SCIENCE SET
OPEN ACCESS PUBLISHERS

ISSN: 3066-8131
Research Article

Science Set Journal of Physics

The Wonders and Curiosities of the Number 9

Hussein Ahmed Ayed Rababa

Hashemi Center for Public Opinion Survey, Jordan - Irbid - Douar al-Qubbah.

***Corresponding author:** Hussein Ahmed Ayed Rababa, Hashemi Center for Public Opinion Survey, Jordan - Irbid - Douar al-Qubbah.

Submitted: 27 Dec 2022 **Accepted:** 03 Jan 2023 **Published:** 13 Jan 2023

https://doi.org/10.63620/MKSSJP.2022.1007

Citation: *Rababa, H. A. A. (2022). The wonders and curiosities of the number 9, Sci Set J of Physics 2(1), 01-02.*

Abstract
Numbers are a world full of secrets and wonders that help explain many phenomena and enter the world of games to act as an engine for the human mind and a catalyst for the study of these numbers. For the numbers associated with the number 9, and help us build the number system so that it is divisible by the number 9, in addition to what is related to the result and its properties.

Keywords: Converting the Number System, The System of Numbers, Suggested view.

Introduction

The world in which we live is unequal, with all its developments. Numbers played a major role in that, as they contributed to organization, discovery, invention, led the framework of technology, and achieved the pillars of the economy.

The numbers 1 to 9 are very important to the semantics of words, things, and businesses, and these numbers vary in their meaning, contributions, and usage, so whether we see them in our number charts or wonder why they keep popping up in our lives, it's important to know what they mean so that we can understand some of what these numbers are all about of wonders [1,2].

This number is a human number at its core, and it requires a lot of research and more effort from us to find out what it hides in terms of energy and strength, and it provides us with mathematical operations that we deal with as a new tributary to game theory and its multiple applications [3]. pree Theory: Any number whose sum of its digits is equal to a natural number [4]. If the number representing the sum of the digits of that number is subtracted from it, the result becomes divisible by 9, this theory is expressed in the following way:

if a is natural number, and the sum of its digits equal q, then (a- q)

∑a=q,a-q , divisible by 9.

Examples of the discovered theory, the application of the theory is shown in the following table (1)

Number (a)	sum of number of the digit number ∑a=q	a-q	(a-q)÷ 9
678945	39	678945-39=678906	678906÷9=75434
45870234	33	45870234-33=45870201	45870231÷9=509689
98000111	20	98000111-20=98000091	98000091÷9=1088899
76	13	76-13=63	63÷9=7
3241	10	3241-10=3231	3231÷9=359
539	17	539-17=522	522÷9=58

From this theory, the following two branches can be reached:
lemma 1: If any number consisting of two digits is divided after subtracting the sum of its digits by the number 9, the result of the division operation is the number in the ones place of the original number.

The application of the lemma (1) is shown in the following table (2)

Number (a)	sum of number of the digit number ∑a=q	a-q	(a-q)÷ 9
32	5	27	27÷9=3
67	13	54	54÷9=6
98	17	81	81÷9=9
05	5	0	0÷9=0
12	3	9	9÷9=1

lemma 2: If any number consisting of three digits is divided so that the tens digit is 0 and after subtracting the sum of its digits to the number 9, the result of the division process is the number in the ones place repeated.

The application of the lemma 2 is shown in the following table (3)

Number (a)	sum of number of the digit number ∑a=q	a-q	(a-q)÷ 9
302	5	297	297÷9=33
609	15	594	594÷9=66
908	17	891	891÷9=99
405	9	396	396÷9=44
102	3	99	99÷9=11
801	9	792	792÷9=88

The two lemmas presented in this article contributes extensively to

1. Determine the divisibility of a number by 9
2. The theory is used in the applications of game theory
3. Create numbers that are divisible by 9

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