LESSON MAKER PRO

Power Up Numbers

Multiply equal factors to evaluate powers.

GRADE 6 · MA.6.NSO.3.3

MA.6.NSO.3.3 "Evaluate positive rational numbers and integers with natural number exponents."

NAME _____ DATE _____

POWERS SHOW REPEATED FACTORS

A natural-number exponent tells how many equal factors to multiply. The base is the factor that repeats. When a fraction has an exponent, multiply the numerator by itself and the denominator by itself.

WORKED EXAMPLE

Evaluate: $(11/13)^2$

1. The exponent 2 means multiply 11/13 by itself.
2. $(11/13) \times (11/13) = (11 \times 11)/(13 \times 13)$
3. 121/169

Answer: 121/169

PRACTICE 6 problems

1 Evaluate: 6^3

ANSWER _____

2 Evaluate: 9^4

ANSWER _____

3 Evaluate: $(1/8)^3$

ANSWER _____

4 Evaluate: $(2/7)^4$

ANSWER _____

5 Evaluate: $(3/4)^3$

ANSWER _____

6 Evaluate: $(5/6)^4$

ANSWER _____

APPLY IT Show your work

1 A choose-your-own adventure game gives you 3 choices at each of 4 checkpoints. How many different choice paths can you make from the start through all 4 checkpoints?

WORK SPACE

ANSWER _____

2 A tablet game starts a shield at 1 unit. After each round, the shield has 2/3 of the energy it had before. What fraction of the starting energy remains after 3 rounds?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Evaluate: $8^2 \times (5/8)^2$

WORK SPACE AND ANSWER

Power Up Numbers

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Evaluate: 6^3	**216**
2	Evaluate: 9^4	**6561**
3	Evaluate: $(1/8)^3$	**1/512**
4	Evaluate: $(2/7)^4$	**16/2401**
5	Evaluate: $(3/4)^3$	**27/64**
6	Evaluate: $(5/6)^4$	**625/1296**

PART 2 · APPLY IT

1. **81** Multiply 3 choices four times: $3^4 = 81$.
2. **8/27** Multiply 2/3 by itself three times: $(2/3)^3 = 8/27$.

CHALLENGE

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Accept equivalent fraction answers, although all fraction answers shown are simplified. Check that students apply the exponent to both the numerator and denominator of each fraction.