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Introduction to Supreme Number (Part 1)

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***Abstract*— Mathematical world is always wonderful, amazing, and meaningful. It was made of varieties of analysis and domains. To date, it helps to improve many branches of science and technology. Although the current domains or branches are marvellous, the natural numbers are the base for all the mathematics. Great mathematicians in history had an idea that there must be a special one (supreme number) controls the numbers' theory; either directly or indirectly. This idea initiated me to analyze the numbers theory and consequently a number was identified with supreme qualities. Hence a computing tool (digit summed) was introduced at first, and then analyzed. Later it was compared with the famous mathematical approaches as to find a link between them. How does the supreme number influence mathematical approaches? This is the proving part of this research which has been checked with famous mathematics. I was surprised that most of the mathematics was influenced by one of the natural numbers. The assumption of old mathematicians is correct then. It was the most weighted number in the natural numbers. Yes, it is the nine (9) which had the supreme qualities and most of today's mathematics are directly and also indirectly have a relationship with it when digit-summed method is used. Eventually any results of numbers of mathematical world can be categorized into four as Supreme Numbers, None-Supreme Numbers, Ordered-Supreme Numbers and Random-Supreme Number.**

***Keywords*— Supreme Number; Numbers Theory; Number Nine.**

I. INTRODUCTION

A summing tool (digit sum) is re-introduced here to bring any values of numbers to natural numbers [1]. It is just done by adding its' subsequent digits. Thus, if 208 are considered here, and then it will be added as follows. 2+0+8 = 10 = 1+0 = 1. This is the basic methodology used long ago to bring any values of arithmetic result to the natural number of 10 digits [2]. It is shortly, called Digits-Summed. By applying such a tool, we can analyze the old mathematicians' ideas of that; there must be a single number influences natural number! If the idea creates significance today; what will be the number then? Let's move on to the analysis.

$$\{ 0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 \}$$

The fundamental set of natural numbers is shown above. It starts from zero (0) and ends up with nine (9). Total of ten (10) digits which are often called as decimal numbering system [3] and the entire mathematical world's result can be categorized into four using this approach. They are named as follow: Supreme Numbers, None Supreme Numbers and Ordered Supreme Numbers and Random Supreme Numbers.

II. ANALYSIS AND DISCUSSION 1 (SUPREME NUMBERS)

Firstly, the basic arithmetic function is performed.

Addition: Sum of all digits of natural numbers (0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9) gives forty five (45). By adding the digits four and five (4 + 5) to bring to natural numbers, it gives nine (9).

Subtraction: Difference of all digits (0 – 1– 2 – 3 –4 – 5 – 6 – 7 – 8 – 9) produces negative forty five (- 45) . By adding the digits four (-4) and five (-5) (the negative sign was initially belong to both digits in difference) gives negative nine (- 9). Or ignore the sign for simplicity. Again the result shows nine (9).

Multiplication: It generates zero as it contained zero. If zero is removed , then the product is (1 x 2 x 3 x 4 x 5 x 6 x 7 x 8 x 9) is 362880 . By summing up all digits, it gives (3 + 6 + 2 + 8 + 8 + 0) exactly nine (9) . (More examples are given on factorials for multiplication.)

Division: It generates, again, zero (0) as it contained zero (0). If again the zero is removed , then the division of (1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9) is 0.0000027 . By summing up all digits again, it gives (0 + 0 + 0 + 0 + 0 + 0 + 2 + 7) nine (9) as what the result of product is. (Please note: Scientific calculator gives more fractional value than the normal one.)

Secondly, pairs of natural number were noticed. Naturally it establishes pairs of numbers as every single digit on the natural numbers has its partner digit to form a sum of nine (9). Such as :

TABLE 1 Pairs of Natural Number

	Partners	**Digits-Summed**
Pair 1	0 + 9	9
Pair 2	1 + 8	9
Pair 3	2 + 7	9
Pair 4	3 + 6	9
Pair 5	4 + 5	9

There are five pairs exist, and the sum of pairs gives nine (9) and none of the digit has repeated on any pair of the set. Likewise, other values of sum of pairs are not possible within. Thirdly, the pair values are checked with an algebraic equation $(a+b)(a-b) = (a^2-b^2)$.

