Negative×Negative in addition Format

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Claims & Highlights of The Research Paper -

1. n*m = n+n+...+n (m times) is not perfect

i.e. Negative*Negative can't be defined by this definition

2. 2*2 should not be written as 2+2

3. Expanded form of zero (0). what's hidden inside ?

Abstract:

This research paper discusses the shortcomings of the currently prevalent definition of multiplication, and according to this paper, the definition of Multiplication is not complete and has many Errors as it does not apply to all types of examples such as negative*negative

Rather, the new definition given by us applies well to all examples and also defines the multiplication of negative numbers more efficiently than the current definition

The correctness of this new definition means that we should not write 2*2=2+2, but in the new format, although in this example both definitions are correct, but in the example of negative numbers, only the new definition works. Therefore, whether it is positive or negative, the same definition and format should be used which is more perfect because in mathematics a definition will be considered complete only if it works in all types of example numbers and charge

According to the mathematics of the Vedic period, multiplication is somewhat different from modern mathematics, and modern mathematics took the basics from ancient Indian mathematics but was not flawless.

I found the real meaning of multiplication by doing deep research on Brahmagupta's Mathematics, Vedic Mathematics,Rashi vigyan, Brahmasiddhanta, Upanishads, Rigveda and other Ganit Shashtras

Apart from this, we have also explained the correct definition of zero and its actual form which is mentioned in Indian Sanskrit texts.Through the real property and basic nature of zero, we have also given a new dimension to understand the basics of negative and positive number's operation

According to Modern Mathematics (Oxford and Cambridge dictionary)
• Definition of multiplication:

to increase a number by the number of times mentioned
  i.e. 2×3 means increase 2 for 3 times
                    OR
to add a number to itself a particular number of times.
  i.e. 2×3 means Add 2 to itself 3 times

Explaination

According to these definitions multiplication is the only repetitive addition of a number nothing other than this. If this concept is perfect then it should be applied in all examples with all conditions.
So Now We Are Going To Check this Definition by different examples

Ex. 1   **Ex. 2**
2×3 = 6   (-2)×3 = -6
try it in Definition format   Check it in Definition format
2+2+2 = 6   (-2)+(-2)+(-2) = -6
it works here (2×3=2+2+2)   Its works here so -2×3= (-2)+(-2)+(-2)

Ex. 3
(-2)×(-3) = +6 (we Know) Check it in definition format
"negative two groups of negative three." Makes no Sense

- The main problem is how do you write it in an arithmetical format that also justifies your Definition of Multiplication

We can't describe it in Repitive Addition format because how can we add -2 into itself for -3 times. As we can't assume negative times addition.(It's a self contradiction.)

And a **Mathematical website** named g'day maths **also** claims that you cannot properly explain Negative Multiplication in the Repetitive Addition (Current Definition of multiply)

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models that try, but must **fail at some point**, to "explain" what negative number multiplication is. We must start instead with a discussion on what we think should be true about multiplication in

What could $(-2) \times 3$ mean?
"Negative two groups of three"
makes no sense.

And $(-2) \times (-3)$ is equally strange:
"negative two groups of negative three."

The truth is that multiplication has no meaning here in context of repeated addition. We have entered new territory and if we want to open up our world to

Source ; Article link
https://gdaymath.com/lessons/powerarea/1-5-why-is-negative-times-negative-positive/

• This website shows the failure of the current definition and prove it algebraically that -×- = + but can't even put it into an equation as an arithmetic definition. Multiplying negative by negative is definitely positive This can be accomplished in many ways, even with simple thinking; But this in no way can be summed up in a formula using the honorific definition of current muliplication or Repetitive Addition.. It means that is the problem is in the definition and it needs to be universalized... because if the definition would be correct then From the very beginning, school children will be able to grasp the philosophy of multiplication very well.

Conclusion = "We cant Describe(-×-) in Addition by using current definition of multiplication."

(According to Ancient Indian Mathematics)

•New And Perfect Definition Of Multiplication

Introduction

According to Vedic period's mathematics, multiplication is something different from modern mathematics, And Modern mathematics adopted the basics from ancient indian mathematics but not faultlessly.

We found **The Real meaning Of multiplication** by doing a deep research on Brahmgupta's maths, vedic maths, Rashi-vigyan,brahmsidhhant, upnishads, Rigved and other Ganit shashtras.

Perfect Definition of Multiply

• **To Add/Subtract a number to Zero (0) for a particular number of times.**

                        Or

• **To increase or decrease a number to Zero (0) for a particular number of times.**

Ex. 2×3 means Add 2 Times 2 in 0 (2×3 = 0+2+2+2 not 2+2+2)

Explaination :-

• If multiplier is +3 It means add 2 to 0 for 3 times.

• If multiplier is -3 It means subtract 2 to zero for 3 times .

