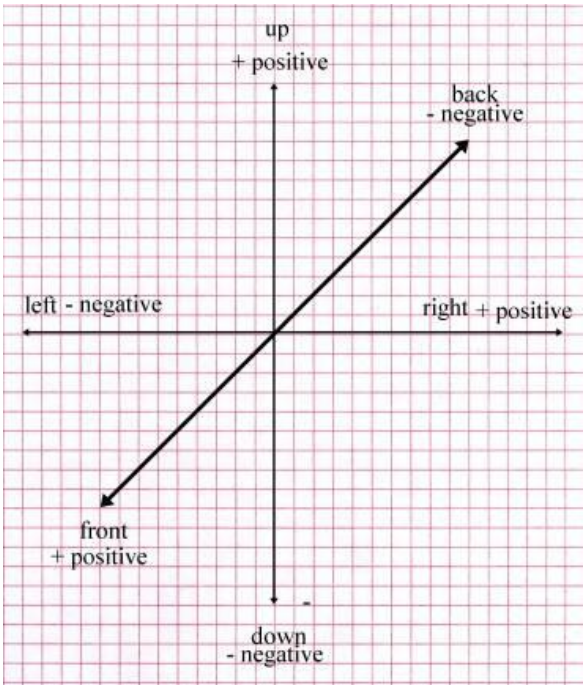
SECTION-7:
Are There Negative and Positive Directions in Space?

If I asked you to point to a negative direction in space, which way would you point? Hopefully, you will realize that there is no such thing as a negative direction in space.
If I asked you to point to a positive direction in space, which way would you point? Again, hopefully, you will realize that there is no such thing as a positive direction in space.

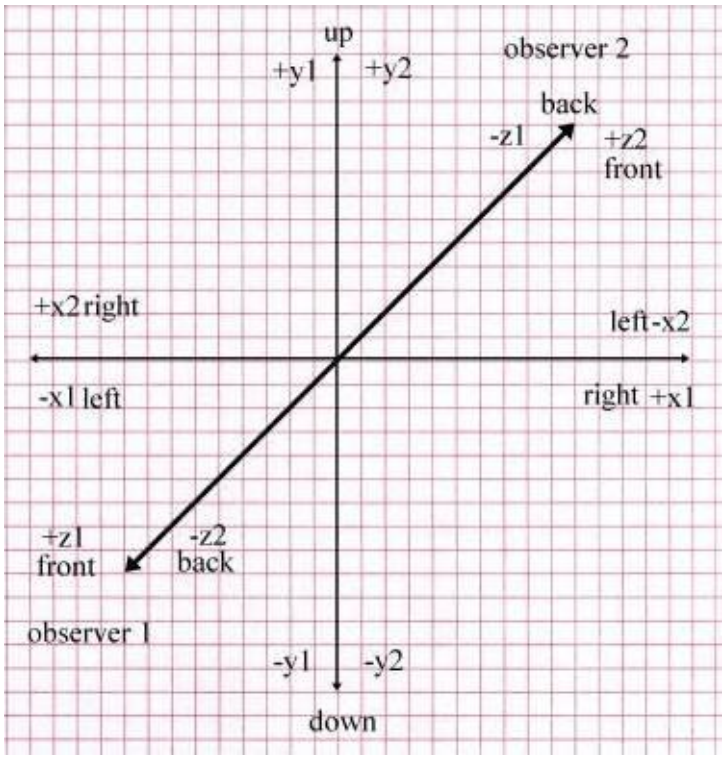
The Broken-Symmetry (BS) math number line is **broken-symmetry** in the x, y and z axis. BS math on the left, down, and back side of the BS math number line is different from the math on the right, up and front side of the BS math number line.



- Objects on the right of the x-axis are positive. (+)(+) = (+)
- Object on the left of the x-axis are negative. (-)(-) = (+); negative math is different from positive math. This is illogical
- Object on the top the y-axis are positive.
- Objects on the bottom of the y-axis are negative.
- Objects in the front of the z-axis are positive.
- Objects in the back of the z-axis are negative.

Again, BS math of the positive direction (x; right, y; up, and z; front) is different from the BS math of the negative direction (x; left, y; down and z; back). (Left & right), (front & back) and (up & down) axes have broken-symmetry.