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

Pair 1: $(0 + 9)\ (0 - 9) = 0^2 - 9^2 = 81 = 8 + 1 = 9$

Pair 2: $(1 + 8)\ (1 - 8) = 1^2 - 8^2 = -63 = -(6+3) = -9$

Pair 3: $(2 + 7)\ (2 - 7) = 2^2 - 7^2 = -45 = -(4+5) = -9$

Pair 4: $(6 + 3)\ (6 - 3) = 6^2 - 3^2 = 27 = 2 + 7 = 9$

Pair 5: $(5 + 4)\ (5 - 4) = 5^2 - 4^2 = 9 = 9$

Fourthly, two-numbered subtraction from high to low, reversed-same-digits, reveal the pairs again which gives a sum of nine (9). Some examples are shown below.

83	74	87	62	86
- 38	- 47	- 78	- 26	- 68
45	27	09	36	18

Fifthly, it was checked with factorials and found that the result was relatively linked with nine. The factorials that more than 6 induce a digit sum of nine. By eliminating factorial zero (0!), the factorials of 1, 2, and 3 can be added to form nine and also 4 and 5. As such, it obviously shows that the result is related with nine.

TABLE 2 Factorials

Integers	**Answer**	**Digit Summed**	**Result**
0!	1	1	1
1!	1	1	1
2!	2	2	2
3!	6	6	6
4!	24	2+4	6
5!	120	1+2+0	3
6!	720	7+2+0	9
7!	5040	5+0+4+0	9
8!	40320	4+0+3+2+0	9
9!	362880	3+6+2+8+8+0	9
10!	3628800	3+6+2+8+8+0 +0	9
11!	39916800	3+9+9+1+6+8 +0+0	9
12!	479001600	4+7+9+0+0+1 +6+0+0	9
13!	6227020800	6+2+2+7+0+2 +0+8+0+0	9
Towards Infinity			9

Sixthly, an analysis was performed on four quadrants and noticed that all the perfect angles are producing a digit sum of nine (9). Moreover digit-sum of all the closed angles of triangle, rectangle, pentagonal, hexagonal, and others are also produce (9).

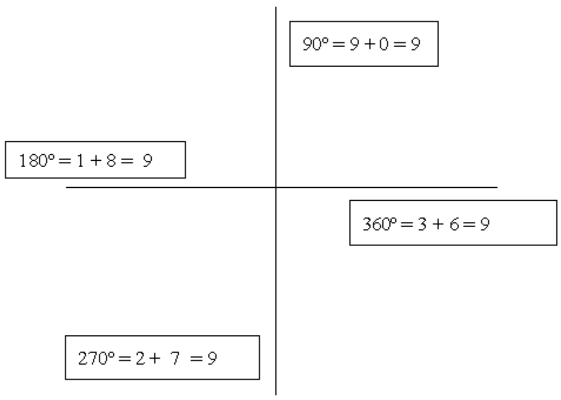


FIGURE 1 Four Quadrant Analysis

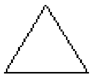
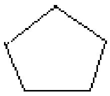
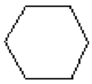
Angular Analysis		
Triangle		A ° + B ° + C ° = 180° (1 + 8 = 9)
Rectangle		A ° + B ° + C ° + D ° = 360° (6 + 3 = 9)
Pentagon		A ° + B ° + C ° + D ° + E ° = 540° (5 + 4 = 9)
Hexagon		A ° + B ° + C ° + D ° + E ° + F ° = 720° (7 + 2 = 9)

FIGURE 2 Angular Analyses

Seventhly, Fibonacci series is given by Fn = F n-1 + F n-2. Basically it is a series which plays important role on much complex architecture. Hence an analysis was extended on it to find the factor that creates this series. It was just the 1 & 2 which determines the place or order that should be added to find the following series. How does the supreme number manipulate this?

