Fundamentals of Arithmetic

This document goes over properties of arithmetic, inverse operations, order of operations, and the fundamental theorem of arithmetic.

Properties of Arithmetic

Property Name	Algebraic Representation
Commutative Property	$a + b = b + a$
Associative Property	$(a + b) + c = a + (b + c)$
Commutative Property of Multiplication	$a \cdot b = b \cdot a$
Associative Property of Multiplication	$(ab)c = a(bc)$
Distributive Property	$a(b + c) = ab + ac$

Inverse Operations

Inverse operations are operations that "undo" each other.

Addition ⇔ Subtraction

Multiplication ⇔ Division

Exponents ⇔ Roots

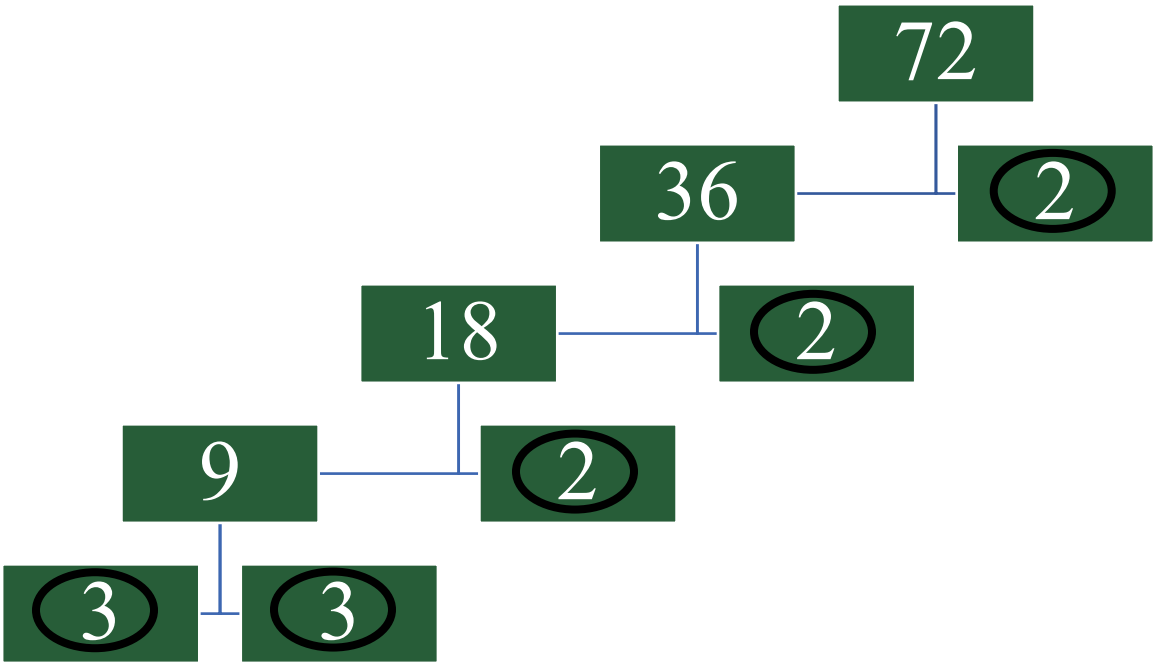
Order of Operations: PEMDAS

The *order of operations* systematically simplifies within each step from left to right.

Abbreviation	Representation	Examples
P	Parenthesis and other grouping symbols	( ), [ ], { }, −
E	Exponents, Radicals, and Logs	$a^m, \sqrt[n]{a}, \log_b x$
MD	Multiplication and Division	×,· ,÷,/
AS	Addition and Subtraction	+, −

Fundamental Theorem of Arithmetic

Every integer greater than 1 is itself prime or is the product of a unique set of prime numbers.



= prime number, cannot split further