LESSON MAKER PRO

Power Moves

Write, evaluate, and compare expressions with exponents.

GRADE 6 · 6.AF.A.14

6.AF.A.14 "Write, evaluate, and compare expressions involving whole number exponents."

NAME _____ DATE _____

EXPONENTS IN ACTION

An exponent tells you how many times to use the base as a factor. Evaluate exponents before adding, subtracting, or multiplying. If an expression has parentheses, work inside them first.

WORKED EXAMPLE

Evaluate $7^2 + 9$.

1. $7^2 = 7 \times 7$
2. $7 \times 7 = 49$
3. $49 + 9 = 58$

Answer: 58

PRACTICE 6 problems

1 Write $3 \times 3 \times 3 \times 3$ using an exponent.

ANSWER _____

2 Evaluate 5^3.

ANSWER _____

3 Evaluate $2^4 + 6$.

ANSWER _____

4 Evaluate 4×3^2.

ANSWER _____

5 Compare 4^3 and 3^4 using <, >, or =.

ANSWER _____

6 Evaluate $(10 - 6)^2$.

ANSWER _____

APPLY IT Show your work

1 You make a playlist with 4 song slots. You can choose from the same 3 songs for each slot, and you may repeat songs. Write an expression with an exponent for the number of possible playlists. Then find the number.

WORK SPACE

ANSWER _____

2 In one game, you choose between 2 doors in each of 5 rooms. In another game, you choose among 4 doors in each of 2 rooms. How many more possible paths does one game have than the other?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Compare $2^5 + 3^2$ and $(2 + 3)^2$. Find both values and explain which expression is greater.

WORK SPACE AND ANSWER

ANSWER KEY # Power Moves

GRADE 6 · 6.AF.A.14

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 3 × 3 × 3 × 3 using an exponent.	**3^4**
2	Evaluate 5^3.	**125**
3	Evaluate $2^4 + 6$.	**22**
4	Evaluate 4×3^2.	**36**
5	Compare 4^3 and 3^4 using <, >, or =.	**$4^3 < 3^4$**
6	Evaluate $(10 - 6)^2$.	**16**

PART 2 · APPLY IT

1. **$3^4 = 81$ playlists** There are 3 choices for each of 4 slots, so multiply 3 × 3 × 3 × 3.
2. **The first game has 16 more paths.** The first game has $2^5 = 32$ paths, and the second has $4^2 = 16$ paths. Subtract 32 - 16 = 16.

CHALLENGE

$2^5 + 3^2 = 32 + 9 = 41$. $(2 + 3)^2 = 5^2 = 25$, so the first expression is greater.

For comparisons, accept the correct inequality or a clear statement of which expression is greater. In the challenge, the explanation must show that the exponent applies to the entire sum only when the sum is in parentheses.