It means we are doing A particular Action (add or substruct) with main number in 0(zero) for mentioned Number of times (Frequency)

So Now We Are Going To Check the new Definition by different examples

Ex.1	Ex. 2
-2×2 = -4	2×2= 4
Expand:-	Expand:-
0+(-2)+(-2) = -4	0+2+2= 4
So **-2×2 = 0+(-2)+(-2)**	So (2×2=0+2+2)

Ex. 3

(-2)×(-2) = +4 (We know)

Expand:- Subtract -2 in 0 for 2 times

0-(-2)-(-2) = **+4** (Proved)

So -2×(-2)= 0-(-2)-(-2)   **(Expandation is Possible)**

•Now We can describe the Neg. multiplication in definition format

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Now We Will Prove that

•how 0-(-) = (+) in Our explanation ?

• And Why I Use 0 in Multiplication?

•**To Find the answer of the both Questions ,We need to Know about the basics of Zero**

What is 0 (Zero)?

• **Number System and basic rules of Maths are also Adopted from ancient indian maths. (But not perfectly..)**

• **According to Ved,Upnishads and other sanskrit texts** = Zero(Shunya) Is base of All Numbers and it is Not Only a placeholder But Also A starting Of All basics And numbers. Shunya Also contains Something (Zero is not so called 'Nothing' in Maths)

Ancient Indian mathematicians and Grammarians about zero

1. Panini About Zero (Shunya)

Panini's definition of Zero On the basis of Sanskrit grammar :-

अदर्शनं लोपः - १.१.६० (Adarshanãm Lopäh - 1.1.60)

Note :- Lop is synonym of Zero or shunya

Adarshanäm means = To be Invisible

And Lop is Adarshnam (According to Sage panini)

Explain = According to the sutra , Zero means Something Disappeared or Become invisible

It means Something is Still exist inside zero but its invisible

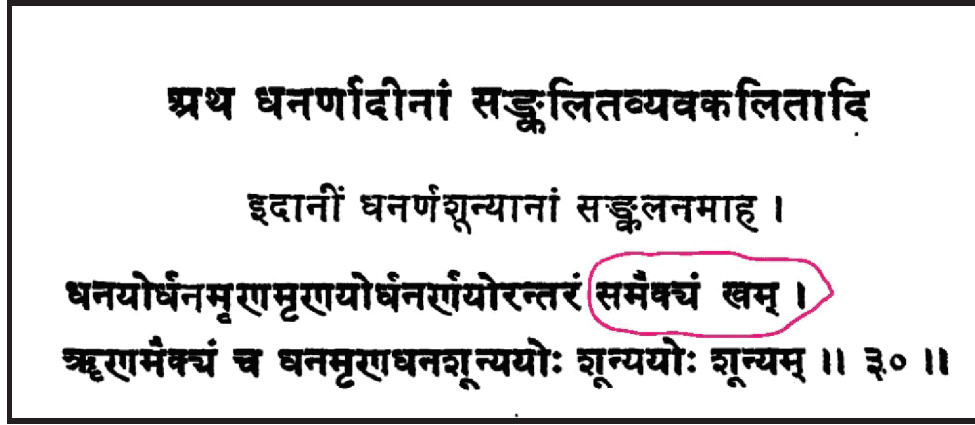**So we can Say that Actually Zero is not nothing but it's behave like Nothing**

Reference :- Asthadhyayi- Chapter 1, Bhag-1 , Sutra no. 60 Ashṭādhyāyī १.१.६०

2. Brahmgupta About Zero

Brahmgupta's definition about zero is

"samaekyam kham" (समैक्यम् खम्) In His text

"Brāhmasphuṭasiddhānta" (BSS)

अथ धनर्णादीनां सङ्कलितव्यवकलितादि

इदानीं धनर्णशून्यानां सङ्कलनमाह ।

धनयोर्धनमृणमृणयोर्धनर्णयोरन्तरं समैक्यं खम् ।

ऋणमैक्यं च धनमृणधनशून्ययोः शून्ययोः शून्यम् ॥ ३० ॥

BSS PDF Screenshot(Source - ब्रह्म१८.३०)

•**Samaekyam = Equal Positive and Negative**

•Kham (ख) means = Zero

(2 equal one in different charge,makes Zero)

Explain = According to the Definition,Sum of a equal Positive and negative Makes Zero,

Or we can say that Subtract a number into itself makes zero

Ex. (1-1=0)

•This sutra also describes that Zero is neutral But it contains

positive and negative charge in Equal quantity (0 = +,-)

Zero is very important in All basic operations of maths

I Created a Virtual structure of Zero

On The basis of Brahmsphutasidhhanta, Asthadhyayi amd Yajurved

• Om Kham Brahm - Yajurved 40.17 • Samaikyam kham - Brāhmasphuṭasiddhānta

• Adarshanam Lopah - Asthadyayi **1.1.60**

Structure of Zero
(शुन्य संरचना)

