LESSON MAKER PRO

Power Up Math

Write and evaluate expressions with whole-number exponents.

GRADE 6 · NY-6.EE.1

NY-6.EE.1 "Write and evaluate numerical expressions involving whole-number exponents."

NAME _____ DATE _____

POWERS SHOW REPEATED FACTORS

An exponent tells how many times to use the base as a factor. Evaluate expressions by doing powers first, then multiply or divide, and then add or subtract.

WORKED EXAMPLE

Evaluate $12^2 - 7$.

1. Rewrite 12^2 as 12×12.
2. Multiply: $12 \times 12 = 144$.
3. Subtract: $144 - 7 = 137$.

Answer: 137

PRACTICE 6 problems

1 Write 5^3 as repeated multiplication. Then evaluate it.

ANSWER _____

2 Evaluate $6^4 / 6$.

ANSWER _____

3 Evaluate $(8 + 1)^3$.

ANSWER _____

4 Evaluate $3 \times 4^3 + 5$.

ANSWER _____

5 Evaluate $10 + 3^3 \times 4$.

ANSWER _____

6 Evaluate $11^3 - 100$.

ANSWER _____

APPLY IT Show your work

1 In a building game, Maya makes a cube-shaped storage room. It is 6 blocks long, 6 blocks wide, and 6 blocks high. Write an expression with an exponent and find how many unit blocks fill the room.

WORK SPACE

ANSWER _____

2 A music app starts with one shared playlist. At each stage, every shared playlist is sent to 3 new listeners. How many shares are made at stage 4? Write and evaluate an expression with an exponent.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Which expression has the greater value, 3^5 or 5^3? Evaluate both expressions and explain your reasoning.

WORK SPACE AND ANSWER

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 5^3 as repeated multiplication. Then evaluate it.	**5 × 5 × 5 = 125**
2	Evaluate 6^4 / 6.	**216**
3	Evaluate $(8 + 1)^3$.	**729**
4	Evaluate $3 \times 4^3 + 5$.	**197**
5	Evaluate $10 + 3^3 \times 4$.	**118**
6	Evaluate 11^3 - 100.	**1231**

PART 2 · APPLY IT

1. **6^3 = 216 unit blocks** Multiply the three equal dimensions: 6 × 6 × 6. Write this as 6^3 and evaluate.
2. **3^4 = 81 shares** Each stage multiplies the number of shares by 3. Use 3^4 and evaluate.

CHALLENGE

3^5 is greater because 3^5 = 243 and 5^3 = 125.

Accept equivalent repeated-multiplication forms that show the correct number of factors. Students should evaluate powers before completing the other operations.