LESSON MAKER PRO

Pattern Detectives

Find rules and predict what comes next.

GRADE 3 · 3.A.1

3.A.1 "Describe and create representations of numerical and geometric patterns. Create, describe, and extend patterns involving addition, subtraction, or multiplication to solve problems in a variety of contexts..."

NAME _____ DATE _____

FIND THE RULE

A number pattern follows a rule. To find the rule, look at how one number changes to the next. In an input/output table, use the same operation on every input to get its output.

WORKED EXAMPLE

Find the rule and the missing output.

INPUT/OUTPUT

Input	Output
30	36
40	46
50	56
60	___

1. 30 + 6 = 36.
2. 40 + 6 = 46, so the rule is add 6.
3. 60 + 6 = 66.

Answer: Rule: add 6. Missing output: 66.

PRACTICE 4 problems

1 Fill in the blank: 12, 16, 20, 24, ___.

ANSWER _____

2 Fill in the blank: 91, 84, 77, 70, ___.

ANSWER _____

3 Fill in the blank: 3, 9, 27, 81, ___.

ANSWER _____

4 Fill in the blank and name the rule: 21, 32, 43, ___, 65.

ANSWER _____

_____

APPLY IT Show your work

1 Mia earns 4 tickets each round at a game booth. Her totals are 4, 8, 12, 16. How many tickets will she have after the next round?

WORK SPACE

ANSWER _____

2 A class starts with 95 paper cups. After each day, the cups left are 83, then 71. How many cups will be left after two more days?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Find the missing output. State the rule and explain how you know it works.

INPUT/OUTPUT

Input	Output
3	24
7	28
11	32
14	___

WORK SPACE AND ANSWER

ANSWER KEY

Pattern Detectives

GRADE 3 · 3.A.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Fill in the blank: 12, 16, 20, 24, ___.	**28**
2	Fill in the blank: 91, 84, 77, 70, ___.	**63**
3	Fill in the blank: 3, 9, 27, 81, ___.	**243**
4	Fill in the blank and name the rule: 21, 32, 43, ___, 65.	**54; add 11.**

PART 2 · APPLY IT

1. **20 tickets** Each round adds 4 tickets. Add 4 to 16 to get 20.
2. **47 cups** The class uses 12 cups each day. Subtract 12 twice from 71 to get 47.

CHALLENGE

35. The rule is add 21. For example, 3 + 21 = 24 and 7 + 21 = 28, so 14 + 21 = 35.

Accept equivalent wording for each rule. For the challenge, accept any two correct input/output pairs as evidence.