

Pattern Pathways

Find the rule, then follow the pattern.

GRADE 5 • 5.PFA.1.a

5.PFA.1.a "Identify, describe, extend, and create increasing and decreasing patterns using various representations (e.g., objects, pictures, numbers, number lines, input/output tables, function machines)."

NAME _____

DATE _____

FOLLOW THE RULE

A pattern rule tells how the numbers change from one term to the next. Compare nearby terms to find whether the pattern increases or decreases, then use the same rule each time.

WORKED EXAMPLE

Continue the pattern: 4, 10, 16, 22,

1. Start with 4.
2. Add 6 to get 10.
3. Add 6 again to get 16, then 22.
4. Add 6 once more to get 28.

Answer: 28

PRACTICE 6 problems

1 Write the next terms: 9, 12, 15, __, __, __

ANSWER _____

2 Write the next terms: 45, 40, 35, __, __

ANSWER _____

3 The rule is add 9. Start at 11. Write the next terms: __, __, __, __

ANSWER _____

4 The rule is subtract 12. Start at 70. Write the next terms: __, __, __

ANSWER _____

5 An input/output table follows: Input: 2 | 5 | 9
Output: 17 | 20 | 24 What rule changes each input into its output?

ANSWER _____

6 Create a decreasing pattern. Start at 64 and subtract 7 each time. Write five terms.

ANSWER _____

APPLY IT Show your work

- 1** Before playing arcade games, Kai has 72 tickets. He earns 9 tickets after each game. His ticket totals are 72, 81, 90, __, __. What will his totals be after the next two games?

WORK SPACE

ANSWER _____

- 2** Nora starts with 96 gems in a video game. She spends 14 gems to unlock each level and does not earn any new gems. Her gem pattern is 96, 82, 68, __, __. How many gems will she have after unlocking the third and fourth levels?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A robot's score pattern is 93, 84, 75, __, __. Mia says the next score is 67. Is Mia correct? Explain your reasoning and write the next two scores.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Write the next terms: 9, 12, 15, __, __, __	18, 21, 24
2	Write the next terms: 45, 40, 35, __, __	30, 25
3	The rule is add 9. Start at 11. Write the next terms: __, __, __, __	20, 29, 38, 47
4	The rule is subtract 12. Start at 70. Write the next terms: __, __, __	58, 46, 34
5	An input/output table follows: Input: 2 5 9 Output: 17 20 24 What rule changes each input into its output?	Add 15.
6	Create a decreasing pattern. Start at 64 and subtract 7 each time. Write five terms.	64, 57, 50, 43, 36

PART 2 • APPLY IT

- 99 tickets, 108 tickets** The pattern increases by 9 tickets each time. Add 9 to 90 to get 99, then add 9 again to get 108.
- 54 gems, 40 gems** The pattern decreases by 14 gems each time. Subtract 14 from 68 to get 54, then subtract 14 again to get 40.

CHALLENGE

No. The pattern subtracts 9 each time, so the next two scores are 66 and 57.

Accept equivalent rule descriptions, such as "increase by 15" for "add 15." For the created pattern, accept the listed sequence when it starts at 64 and decreases by 7 each time.