$$2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$$

- Base: the BIG #, the # that gets multiplied to itself a lot.
- Exponent: the LITTLE #, the count of how many times the base gets multiplied.
- Power: both a base and an exponent.

Write the expression in expanded form: (stretched out)

Ex. 1: $3^2 \cdot 2^4$

$3 \cdot 3 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

Write each expression using exponents:

Ex. 2: $(-9) \cdot (-9) \cdot (-9) \cdot (-9) \cdot (-9) \cdot 4 \cdot 4 \cdot 4$

$(-9)^5 \cdot 4^3$

Ex. 3: $x \cdot y \cdot x \cdot y \cdot x \cdot x$

$x^4 y^2$

Write the variables in alphabetical order

The exponent hits what it is RIGHT NEXT TO!

Notes 4-2

Int 2 **Powers & Exponents** **Unit 4**

Expand each expression, then evaluate:

stretch out

Ex. 4: $-2^4 =$ without ( )

$-2 \cdot 2 \cdot 2 \cdot 2$

$-4 \cdot 4 = -16$

find answer

Ex. 5: $(-2)^4 =$ even → +

$-2 \cdot -2 \cdot -2 \cdot -2$

$4 \cdot 4 = 16$

Ex. 6: $-2^3 =$

$-2 \cdot 2 \cdot 2$

$-4 \cdot 2$

-8

Ex. 7: $(-2)^3 =$ odd → −

$-2 \cdot -2 \cdot -2$

$4 \cdot -2 = -8$

Expand each expression, then evaluate:

Ex. 8: $\left(-\frac{2}{3}\right)^4$

$-\frac{2}{3} \cdot -\frac{2}{3} \cdot -\frac{2}{3} \cdot -\frac{2}{3}$

$\frac{4}{9} \cdot \frac{4}{9}$

Multiply Frac →

Straight across

$+\frac{16}{81}$

Ex. 9: $\left(\frac{1}{5}\right)^3$

$\frac{1}{5} \cdot \frac{1}{5} \cdot \frac{1}{5} = \frac{1}{125}$

Ex. 10: The deck of a skateboard has an area of about $2^5 \cdot 7$ square inches. What is the area of the skateboard deck?

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 7$

$4 \quad 4 \quad 14$

$16 \cdot 14 = 224 \text{ in}^2$

Evaluate each expression if $a = 3$ and $b = 5$.

Ex. 11: $a^2 + b^4$

$3^2 + 5^4$

$3 \cdot 3 \quad 5 \cdot 5 \cdot 5 \cdot 5$

$25 \cdot 25$

$9 + 625 = 634$

Ex. 12: $(a - b)^2$

$(3 - 5)^2$

$(-2)^2$

$-2 \cdot -2 = 4$

Evaluate each expression if $c = -2$ and $d = 4$

Ex. 13: $d^2 + c^2$

$4^2 + (-2)^2$

$4 \cdot 4 \quad -2 \cdot -2$

$16 + 4 = 20$

When you plug in a negative # in for a variable, use ( ) ALWAYS!

Ex. 14: $|c^5 + d| + 2$

$-2 \cdot -2 \cdot -2 \cdot -2 \cdot -2$

$4 \quad 4 \quad -2$

-32

$|(-2)^5 + 4| + 2$

$|-32 + 4| + 2$

$|-28| + 2 = 28 + 2 = 30$

Abs Value | |
Find the inside # then make it positive

Ex. 15: $\dfrac{c - d}{c}$

$\dfrac{(-2) - 4}{(-2)} = \dfrac{-6}{-2} = 3$