In BS math, mirror image is broken symmetry in the x and z axis:



- If the left & right-axis are reversed, symmetry is broken. Obs-1 math is different from obs-2.
- If the front & back-axis is reversed, symmetry is broken. Obs-1 math is different from obs-2.
- If the top & bottom-axis are reversed, symmetry is not broken. Obs-1 math is the same as obs-2.

Negatives and Positives:

There are no negatives (-) in math or space directions. This was just a poor choice of words and symbols. There is nothing negative about space; it is just a direction. In math, the dash (-) symbol should only mean to subtract. It does not mean something is negative (whatever a negative means).

There are no positives (+) in math or space directions. In math, the cross (+) symbol should only mean addition. It does not mean something is positive (whatever a positive means).

When a direction arrow "←"is used for the dash (-) symbol and the word negative is removed, the answers come out correctly for adding and subtracting directions in space. You do not need the invention of "i" (imaginary numbers)

BS: Barry Mazur Imagining Numbers Page 145	Symmetry-Math using arrows for direction
$i^2 = (i)(i) = -1$ $i = \sqrt{-1}$	$(\leftarrow)^2 = (\leftarrow)(\leftarrow) = (\leftarrow)$
$\sqrt{-A} = (\sqrt{-1})(\sqrt{A}) = (i)(\sqrt{A}) = (\sqrt{A})(i)$	$\sqrt{\overleftarrow{A}} = \left(\sqrt{\leftarrow}\right)\left(\sqrt{A}\right) = (\leftarrow)\left(\sqrt{A}\right) = \left(\sqrt{A}\right)(\leftarrow)$
$\sqrt{-2} = \left(\sqrt{-1}\right)\left(\sqrt{2}\right) = (i)(1.414)$	$\sqrt{\overleftarrow{2}} = \left(\sqrt{\leftarrow}\right)\left(\sqrt{2}\right) = 1.\overleftarrow{414}$
BS Math is Illogical	SM is logical

A Subtraction of one direction in space means to move in the opposite direction.

sub dir.left dir.right $(-)\ (\leftarrow)\ =\ (\rightarrow)$ This is NOT multiplication of a dash times an arrow	*sub dir.right dir.left* $(-)\ (\rightarrow)\ =\ (\leftarrow)$ This is NOT multiplication of a dash times an arrow	SM: Logical The subtraction of an arrow pointing to the left is an arrow pointing to the right. The subtraction of an arrow pointing to the right is an arrow pointing to the left.
$(-)(-) = (+)$ $(neg)(neg) = (pos)$ (dash)(dash)=(cross) A negative (subtraction operator) multiplied by a negative (direction in space) = a positive direction in space Illogical	$(-)(+) = (-)$ $(neg)(pos) = (neg)$ (dash)(cross)=(dash) A negative (subtraction operator) multiplied by a positive (direction in space) = a negative direction in space Illogical	BS Math: Illogical

Addition means to move in the same direction.

add dir.left dir.left $+\ \leftarrow\ =\ \leftarrow$ SM Logical	*add dir.right dir.right* $+\ \rightarrow\ =\ \rightarrow$ SM Logical	SM Logical
$(+)(-) = (-)$ an addition operator multiplied by a subtraction operator is equal to a subtraction operator. Multiplying subtraction and addition operators is illogical.	$(+)(+) = (+)$ an addition operator multiplied by and addition operator is equal to an addition operator. Multiplying subtraction and addition operators is illogical.	BS: What is the meaning of multiplying addition and subtraction operator? BS math is Illogical.

