Bell Ringer:

Can you think of an easier way to find the sum of these numbers without

$$\underbrace{\cancel{3}+\cancel{9}}+\underbrace{\cancel{4}+\cancel{2}}+\underbrace{\cancel{7}+\cancel{1}}+\underbrace{\cancel{6}+\cancel{8}}$$

$12 + 6 + 8 + 14$

$3+7 + 9+1+ 4+6+ 8+2$

$x^2 - 2(x-3)$ when $x = 3$

$= x^2 - 2(x-3)$

$= 3^2 - 2(3-3)$

$= 3^2 - 2(0)$

$= 9 - 2(0)$ * $9 - 0$

$= 7(0)$ * 9

$= 0$

3b) $\frac{w^2}{25} + 45w + 155$ 1yr = 52 w

w = 52

$\frac{(52)^2}{25} + 45(52) + 155$

$$\begin{array}{r} 2340.00 \\ 108.16 \\ 155.00 \\ \hline 2603.16 \end{array}$$

$$\begin{array}{r} 45 \\ \times 52 \\ \hline 90 \\ 225 \\ \hline 2340 \end{array}$$

Commutative Property of Addition:

$8+4$ gives the same sum as $4+8$.

Both sums equal 12.

$a+b=b+a$

Commutative Property of Multiplication:

6×3 gives the same product as 3×6.

Both products equal 18.

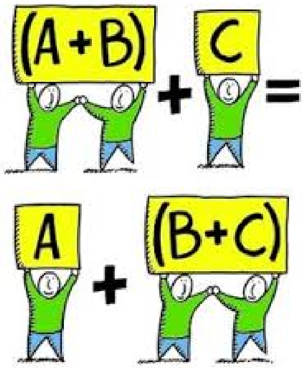
$a\times b=b\times a$

Associative Property of Addition:

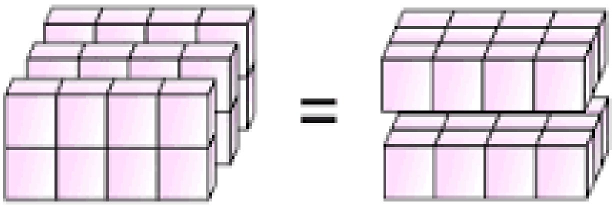
The sum $(3+5)+9$ gives the same

result as the sum $3+(5+9)$

Both sums are equal to 17



Associative Property of Multiplication:



$(2 \times 4) \times 3$ $2 \times (4 \times 3)$

The product $(2 \cdot 5) \cdot 7$ gives the same result as the product ___________

$10 \times 7 = 35 \times 2$

$2 \cdot (5 \cdot 7)$

70

Both products are equal to __________

Give an example that shows that subtraction is not commutative.

$3 - 6 = 6 - 3$

$3 + {}^-6$

$-3 \neq 3$

Write a mathematical proof of the algebraic equivalency of:

$(ab)^2 =$ $(ab)^2$ and a^2b^2.

$(ab)^2 = a^2b^2$

$(ab)(ab)$

$a \cdot b \cdot a \cdot b$

$x^a \cdot x^b = x^{a+b}$

$a \cdot a \cdot b \cdot b$

$a^1 \cdot a^1 = a^{1+1} = a^2$

$(a \cdot a) \cdot (b \cdot b)$

$b^1 \cdot b^1 = b^{1+1} = b^2$

a^2b^2

Exercise #4:

$$7-3+8-2-6+1-(-3)$$

$$\cancel{7}+{}^-\cancel{3}+\cancel{8}+{}^-\cancel{2}+{}^-\cancel{6}+\cancel{1}+\cancel{3}$$

$(-3+3)$ 0

$(8+-8)$ 0

$7+1=8$

Exercise #5: Please recall the following quickly:

(a) $5\underline{x}+2\underline{x}=$ $7x$

(b) $7x+-3x=$

$4x$

(c) $-8x+-2x$

$-10x$

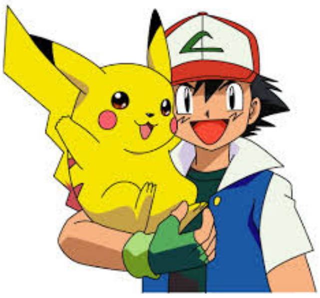
Exercise #6:

$(3x+7)+(2x+8)=3x+7+2x+8$ ASSOCIATIVE

$3x+7+2x+8=3x+2x+7+8$ COMMUTATIVE

$3x+2x+7+8=(3x+2x)+(7+8)$ ASSOCIATIVE

$=5x+15$



***Exercise* #7:** Combine the expressions below.

C.P. (a) $4x+6+-2x-9$

A.P. $(4x-2x)+(6-9)$

$\boxed{2x-3}$

C.P. (b) $-6x+9+10x+3$

C.P. $-6x+10x+9+3$

A.P. $(10x-6x)+(9+3)=\boxed{4x+12}$

C.P. (c) $4y-10-7y-3$

A.P. $(4y-7y)+(-10+-3)$

$\boxed{-3y+-13}$

C_+ for the commutative property of addition

$C_\times$ for the commutative property of multiplication

A_+ for the associative property of addition

$A_\times$ for the associative property of multiplication

$(x+4)+5(a+(2x)y)$

$(4+x)$

$5(a+y(2x))+(x+4)$

$C_\times$

$5(a+(2x)y)+(x+4)$

C_+

$A_\times$

$(x+4)+5(a+(2x)y)$

$5(a+2(xy))+(x+4)$

C_+

$(4+x)+5(a+(2x)y) \quad \xleftrightarrow{A_+} \quad 4+(x+5(a+(2x)y)) \quad \xleftrightarrow{C_+} \quad (x+5(a+(2x)y))+4$

The following is a proof of the algebraic equivalency of $2x\ ^3$ and $8x^3$.

Fill in each of the blanks with either the

statement "commutative property" or "associative property."

$2x\ ^3$	$= 2x \cdot 2x \cdot 2x$	
	$= 2\ x \times 2\ \ x \times 2\ x$	ASSOCIATIVE
	$= 2\ \ 2x\ \ 2x\ \ x$	COMMUTATIVE
	$= (2 \cdot 2)(x \times 2)(x \cdot x)$	ASSOCIATIVE
	$= 2 \cdot 2\ \ 2x\ \ x \cdot x$	COMMUTATIVE
	$= (2 \cdot 2 \cdot 2)(x \cdot x \cdot x)$	ASSOCIATIVE
	$= 8x^3$	

Time for Group Work!

Answer #1-5, Fluency, Applications, and Reasoning