EVALUATING EXPRESSIONS / FUNCTIONS

calculation / process

evaluating an expression or function means creating a **table of values** which **visually** represents a **graph** (scatter plot)

Domain	Range	
Replacement Set	Answer Set	
x	y	
0	y-intercept	starting point
x-intercept	0	solution

CALCULATION / PROCESS

Paper: Order of Operations , Synthetic Substitution-Division

Calculator: Home Screen , Table Screen , Graph Screen , List Screen

Order of Operations Numerical Review

$7 - 4 + 3 \times 0 + 3$

$6 \div 2(1+2)$

$2^3 - 1 \div 2^2 \times 4$

Order of Operations	always replace the variable(s) with ( ) then substitute replacement value(s) doing so will avoid sign errors

Expression Function	$2x^2 - 5x + 4$ when $x = -2$

Synthetic Substitution-Division

download synthetic template

(1) ORDER the expression / function
all variable terms must be accounted for / listed in descending order of the exponents
if a variable term is MISSING use ZERO as a coefficient place holder for that variable term

(2) LIST the coefficients - bring the first coefficient DOWN

(3) MULTIPLY "below the line" to the domain value
place answer DIAGONAL right

(4) ADD down

Expression Function	$5x + 4$ when $x = -2$

domain value	coefficients							
x =								(,)
								
							= y	if $y = 0$ then x value is a solution

Expression Function	$2x^2 - 5x + 4$ when $x = -2$							
domain value	coefficients							
x =								(,)
	↓							
							= y	if $y = 0$ then x value is a solution

Historical Perspective

Who Invented Synthetic Division?

Synthetic division was invented in **1809** by Paolo Ruffini.
This process was created to more efficiently perform long division between polynomials, which represents evaluating polynomials and also solves polynomial functions when the remainder in the process equals zero.