Justify It!

A growing list of mathematical reasons to justify your work.

Commutative Property

Of Addition

$a+b=b+a$

$2+3 = 3+2$

Of Multiplication

$a \cdot b=b \cdot a$

$2 \cdot 3 = 3 \cdot 2$

Associative Property

Of Addition

$(a+b)+c=a+(b+c)$

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

Of Multiplication

$(a \cdot b) \cdot c=a \cdot (b \cdot c)$

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

Identity Property

Of Addition

$a+0=a$

$2+0 = 2$

Of Multiplication

$a \cdot 1=a$

$2 \cdot 1 = 2$

Inverse Property

Of Addition

$a+(-a)=0$

$2+(-2) = 0$

Of Multiplication

$a \cdot \frac{1}{a}=1$

$2 \cdot \frac{1}{2} = 1$

Symmetric POE

If a=b, then b=a.

If x=2, then 2=x.

Reflexive POE

a=a

A number is always equal to itself.

Transitive POE

If a=b and b=c, then a=c.

If x=2 and 2=y, then x=y.

Distributive POE

a(b+c)=ab+ac

2(x+3)=2x+6

Addition POE

If a=b, then a+c=b+c.

If x=2, then x+3=2+3→x=5

Subtraction POE

If a=b, then a-c=b-c.

If x=2, then x-3=2-3→x=-1

Multiplication POE

If $a=b$, then $a \cdot c = b \cdot c$.

If $x=2$, then $x \cdot 4 = 2 \cdot 4$.

Division POE

If $a=b$, then $a \div c = b \div c$

If $x=2$, then $x \div 4 = 2 \div 4 \rightarrow x = \frac{1}{2}$.

Substitution POE

If a=b, then b can replace a.

If x=2, then x+5=2+5→x+5=7

Zero Product Property

If a·b=0, then a=0 and/or b=0

If (x-2)(x+3)=0, then x-2=0 and/or x+3=0

Blank POE

If , then .

If, then .

Blank POE

If , then .

If, then .