Let's look up at the series.

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, **144**, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, **46368**, 75025, 121393, 196418, 317811, 514229, 832040, 1346269, 2178309, 3524578, 5702887 , 9227465 , **14930352** , …………………..

Every 12th (1 & 2 of Fibonacci series pointers) place of Fibonacci series' digits-sum is nine (9). The places are underlined. Other digit sum of numbers on the series does not produce nine at any values.

Eighthly, the digits-sum of Universal Time was analysed and it produces nine (9) as well. So the analysis extended from Second to Years. Recalling equations, 60 Second = 1 Minute, 60 Minutes = 1 Hour, 24 Hours = 1 Day, 365/366 Days = 1 Year.

60Sec X 60Min (1Hr) = 3600Sec (3+6=9)
3600Sec X 24Hrs = 86400Sec (8+6+4+0+0=9)
86400Sec X 28Days (1Month) =2419200Sec
(2+4+1+9+2+0+0 = 9)
Or
86400Sec X 29Days (1Month) = 2505600Sec
(2+5+0+5+6+0+0 = 9)
Or
86400Sec X 30Days (1Month) = 2592000Sec
(2+5+9+2+0+0+0= 9)
Or
86400Sec X 31Days (1Month) = 2678400Sec
(2+6+7+8+4+0+0= 9)
And
86400 Seconds X 365 Days = 31536000 Sec
(3+1+5+3+6+0+0+0=9)
86400 Seconds X 366 Days = 31622400 Sec
(3+1+6+2+2+4+0+0=9).

III. Analysis and discussion 2 (None Supreme Numbers)

Firstly, Pascal's Triangle was checked and found that it does not generate a digits-sum of nine at any row. It can be expanded to infinity but there is no existence of nine (9) at any row and is also fulfilling the pairs theory. Two pairs of numbers (0+9) (3+6) are missing.

1	**1**
1 1	**2**
1 2 1	**4**
1 3 3 1	**8**
1 4 6 4 1	**7**
1 5 10 10 5 1	**5**
1 6 15 20 15 6 1	**1**
1 7 21 35 35 21 7 1	**2**
1 8 28 56 70 56 28 8 1	**4**
1 9 36 84 126 126 84 36 9 1	**8**
1 10 45 120 210 252 210 120 45 10 1	**7**

TABLE 3 Pascal's Triangle

Secondly, Combination and Permutation were checked for digit sum. It should be noted that combination gives exact values as Pascal's triangle produced. So any row of digit sum of combinations will also produce similar results as that of the Pascal's triangle produced. What about permutation then? Permutation does not generate digit sum of any row of permutation result as nine when we draw a similar tree like Pascal's triangle.

Permutation = nPr = n! / (n-r)!
Combination = nCr = n! / (n-r)! r! Or nPr / r!

Thirdly, Prime Number was checked for digit sum. None of the prime numbers' digit sum had produced the nine. This is how the supreme number stands alone with its superior qualities.

TABLE 4 Prime Number

2	3	5	7	11	13	17	19	23	29
31	37	41	43	47	53	59	61	67	71
73	79	83	89	97	101	103	107	109	113
127	131	137	139	149	151	157	163	167	173
179	181	191	193	197	199	211	223	227	229
233	239	241	251	257	263	269	271	277	281
283	293	307	311	313	317	331	337	347	349
353	359	367	373	379	383	389	397	401	409
419	421	431	433	439	443	449	457	461	463
467	479	487	491	499	503	509	521	523	541
547	557	563	569	571	577	587	593	599	601
607	613	617	619	631	641	643	647	653	659

IV. Analysis and discussion 3 (Ordered Supreme Numbers)

People may raise question that "is there any mathematical approaches existed with both supreme numbers and none-supreme numbers in order?" The answer is, again, yes!

