Intermediate 1: Unit 3 Lesson 1

Properties & Variables

Commutative Property of Addition & Multiplication

Example: $2+3+4 = 3+2+4$ Addition.

$2 \cdot 3 = 3 \cdot 2$ Multiplication.

→ You can change the order & still get the same answer.

Associative Property of Addition & Multiplication

Example: $2+(3+4) = (2+3)+4$

$9 \checkmark = 9 \checkmark$

$2 \cdot (3 \cdot 4) = (2 \cdot 3) \cdot 4$

$24 = 24$ ✓

→ You can change the grouping & still get the same answer.

Identity Property

of Addition:

Any # + 0 = itself.

$4+0 = 4$

of Multiplication:

Any # $\cdot$ 1 = itself

$4 \cdot 1 = 4$

Multiplicative Property of Zero:

Any # $\cdot$ 0 = 0

$4 \cdot 0 = 0$

Variables

Evaluate if $a=3$ $b=5$ & $c=9$

① $a+b+c$
$3+5+9$
$8+9$
$\boxed{17}$

② $c+(b+a)$
$9+(5+3)$
$9+8$
$\boxed{17}$

③ $2a$
$2 \cdot a$
$2 \cdot 3$
$\boxed{6}$
Not 23!

Evaluate if $x=8$ $y=2$ & $z=4$

④ xyz
$x \cdot y \cdot z$
$8 \cdot 2 \cdot 4$
$16 \cdot 4$
$\boxed{64}$

⑤ $\frac{x}{y}$
$\frac{8}{2} = 4$

⑥ $\frac{2z+x}{y}$
$\frac{2 \cdot 4 + 8}{2} = \frac{8+8}{2} = \frac{16}{2} = 8$

⑦ $2x+3y-z = 2 \cdot 8 + 3 \cdot 2 - 4$
$16 + 6 - 4$
$22 - 4 = \boxed{18}$

Evaluate if $x=-4$ $y=6$ and $z=5$

⑧ $3x^2$
$3 \cdot x^2$
$3 \cdot (-4)^2$
$3 \cdot 16 = \boxed{48}$
$-4 \cdot -4$
16

⑨ x^2y
$x^2 \cdot y$
$(-4)^2 \cdot 6$
$16 \cdot 6$
$\boxed{96}$

⑩ $x^3 - 2z$
$(-4)^3 - 2 \cdot 5$
$-4 \cdot -4 \cdot -4$
$16 \cdot -4$
$-64 + 10$
$\boxed{-74}$

⑪ $|xy-z|$
$|-4 \cdot 6 - 5|$
$|-24 + 5|$
$|-29| = \boxed{29}$