

Pattern Partners

Connect number lists, tables, and rules.

GRADE 3 • 3.PFA.1.e

3.PFA.1.e "Investigate and explain the connection between two different representations of the same increasing or decreasing pattern."

NAME _____

DATE _____

SAME PATTERN, NEW LOOK

A pattern can be shown in a number list, a table, or a rule. Compare how the numbers change each time to see whether the representations show the same pattern.

WORKED EXAMPLE

A table shows rounds 40, 50, 60 and scores 47, 57, 67. Write the matching score pattern and rule.

1. Read the scores in order: 47, 57, 67.
2. From 47 to 57, add 10.
3. From 57 to 67, add 10.
4. The table and list show the same increasing pattern.

Answer: Score pattern: 47, 57, 67. Rule: add 10 each time.

PRACTICE 6 problems

- 1** The number list is 4, 8, 12, 16. A table has step numbers 1, 2, 3, 4 and values 4, 8, 12, 16. What change does each representation show?

ANSWER _____

- 2** The output list is 18, 24, 30. It matches this table: input 2, 4, 6 and output 18, 24, 30. Write the next input-output pair.

ANSWER _____

- 3** Number list: 35, 30, 25, 20. Which table matches the list? A. Step 1, 2, 3, 4; value 35, 31, 27, 23. B. Step 1, 2, 3, 4; value 35, 30, 25, 20.

ANSWER _____

- 4** A number list is 6, 11, 16, 21. A table has term numbers 1, 2, 3, 4 and values 6, 11, 16, 21. Do the list and table show the same pattern? Write the rule.

ANSWER _____

- 5** A table has positions 3, 6, 9 and values 42, 36, 30. Write a matching number list and tell how it changes.

ANSWER _____

- 6** A number pattern is 14, 19, 24, 29. A rule card says, "Start at 14. Add 5 each time." Does the rule card match the pattern? What is the next number?

ANSWER _____

APPLY IT Show your work

- 1** Lena earns 4 game tickets each time she finishes a reading challenge. Her table shows challenges 1, 2, 3, 4 and tickets 4, 8, 12, 16. Her notebook list says 4, 8, 12, 16. Do the table and list show the same pattern? How many tickets will Lena have after challenge 5?

WORK SPACE

ANSWER _____

- 2** In a video game, Kai starts with 39 energy points and loses 4 points after each level. His table shows levels 0, 1, 2, 3 and energy 39, 35, 31, 27. His game notes say 39, 35, 31, 27. Do the table and notes show the same pattern? What is Kai's energy after level 4?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Table A has term numbers 1, 2, 3, 4 and values 9, 13, 17, 21. Table B has term numbers 3, 4, 5, 6 and values 17, 21, __, __. Are the tables parts of the same pattern? Explain your reasoning and fill in the blanks.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	The number list is 4, 8, 12, 16. A table has step numbers 1, 2, 3, 4 and values 4, 8, 12, 16. What change does each representation show?	Increase by 4 each step.
2	The output list is 18, 24, 30. It matches this table: input 2, 4, 6 and output 18, 24, 30. Write the next input-output pair.	8, 36
3	Number list: 35, 30, 25, 20. Which table matches the list? A. Step 1, 2, 3, 4; value 35, 31, 27, 23. B. Step 1, 2, 3, 4; value 35, 30, 25, 20.	B
4	A number list is 6, 11, 16, 21. A table has term numbers 1, 2, 3, 4 and values 6, 11, 16, 21. Do the list and table show the same pattern? Write the rule.	Yes. Add 5 each time.
5	A table has positions 3, 6, 9 and values 42, 36, 30. Write a matching number list and tell how it changes.	42, 36, 30; it decreases by 6 each time.
6	A number pattern is 14, 19, 24, 29. A rule card says, "Start at 14. Add 5 each time." Does the rule card match the pattern? What is the next number?	Yes. 34

PART 2 • APPLY IT

- Yes. 20 tickets.** Both representations increase by 4 tickets for each challenge. Add 4 to 16 to get 20.
- Yes. 23 energy points.** Both representations decrease by 4 each level. Subtract 4 from 27 to get 23.

CHALLENGE

Yes. Both tables add 4 each term, and Table B starts at term 3. The blanks are 25 and 29.

Accept equivalent wording such as "goes up by" or "goes down by" for increase and decrease rules. For explanation items, students should identify the repeated change and connect matching values or term numbers.