Firstly, the analysis was taken into squared number (X^2) of natural numbers and noticed both, supreme numbers and none supreme number in an order. Therefore it is named as ordered supreme number.

TABLE 5 Squared Powers

$1^2 = 1 \times 1$			= 1
$2^2 = 2 \times 2$			= 4
$3^2 = 3 \times 3$			**= 9**
$4^2 = 4 \times 4$	= 16	= 1+6	= 7
$5^2 = 5 \times 5$	= 25	= 2+5	= 7
$6^2 = 6 \times 6$	**= 36**	**= 3+6**	**= 9**
$7^2 = 7 \times 7$	= 49	= 4+9	= 4
$8^2 = 8 \times 8$	= 64	= 6+4	= 1
$9^2 = 9 \times 9$	**= 81**	**= 8+1**	**= 9**
$10^2 = 10 \times 10$	= 100	=1+0+0	= 1
$11^2 = 11 \times 11$	= 121	= 1+2+1	= 4
$12^2 = 12 \times 12$	**= 144**	**=1+4+4**	**= 9**
$13^2 = 13 \times 13$	= 169	=1+6+9	= 7
$14^2 = 14 \times 14$	= 196	= 1+9+6	= 7
$15^2 = 15 \times 15$	**= 225**	**= 2+2+5**	**= 9**
$16^2 = 16 \times 16$	= 256	= 2+5+6	= 4
$17^2 = 17 \times 17$	= 289	= 2+8+9	= 1
$18^2 = 18 \times 18$	**= 324**	**= 3+2+4**	**= 9**
$19^2 = 19 \times 19$	= 361	= 3+6+1	= 1
$20^2 = 20 \times 20$	= 400	= 4+0+0	= 4

Secondly, times table was checked. In this case, it has been computed from 0 to 30 on both; vertically and horizontally. Digits in the columns after ten (10) are all added to a single digit (digit summed) as to see the repetition of numbers on both direction (vertically and horizontally). The nine was found to be the border of all digits and also chained. Other numbers are not possible for this type of analysis.

Thirdly, the numbers are raised to cubic powers (X^3). Again an order existed with different combination. It has been tabulated on table 6 for simplicity. The analysis was extended to power of 4 and again an order of numbers exists as how it has existed on power of 3 and 4.

TABLE 6 Cubic Powers

$1^3 = 1 \times 1 \times 1$	= 1	= 1
$2^3 = 2 \times 2 \times 2$	= 8	= 8
$3^3 = 3 \times 3 \times 3$	**= 27**	**= 9**
$4^3 = 4 \times 4 \times 4$	= 64	= 1
$5^3 = 5 \times 5 \times 5$	= 125	= 8
$6^3 = 6 \times 6 \times 6$	**= 216**	**= 9**
$7^3 = 7 \times 7 \times 7$	= 343	= 1
$8^3 = 8 \times 8 \times 8$	= 512	= 8
$9^3 = 9 \times 9 \times 9$	**= 729**	**= 9**
$10^3 = 10 \times 10 \times 10$	= 1000	= 1
$11^3 = 11 \times 11 \times 11$	= 1331	= 8
$12^3 = 12 \times 12 \times 12$	**= 1728**	**= 9**
$13^3 = 13 \times 13 \times 13$	= 2197	= 1
$14^3 = 14 \times 14 \times 14$	= 2744	= 8
$15^3 = 15 \times 15 \times 15$	**= 3375**	**= 9**
$16^3 = 16 \times 16 \times 16$	= 4096	= 1
$17^3 = 17 \times 17 \times 17$	= 4913	= 8
$18^3 = 18 \times 18 \times 18$	**= 5832**	**= 9**
$19^3 = 19 \times 19 \times 19$	= 6859	= 1
$20^3 = 20 \times 20 \times 20$	= 8000	= 8

