



MATH WITH MR DJ

GRADE 6 · EXPRESSIONS & EQUATIONS

WHOLE-NUMBER EXPONENTS

Today's goal: I can write numerical expressions involving whole-number exponents in the form a^b , where a and b are non-zero whole numbers and evaluate numerical expressions involving whole-number exponents, including fractions and decimals raised to whole-number exponents.



Tan



Digit



Blaze



Pi



WARM-UP

Turn & talk · 1 min

What is 3^4 ?

- 1 Answer it in your head. Don't say it out loud.

TURN & TALK

is it 12 or 81?



The exponent COUNTS the factors

- 1 a^b means: use **a** as a factor **b** times.
- 2 The exponent is not one of the numbers being multiplied — it tells you how many.



BIG IDEA 2

$$3^4 = 3 \times 3 \times 3 \times 3 = 81$$

- 1 Not $3 \times 4 = 12$.
- 2 Write the expansion out every time until it is automatic.

REMEMBER

Expanding first prevents nearly every error.



BIG IDEA 3

Order matters: $2^3 \neq 3^2$

1 $2^3 = 2 \times 2 \times 2 = 8$

2 $3^2 = 3 \times 3 = 9$

REMEMBER

The base is what repeats. Swap them and the meaning changes.



BIG IDEA 4

A base below 1 SHRINKS

1 $(\frac{1}{2})^3 = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$

2 $0.2^2 = 0.04$

REMEMBER

Multiplying by a number less than 1 makes it smaller – repeatedly.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

Evaluate 10^3 .

WHAT A STUDENT DID

Answered 30 (10×3).

YOUR MISSION

What went wrong? What's the right answer?



WATCH MR DJ SOLVE

Copy the steps

Evaluate 10^3 .

1 $10 \times 10 \times 10 = 1000.$

Answer: **1000**



YOUR TURN

Whiteboards up!

Pick your pepper!



🌶️ MILD

Evaluate 5^2 .

#1 on your practice sheet



🌶️🌶️ MEDIUM

Evaluate 4^3 . Show the expansion.

#3 on your practice sheet



🌶️🌶️🌶️ SPICY

Which is greater: 3^2 or 2^3 ?
Show both and explain what changed.

#6 on your practice sheet



How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help



MATH WITH MR DJ

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Watch "Order of Operations with Exponents | PEMDAS in Under 2 Minutes" on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

