Fundamentals of Arithmetic

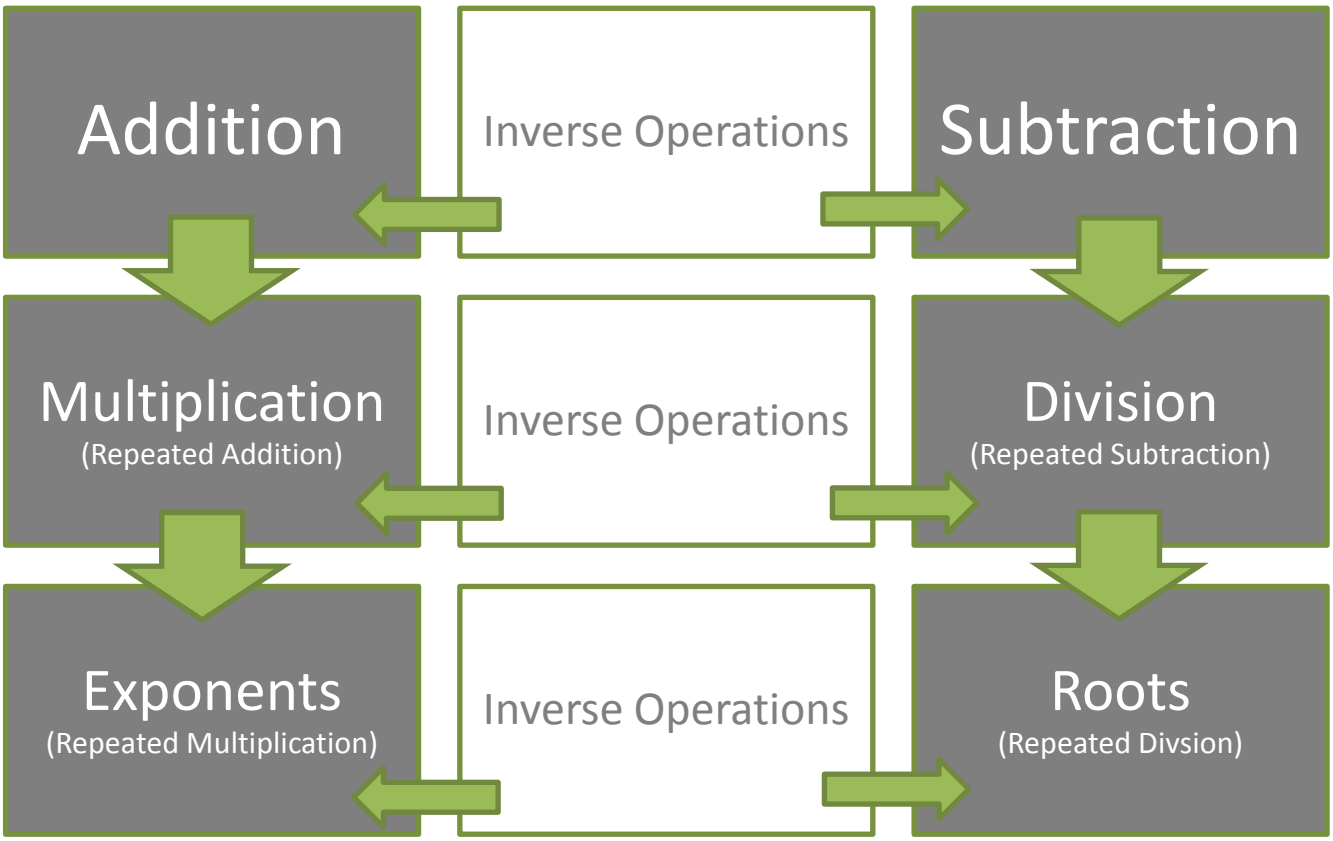
UVU Math Lab

Properties of Arithmetic:

Commutative Property of Addition: $a + b = b + a$	**Commutative Property of Multiplication:** $a \cdot b = b \cdot a$
Associative Property of Addition: $(a + b) + c = a + (b + c)$	**Associative Property of Multiplication:** $(ab)c = a(bc)$

Distributive Property:
$a(b + c) = ab + ac$

Definition of Arithmetic Operations:



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Order of Operations: GEMS

(simplify within each step from left to right – like reading a book)

G – Grouping Symbols: ( ), [ ], { }, $\frac{\square}{\square}$

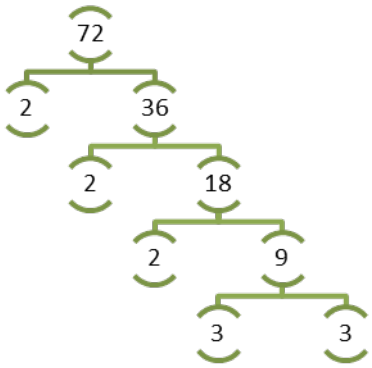
E – Exponents, Radicals, & Logs: a^m, $\sqrt[n]{a}$, $\log_b x$

M – Multiplication & Division: ×,·,÷,/

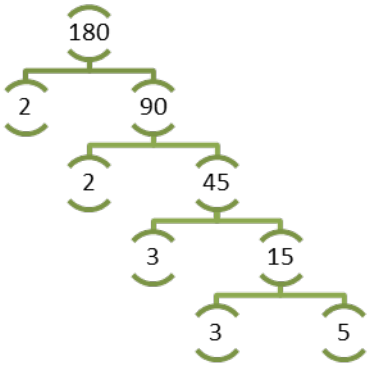
S – Subtraction & Addition: +, −

Fundamental Theorem of Arithmetic

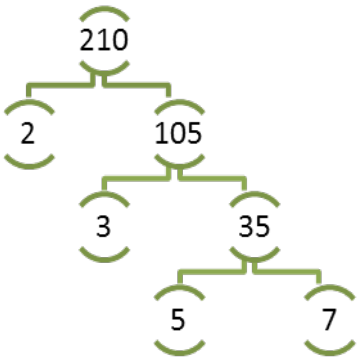
Every integer greater than 1 is itself prime or is the product of a unique set of prime numbers.



$$72 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 = 2^3 \cdot 3^2$$



$$180 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 = 2^2 \cdot 3^2 \cdot 5$$



$$210 = 2 \cdot 3 \cdot 5 \cdot 7$$