V. Analysis and Discussion 4 (Random Supreme Numbers)

Firstly**,** logarithmic was examined for the digit sum and found a random existence of supreme numbers. There are many formulas-reductions methods existed in logarithmic. However those methods are also applicable for digit sum. See below:

TABLE 7 logarithmic

Log 1 = 0 (Not existed)

Log 2 = 0.3010299957

0+3+0+1+0+2+9+9+9+5+7 = 9

Log 3 = 0.4771212547

0+4+7+7+1+2+1+2+5+4+7 = 4

Log 4 = 0.6020599913

0+6+0+2+0+5+9+9+9+1+3 = 8

Log 5 = 0.6989700043

0+6+9+8+9+7+0+0+0+4+3 = 1

Log 6 = 0.7781512504

0+7+7+8+1+5+1+2+5+0+4 = 4

Log 7 = 0.8450980800

0+8+4+5+0+9+8+0+8+0+0 = 6

Log 8 = 0.9030899870

0+9+0+3+0+8+9+9+8+7+0 = 8

Log 9 = 0.9542425094

0+9+5+4+2+4+2+5+0+9+4 = 8

Secondly**,** angle function with sine was examined. They are listed below as:

TABLE 8 Sines

Sin (0) = 0

Sin (1) = 0.01745240644

0+0+1+7+4+5+2+4+0+6+4+4 = 1

Sin (2) = 0.0348994967

0+0+3+4+8+9+9+4+9+6+7 = 5

Sin (3) = 0.05233595624

0+0+1+7+4+5+2+4+0+6+4+4 = 8

Sin (4) = 0.06975647374

0+0+6+9+7+5+6+4+7+3+7+4 = 4

Sin (5) = 0.08715574275

0+0+8+7+1+5+5+7+4+2+7+5 = 6

Sin (6) = 0.1045284633

0+1+0+4+5+2+8+4+6+3+3 = 9

Sin (7) = 0.1218693434

0+1+2+1+8+6+9+3+4+3+4 = 5

Sin (8) = 0.139173101

0+1+3+9+1+7+3+1+0+1 = 8

Sin (9) = 0.156434465

(0+1+5+6+4+3+4+4+6+5) = 2

Thirdly**,** angle function with cosine was examined. They are listed below as:

TABLE 9 Cosines

Cos (0) = 1

Cos (1) = 0.9998476952

(0+9+9+9+8+4+7+6+9+5+2) = 5

Cos (2) = 0.999390827

(0+9+9+9+3+9+0+8+2+7) = 2

Cos (3) = 0.9986295348

(0+9+9+8+6+2+9+5+3+4+8) = 9

Cos (4) = 0.9975640503

(0+9+9+7+5+6+4+0+5+0+3) = 3

Cos (5) = 0.9961946981

(0+9+9+6+1+9+4+6+9+8+1) = 8

Cos (6) = 0.9945218954

(0+9+9+4+5+2+1+8+9+5+4) = 2

Cos (7) = 0.9925461516

(0+9+9+2+5+4+6+1+5+1+6) = 3

Cos (8) = 0.9902680687

(0+9+9+0+2+6+8+0+6+8+7) = 1

Cos (9) = 0.9876883406

(0+9+8+7+6+8+8+3+4+0+6) = 2

There are still many branches of mathematics can be included here but only three were selected for comparison purposes.

VI. Conclusion

1) Nine is the most weighted number of natural or decimal numbers.
2) Nine plays important role on many branch of mathematics. Hence, it is named as supreme number of natural number due to its supreme qualities.
3) Any results of numbers of mathematical world can be categorized into four as Supreme Numbers, None-Supreme Numbers, Ordered-Supreme Numbers and Random-Supreme Numbers.
4) Supreme Number is determined by performing digit-summed on any mathematical approach at the moment.
5) The analysis is also possible for other numbering system like octal, hexadecimal, and binary numbering system.

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