Positive   Negative

Structure Explainer- Mohit Gaur
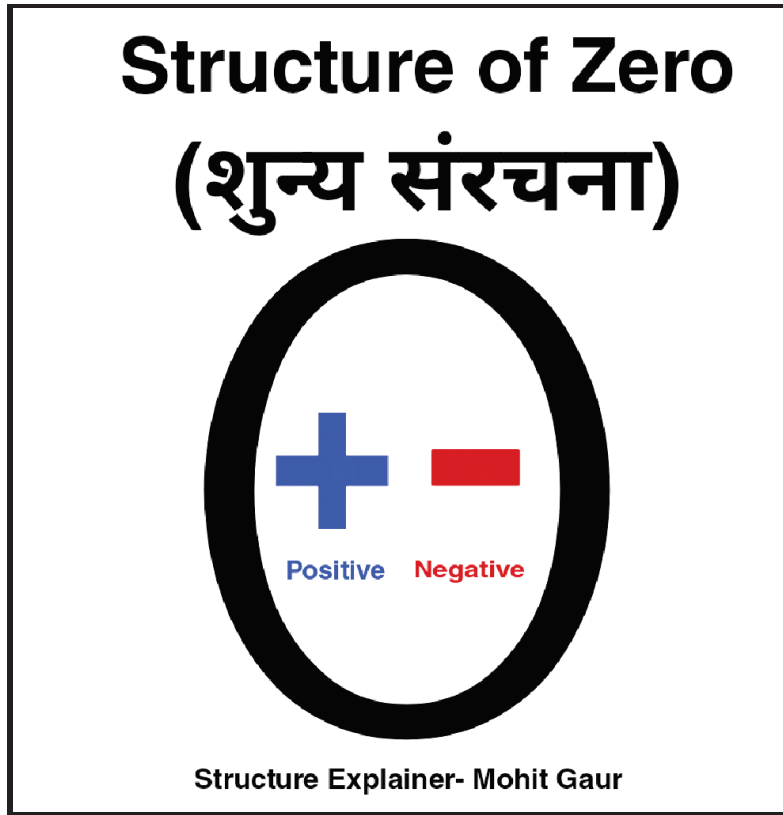
0 = numbers in Positive and negative version in equal quantity

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But We are Talking about How 0-(-) Become + in our Example 3

According to The Structure of 0 it contains + and - Both in equality **(and Its a Fact that +1-1=0)**

So If we Say

0+(Y) Means Add Y in 0

0-(Y) Means Subtract Y From 0

Than:-

0+(+) Means = Add (+) in 0

Before this process 0 have "+" and "-" In equality, so If You add one more "+" Than 0 Lost his Equality and become "+" Dominated

0-(+) Means = **Subtract** the Positive(+) Into 0 and we will get Negative dominated results So **0-(+) = Negative (-)**

0+(-) Means = Add the Negative (-) Into 0 and We will get Negative results So

0+(-) = Negative (-)

(Because,Now 0 has 2 Negatives)

0-(-) Means = Subtract (-) into Zero(0) Gives Positive

Before this process zero has **Negative and Positive both in equality** ,And we **removed Negative from zero** so 0 become positive(+) Dominated .

(because now 0 has more positives than negative when we removed some negative value ..so it gives a positive answer)

Ex. -(-5) means 0-(-5)

And if we remove -5 from 0 which contains +5 and -5 both than it remains +5

So finally we write,

0-(-5)= 0+5

 [here 0 means (+5,-5)]And if we remove -5 from the given subset then it remains only +5

And this theory is applicable with Every examples and conditions…..

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Final Conclusion :

2×2 = 2+2 in not honorific perfect

2×2= 0+2+2 is perfect

References For My Research

• Cambridge Dictionary - (definition of multiply)

• Oxford Dictionory and Google (definition of Multiply)

• Brāhmasphuṭasiddhānta ३० ; PDF (Mentioned Screenshot)

• Astadhayi By Panini ~1.1.60 (Chapter - 1 , Part 1 , Sutra 60)

• Yajurved Chapter - 40 Mantra -17

• Rigved 1.113.3

• Gday Maths Article ,Why is Negetive times Negetive positive

https://gdaymath.com/lessons/powerarea/1-5-why-is-negative-times-negative-positive/

Source Of The Research (Bibliography)

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● Ashṭādhyāyī (Author- Panini)
● Vedo me Vigyan By Kapildev Dwivedi
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● Aryabhattiyam (Author -Aryabhatt)
● Chhandogya Upnishand, Kathak samhita and vedang jyotish
● Cambridge Dictionary website and Oxford website,
● Khan Academy (2015-08-14), Intro to multiplication | Multiplication and division | Arithmetic | Khan Academy, archived from the original on 2017-03-24, retrieved 2017-03-07and Other Internet research (included - Google,Wikipedia,Quora, Arixiv and other Factual Sites)
● Devlin, Keith (January 2011). "What Exactly is Multiplication?". Mathematical Association of America. Archived from the original on May 27, 2017. Retrieved May 14, 2017. With multiplication you have a multiplicand (written second) multiplied by a multiplier (written first)

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