

8th grade material chapter

Skill check

three to the fifth power:

What number is the base and what number is the exponent

Chapter 10 Vocabulary

1.) Power

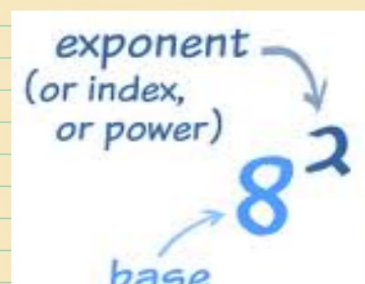
Is the product of repeated factors

2.) Base

Is the common factor

3.) Exponent

indicates the number of times the base is used as a factor



Example 1
Writing Expressions
using exponents

1.) $(-7) \times (-7) \times (-7)$

2.) $\text{Pi} \times \text{Pi} \times \text{R} \times \text{R} \times \text{R}$

Example 2
Evaluating Expressions

1.) $(-2)^4$

2.) -2^4

Example 3
Using order of
operations

$$a.) 3 + 2 \cdot 3^4$$

$$b.) 3^3 - 8^2 \div 2$$

Practice:

$$① 5 + 3 \cdot 2^3$$

$$② (13^2 - 12^2) \div 5$$

$$③ \left| \frac{1}{2} (7 + 5^3) \right|$$

$$\textcircled{4} \quad \left| \left(-\frac{1}{2}\right)^3 \div \left(\frac{1}{4}\right)^2 \right|$$

5^6 means $5 \times 5 \times 5 \times 5 \times 5 \times 5$, and $\left(\frac{9}{7}\right)^4$ means $\frac{9}{7} \times \frac{9}{7} \times \frac{9}{7} \times \frac{9}{7}$.

You have seen this kind of notation before; it is called exponential notation. In general, for any number x and any positive integer n ,

$$x^n = \underbrace{(x \cdot x \cdots x)}_{n \text{ times}}$$

The number x^n is called x raised to the n^{th} power, where n is the exponent of x in x^n and x is the base of x^n .

Exercise 1

$$\underbrace{4 \times \cdots \times 4}_{7 \text{ times}} =$$

Exercise 2

$$\underbrace{3.6 \times \cdots \times 3.6}_{\text{times}} = 3.6^{47}$$

Exercise 3

$$\underbrace{(-11.63) \times \cdots \times (-11.63)}_{34 \text{ times}} =$$

Exercise 4

$$\underbrace{12 \times \cdots \times 12}_{\text{times}} = 12^{15}$$

Exercise 13

Fill in the blanks indicating whether the number is positive or negative.

If n is a positive even number, then $(-55)^n$ is _____.

If n is a positive odd number, then $(-72.4)^n$ is _____.

Exercise 14

Josie says that $\underbrace{(-15) \times \cdots \times (-15)}_{6 \text{ times}} = -15^6$. Is she correct? How do you know?

$$(-55)^2 \leftarrow \text{even}$$

$$(-55)^3 \leftarrow \text{odd}$$

$$(-55)(-55)$$

(+)

$$(-55)(-55)(-55)$$

(+) × (-)

(-)