3 tiles at each stage.

Rule: add 3. Start 6.

Stage 1 Stage 2 Stage 3 Stage 4

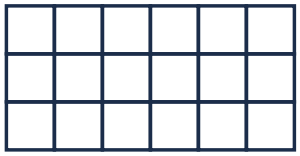


- [x] A. All counts are multiples of 3.
- [ ] B. Every count is odd.
- [x] C. Every count is at least 6.

1st	2nd	3rd	4th	5th
6	**9**	**12**	**15**	**18**

15 + 3 = 18
Each new column adds 3 tiles.

Draw stage 5.



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Input-Output Tables

Name _____ Print at 100%

Use the printed rule. Complete the missing inputs and outputs.

Strategy Spotlight

Rule: multiply by 3, then add 4.
Start 7.

7 × 3 + 4 = 25

1 Rule: multiply by 4, then add 3.

Input	2	5	8		14
Output	11	23		47	59

2 Rule: multiply by 5, then add 2.

Input	3	6	9		15
Output	17	32		62	77

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Answer Key: Input-Output Tables

Name _____ Print at 100%

Use the printed rule. Complete the missing inputs and outputs.

Strategy Spotlight

Rule: multiply by 3, then add 4.
Start 7.

7 × 3 + 4 = 25

1 Rule: multiply by 4, then add 3.

Input	2	5	8	11	14
Output	11	23	35	47	59

8 × 4 + 3 = 35
11 × 4 + 3 = 47

2 Rule: multiply by 5, then add 2.

Input	3	6	9	12	15
Output	17	32	47	62	77

9 × 5 + 2 = 47
12 × 5 + 2 = 62

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