

An exponent is a shorthand notation for repeated multiplication.

$$\underbrace{3 \cdot 3 \cdot 3 \cdot 3 \cdot 3}_{3 \text{ is a factor 5 times}}$$

Using an exponent, this product can be written as

$$\leftarrow 3^5$$

$$4 = 4^1$$

is read as “four to the first power.”

$$4 \cdot 4 = 4^2$$

is read as “four to the second power or four _____.”

$$4 \cdot 4 \cdot 4 = 4^3$$

is read as “four to the third power or four _____.”

$$4 \cdot 4 \cdot 4 \cdot 4 = 4^4$$

is read as “four to the fourth power.”

To **evaluate** exponential notation, we write the expression as a product and then find the value of the product.

$$3^5 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 = 243$$

Complete the chart.

Exponential Form	Factored Form	Simplified	Read as
4^3			
	$5 \cdot 5 \cdot 5 \cdot 5$		
			9 squared
			7 to the fourth power
2^6			
			3 cubed

Write using exponential notation.

1) $2 \cdot 3 \cdot 2 \cdot 2 \cdot 3 \cdot 4$

2) $5 \cdot 5 \cdot 4 \cdot 3 \cdot 3 \cdot 5$

Order of Operations

- 1. Do all operations within grouping symbols such as parentheses or brackets.**
- 2. Evaluate any expressions with exponents.**
- 3. Multiply or divide in order from left to right.**
- 4. Add or subtract in order from left to right.**

Simplify. Show all work.

③ $16 \div 2 \cdot 4$

④ $5^2 \div (45 - 8 \cdot 5) \cdot 12$

⑤ $\frac{28 - 10 + 6}{2^4 - 4}$

⑥ Is $2 \cdot 3^2$ the same as $(2 \cdot 3)^2$? Why or why not?

⑦ Is $3^2 + 4^2$ the same as $(3 + 4)^2$? Why or why not?

A combination of operations on letters (variables) and numbers is called an **algebraic expression.**

Algebraic Expressions

$$5 + x \quad 6 \cdot y \quad 3 \cdot y - 4 + x$$

4x means $4 \cdot x$

and

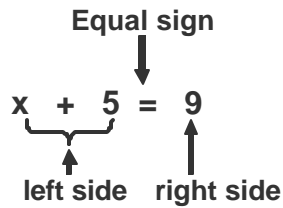
xy means $x \cdot y$

Equation

Statements like $5 + 2 = 7$ are called equations.

An equation is of the form **expression = expression**

An equation can be labeled



Keywords and phrases suggesting addition, subtraction, multiplication, or division.

Addition	Subtraction	Multiplication	Division
sum	difference	product	quotient
plus	minus	times	divided by
added to	subtracted from	multiply	into
more than	less than	twice	per
increased by	decreased by	of	
total	less	double	