LESSON MAKER PRO

Pattern Power Path

Find the rule, then follow the change.

GRADE 5 · 5.PFA.1.b

5.PFA.1.b "Analyze an increasing or decreasing single-operation numerical pattern found in lists, input/output tables, and function machines, and generalize the change to identify the rule, extend the pattern, or identify missing terms..."

NAME _____ DATE _____

SPOT THE CHANGE

A numerical pattern uses the same operation each time. Compare nearby terms or input and output pairs to find the rule, then use the rule to fill in missing terms.

WORKED EXAMPLE

Find the next two terms: 13, 19, 25, ____, ____

1. 19 - 13 = 6.
2. 25 - 19 = 6, so add 6 each time.
3. 25 + 6 = 31.
4. 31 + 6 = 37.

Answer: 31, 37. Rule: add 6.

PRACTICE 6 problems

1 Find the next two terms: 8, 12, 16, ___, ___. What is the rule?

ANSWER _____

2 Find the next two terms: 84, 75, 66, ___, ___. What is the rule?

ANSWER _____

3 Input/output table: Input 2 gives output 12. Input 5 gives output 15. Input 8 gives output ___. What is the rule?

ANSWER _____

4 Function machine: 9 becomes 45, 12 becomes 60, and 15 becomes ___. What is the rule?

ANSWER _____

5 Find the next two terms: 9/10, 7/10, 5/10, ___, ___. What is the rule?

ANSWER _____

6 Find the next term: 5.60, 5.35, 5.10, ___. What is the rule?

ANSWER _____

APPLY IT Show your work

1 For a coding challenge, Jalen earns 18 points in round 1, 26 points in round 2, and 34 points in round 3. He earns the same number of additional points each round. How many points will he earn in round 4 and round 5?

WORK SPACE

ANSWER _____

2 Nora has 11/12 yard of ribbon. After her first project, 9/12 yard remains. After her second project, 7/12 yard remains. Each project uses the same length of ribbon. How much ribbon will remain after her third and fourth projects?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A function machine uses one operation. Input 4 gives output 28. Input 9 gives output 63. What input gives output 84? Write the rule and explain how you found the missing input.

WORK SPACE AND ANSWER

ANSWER KEY # Pattern Power Path

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the next two terms: 8, 12, 16, ___, ___. What is the rule?	**20, 24. Rule: add 4.**
2	Find the next two terms: 84, 75, 66, ___, ___. What is the rule?	**57, 48. Rule: subtract 9.**
3	Input/output table: Input 2 gives output 12. Input 5 gives output 15. Input 8 gives output ___. What is the rule?	**18. Rule: add 10.**
4	Function machine: 9 becomes 45, 12 becomes 60, and 15 becomes ___. What is the rule?	**75. Rule: multiply by 5.**
5	Find the next two terms: 9/10, 7/10, 5/10, ___, ___. What is the rule?	**3/10, 1/10. Rule: subtract 2/10.**
6	Find the next term: 5.60, 5.35, 5.10, ___. What is the rule?	**4.85. Rule: subtract 0.25.**

PART 2 · APPLY IT

1. **42 points in round 4 and 50 points in round 5.** The points increase by 8 each round. Add 8 to 34, then add 8 again.
2. **5/12 yard after the third project and 3/12 yard after the fourth project.** The amount remaining decreases by 2/12 yard after each project. Subtract 2/12 two more times.

CHALLENGE

Input 12. Rule: multiply by 7. Since 84 / 7 = 12, the missing input is 12.

Accept equivalent fractions, including simplified forms such as 3/12 = 1/4. Accept clear equivalent wording for the rules, such as "increase by 4" for "add 4."