



# SCHOOL OF THE WEST

## Algebra 1

### Module 1 – Final Exam

#### Negative Numbers

$$\begin{aligned}
 --4 &= 4 & ----3 &= 3 & -4+5 &= 1 & -2+-1 &= -3 & 7--7 &= 14 & -3--4 &= 1 \\
 ---5 &= -5 & -----16 &= -16 & 3--5 &= 8 & -2-2 &= -4 & 9-+4 &= 5 & 8-9 &= -1 \\
 7x-5 &= -35 & -8x-7 &= 56 & 3x-2 &= -6 & -2x-2 &= 4 & 5x-9 &= -45 & -5x-2 &= 10
 \end{aligned}$$

#### Commutative Property

$$5 \times 99 \times 2 = 990 \quad 4 \times 2 \times 4 \times 5 = 160 \quad -2 \times 8 \times -5 \times 9 = 720 \quad 5 \times -2 \times 2 \times -5 = 100$$

#### Associative Property

Add every number from 1 to 10,000 (answer: 50,005,000)

#### Distributive Property

$$\begin{aligned}
 \text{Expand: } 2(4+8) &= 2 \cdot 4 + 2 \cdot 8 & 2(4-8) &= 2 \cdot 4 - 2 \cdot 8 & A(B+C+D) &= AB+AC+AD & 3(4+A-1) &= 3 \cdot 4 + 3A - 3 \cdot 1 \\
 \text{Factor: } 8A+8B &= 8(A+B) & 3G+6H &= 3(G+2H) & 4D-8K &= 4(D-2K) & -7L-49M &= -7(L+7M)
 \end{aligned}$$

#### Identity Property

$$\frac{2}{X} + \frac{2}{Y} = \frac{2X+2Y}{XY} \quad \frac{4}{A} - \frac{7}{B} = \frac{4B-7A}{AB} \quad \frac{1}{3} - \frac{4}{X} = \frac{X-3 \cdot 4}{3X} \quad \frac{C}{2} - \frac{3}{D} = \frac{CD-3 \cdot 2}{2D}$$

#### Inverse Property

$$8\left(\frac{T}{4}\right)(3)\frac{8}{T} = 48 \quad \frac{1}{2}\left(\frac{4}{T}\right)(9)\left(\frac{T}{4}\right)(8) = 36$$

#### Power Laws

$$\begin{aligned}
 \frac{M^5}{M^2} &= M^3 & \frac{N^2}{N^{-2}} &= N^4 & \frac{U^6}{U^{-6}} &= U^{12} & Z^3 Z^1 Z^{-2} Z^5 &= Z^7 & \frac{Y^5 Y^2}{Y^{-4} Y^4} &= Y^7 \\
 \left(\frac{N^4}{N^5}\right)^{-3} &= N^3 & \frac{512}{8} &= 64 & \left(\frac{XAX^4}{A^2 X^3}\right)^{-2} &= A^2 X^{-4} & (C^2 D^3)^{-3} &= C^{-6} D^{-9}
 \end{aligned}$$

#### Order of Operations (PEMDAS)

$$\begin{aligned}
 -(5+-2) &= -3 & -(-6-6) &= 12 & -(-5)(-4) &= -20 & -3(4) &= -12 & -6(-4)(3)(4) &= 288 & -5^2 &= -25 \\
 \frac{1}{3}(4+2)^2 &= 12 & 4+-3(-9-2) \times 2+3-12 &= 61 & \frac{1}{3}[(X-4)-X-3] &= \frac{-7}{3} & \frac{1}{5}\left[\frac{1}{3}(-4+2)^2\right]-5 &= \frac{-71}{15}
 \end{aligned}$$