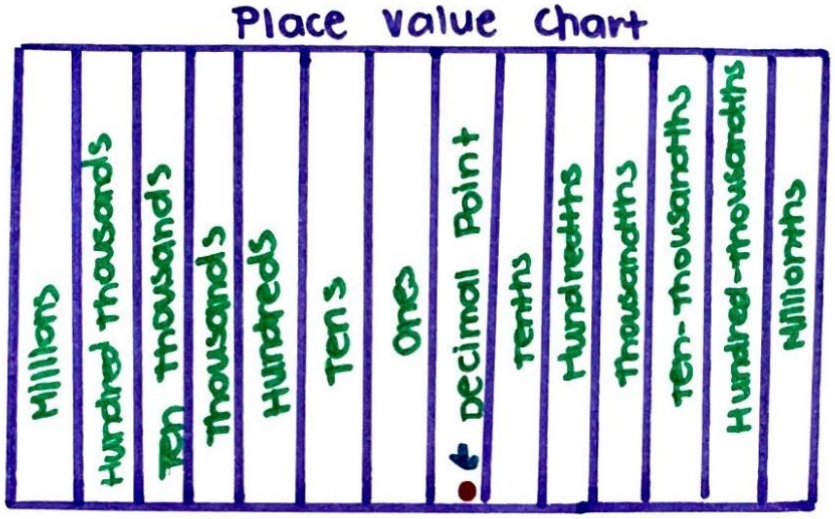
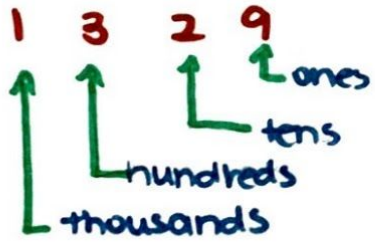
AMA
LEARNING

Arithmetic Properties: Notes

Place Value:





* standard form: the # that you write regularly
  - 1,329

* expanded form: the expanded / stretched out version
  - 1,329 = 1000 + 300 + 20 + 9
  - take each place value and use only 1 # and 0's to make it the correct value, then add together

AMA
LEARNING

Order of Operations:

PEMDAS → Please Excuse My Dear Aunt Sally

P : () → Parentheses
E : $x^{②}$ → Exponents
M : X → Multiplication
D : ÷ → Division
A : + → Addition
S : − → Subtraction

* Solve Left to Right
  - First solve in Parentheses
  - then exponents
  - Multiplication / Division (Left to Right)
  - Addition / Subtraction (Left to Right)

EX: $2^2 + (2+3) \times 2 \div 2$ Parentheses

$2^2 + 5 \times 2 \div 2$ Exponents

$4 + 5 \times 2 \div 2$ Multiplication (B/C it is left → right)

$4 + 10 \div 2$ Division

$4 + 5$ Addition

9 Final Answer

AMA
LEARNING

Rational vs. Irrational Numbers!

Rational Number: • # that can be written as a fraction $\frac{a}{b}$

- b) "b" cannot be 0
- b) "b" can be 1, making "a" a whole number
- has a finite ending
  - b) decimal: 0.1 ✓
  - t repeating
  - $0.\overline{12}$ ✓
  - 0.0123412467... ✗

Irrational Number: a number that never ends

- b) example: $\pi = 3.14...$ ✓
- 1.341698... ✓
- 0.1 ✗

$3 = \frac{12}{4}$ = rational : can be written as a fraction

0.21698... = irrational: never ends

AMA
LEARNING

5 Properties of Pre-algebra!

Commutative Property...

of Addition: $a+b=b+a$ $[4+5=5+4 \quad 9=9]$

of Multiplication: $a \times b = b \times a$ $[4 \times 5 = 5 \times 4 \quad 20=20]$

Associative Property...

of Addition: $a+(b+c)=(a+b)+c$ $[4+(5+6)=(4+5)+6 \quad 4+11=9+6 \quad 15=15]$

of Multiplication: $a \times (b \times c) = (a \times b) \times c$ $[4 \times (5 \times 6) = (4 \times 5) \times 6 \quad 4 \times 30 = 20 \times 6 \quad 120=120]$

Identity Property...

of Addition: $a+0=a$ $[4+0=4]$

of Multiplication: $a \times 1 = a$ $[4 \times 1 = 4]$

Inverse Property...

of Addition: $a+(-a)=0 \quad a-a=0$ $[4+(-4)=0 \quad 4-4=0]$

of Multiplication: $a \times \frac{1}{a} = 1$ $[4 \times \frac{1}{4} = 1]$

Distributive Property...

over Addition: $a(b+c) \quad (a \times b)+(a \times c)$ $[4(5+6) \quad (4 \times 5)+(4 \times 6) \quad 20+24 \quad 44]$

over Subtraction: $a(b-c) \quad (a \times b)-(a \times c)$ $[4(6-5) \quad (4 \times 6)-(4 \times 5) \quad 24-20 \quad 4]$

* can be used with Multiplication and/or Division