

# Pattern Power

*Find the rule and keep the pattern growing.*

**GRADE 3 • MA.3.AR.3**

**MA.3.AR.3** "Identify numerical patterns, including multiplicative patterns."

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## SPOT THE RULE

Look at how each number changes to the next number. In a multiplicative pattern, you multiply by the same number each time. Use that rule again and again to find missing terms.

## WORKED EXAMPLE

Find the next two numbers: 7, 21, 63, \_\_\_\_, \_\_\_\_.

1. 21 is  $7 \times 3$ .

2. 63 is  $21 \times 3$ , so the rule is multiply by 3.

3.  $63 \times 3 = 189$ .

4.  $189 \times 3 = 567$ .

**Answer: 189, 567**

## PRACTICE 6 problems

**1** Find the next two numbers: 5, 10, 20, \_\_\_\_, \_\_\_\_.

**ANSWER** \_\_\_\_\_

**2** Find the next number: 4, 16, 64, \_\_\_\_.

**ANSWER** \_\_\_\_\_

**3** Find the next number: 9, 18, 36, \_\_\_\_.

**ANSWER** \_\_\_\_\_

**4** Find the next number: 11, 22, 44, \_\_\_\_.

**ANSWER** \_\_\_\_\_

**5** Find the next number: 13, 52, 208, \_\_\_\_.

**ANSWER** \_\_\_\_\_

**6** What is the rule, and what is the next number? 6, 30, 150, \_\_\_\_.

**ANSWER** \_\_\_\_\_

## APPLY IT Show your work

- 1** A player begins a game with 12 points. In each new round, the player's points are multiplied by 5. How many points will the player have after the next two rounds?

WORK SPACE

ANSWER \_\_\_\_\_

- 2** Maya has 25 coins in a pet game. Each treasure chest multiplies her coins by 4. She opens two treasure chests. How many coins does Maya have?

WORK SPACE

ANSWER \_\_\_\_\_

## CHALLENGE One step up

### CHALLENGE

A pattern starts with 15. Each new number is twice the number before it. The pattern has five numbers total. Write all five numbers, then explain the rule.

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## PART 1 • PRACTICE

| # | PROBLEM                                                          | ANSWER                    |
|---|------------------------------------------------------------------|---------------------------|
| 1 | Find the next two numbers: 5, 10, 20, ____, ____.                | <b>40, 80</b>             |
| 2 | Find the next number: 4, 16, 64, ____.                           | <b>256</b>                |
| 3 | Find the next number: 9, 18, 36, ____.                           | <b>72</b>                 |
| 4 | Find the next number: 11, 22, 44, ____.                          | <b>88</b>                 |
| 5 | Find the next number: 13, 52, 208, ____.                         | <b>832</b>                |
| 6 | What is the rule, and what is the next number? 6, 30, 150, ____. | <b>Multiply by 5; 750</b> |

## PART 2 • APPLY IT

1. **300 points** Multiply 12 by 5 to get 60. Multiply 60 by 5 to get 300.
2. **400 coins** Multiply 25 by 4 to get 100. Multiply 100 by 4 to get 400.

## CHALLENGE

**15, 30, 60, 120, 240. Each number is multiplied by 2 to make the next number.**

Accept correct multiplication language such as "times 5" or "multiply by 5." For the challenge, students should list all five terms in order and explain that each term is doubled.