BS math is Illogical	BS math is Illogical	

$\overleftarrow{6}-\overleftarrow{4}=\overleftarrow{6}+\overrightarrow{4}=\overleftarrow{2}$	Subtract 4 to the left from 6 to the left = 2 to the left. Logical SM
$\overleftarrow{6}-\overleftarrow{8}=\overleftarrow{6}+\overrightarrow{8}=\overrightarrow{2}$	Subtract 8 to the left from 6 to the left = 2 to the right. Logical SM
$\overleftarrow{6}+\overrightarrow{4}=\overrightarrow{2}$	6 to the left & 4 to the right = 2 to the left Logical SM
$\overleftarrow{6}+\overrightarrow{8}=\overrightarrow{2}$	6 to the left & 8 to the right = 2 to the right Logical SM

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

If we substitute positive numbers into the equation, the answer will be correct. If (a = 5) and (b = 3)

$$(5+3)^2=(5+3)(5+3)=(5)(5)+(5)(3)+(3)(5)+(3)(3)=25+15+15+9=64$$

$$8^2=\sum_{8}8=8+8+8+8+8+8+8+8=64$$

When two positive numbers are added and squared, the BS math distributive law provides a correct answer.

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

By definition, in BS math, no number squared can ever be negative. Therefore, no squared number can ever be an arrow moving in the dash (-) or negative direction if it is squared. In BS math, and addition operator multiplied by a subtraction operator is ALWAYS equal to a subtraction operator. If this had not been used for the last four hundred years, you would die laughing at the utter absurdity of the last statement. This is illogical and violates symmetry.

If a=5 and b=3 $(5-3)^2=(2)^2=\sum_{2}2=2+2=4$

$$(5-3)^2=(5-3)(5-3)=5^2-(5)(3)-(3)(5)+3^2=5^2-2(5)(3)+3^2=25-30+9=4$$

As long as "a" is greater than "b", the BS math distributive law provides correct answers.

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BS breaks down when "b" is greater than "a".

If a=3 and b=5

$$\left[\begin{array}{l}(3-5)^2=(-2)^2=+4\\ \sum_{-2}-2=(-)(-2)+(-)(-2)=+4\end{array}\right]\ \text{BS Math}$$

$$\left[\sum_{2}-2=(-2)+(-2)=-4\right]\ \text{SM}$$

BS math is illogical and incorrect.

By definition, the answer cannot be -4 in BS math. BS math produces incorrect answers.

$$(3-5)^2=(3-5)(3-5)=3^2-(3)(5)-(5)(3)+5^2=3^2-2(3)(5)+5^2=9-30+25=4$$

This is where the distributive law provides incorrect answers. It produces an answer of +4 because by definition, no number squared in BS math can be a negative number.

Using incorrect BS math, the distributive law will give an incorrect answers of +4. This is incorrect and illogical.

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Since there can be no negative direction from a squared term in BS math, BS math must be revised. The BS math distributive law must be abandoned. All arrows inside brackets must be solved first. Then any number raised to any power will just be in the direction of the arrow. The reason BS math does not work is that it is multiplying an arrow going in one direction by an arrow going in another direction. Clearly this is not logical. The numbers 1,2,3,4 and –1,-2,-3,-4… need to abandoned. Arrows or some notation that is specific for a direction must be used.

Broken Symmetry (BS) Math								
-4	-3	-2	-1	0	1	2	3	4
Symmetry Math (SM)								
4	3	2	1	0	1	2	3	4
←	←	←	←		→	→	→	→

What does it mean to multiply $(\overleftarrow{4})$ by $(\vec{4})$? As we know multiplication is just addition. What would $(\overleftarrow{4})$ time $(\vec{4})$ be?

$$\sum_{\overleftarrow{4}} \overleftarrow{4} = \overleftarrow{4}+\overleftarrow{4}+\overleftarrow{4}+\overleftarrow{4} = \overleftarrow{16} \ldots .or \ldots \sum_{\vec{4}} \vec{4} = \vec{4}+\vec{4}+\vec{4}+\vec{4} = \vec{16}$$

In SM Arrow/direction math, you cannot multiply arrows; going in opposite or the same directions.

$$(\rightarrow + \leftarrow)^2 = (\rightarrow + \leftarrow)(\rightarrow + \leftarrow) = \rightarrow^2 + \rightarrow\leftarrow ? + \leftarrow\rightarrow ? + \leftarrow^2 \neq ?$$

The middle two terms is not logical. You cannot multiply opposite directions.

This is a MAJOR error in BS math. They multiply a dash [(-); a direction to the left] by a cross [(+); a direction to the right]. This is illogical and produces incorrect answers. This is Einstein's math error in Special relativity.

The distributive law, when opposite direction are multiplied, produces incorrect answers.