LESSON MAKER PRO

Power Patterns

Use bases and exponents to show repeated multiplication.

GRADE 6 · 6.NS.3.a

6.NS.3.a "Recognize and represent patterns with bases and exponents that are whole numbers."

NAME _____ DATE _____

POWERS SHOW PATTERNS

A power is a short way to write repeated multiplication. In b^n, b is the base, and n is the exponent. The exponent tells how many times to use the base as a factor.

WORKED EXAMPLE

Evaluate 4^3.

1. 4^3 means 4 * 4 * 4.
2. 4 * 4 = 16.
3. 16 * 4 = 64.

Answer: 64

PRACTICE 6 problems

1 Write 2^5 as repeated multiplication.

ANSWER _____

2 Evaluate 6^2.

ANSWER _____

3 Write 7 * 7 using an exponent.

ANSWER _____

4 Evaluate 5^2.

ANSWER _____

5 Complete the pattern: 12^0 = 1, 12^1 = 12, 12^2 = ___.

ANSWER _____

6 In 11^2, name the base and exponent.

ANSWER _____

APPLY IT Show your work

1 In an online game, a player can choose from 7 helmet colors and 7 badge colors. The player chooses one helmet color and one badge color. Write a power expression and find the total number of color pairs.

WORK SPACE

ANSWER _____

2 A school esports club sets up 10 rows with 10 seats in each row. Write a power expression and find the total number of seats.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Two different power expressions have a value of 256. Write two expressions, then explain why each equals 256.

_____

_____

ANSWER KEY

Power Patterns

GRADE 6 · 6.NS.3.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 2^5 as repeated multiplication.	**2 * 2 * 2 * 2 * 2**
2	Evaluate 6^2.	**36**
3	Write 7 * 7 using an exponent.	**7^2**
4	Evaluate 5^2.	**25**
5	Complete the pattern: 12^0 = 1, 12^1 = 12, 12^2 = ___.	**144**
6	In 11^2, name the base and exponent.	**Base: 11; exponent: 2**

PART 2 · APPLY IT

1. **7^2 = 49 color pairs** There are 7 choices for each of 2 categories, so multiply 7 * 7. Write this repeated factor as 7^2, which equals 49.
2. **10^2 = 100 seats** There are 10 equal groups of 10 seats, so multiply 10 * 10. This is 10^2, or 100.

CHALLENGE

2^8 and 16^2. 2^8 = 256 and 16^2 = 256.

Accept equivalent repeated-multiplication forms that use the correct number of factors. For the challenge, accept any two different correct power expressions equal to 256, including 256^1.