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ARITHMETICAL UNDERSTANDING FOR THE CONCEPT OF DIVISIBILITY OF NUMBER SEVEN

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ABSTRACT

The authors establish presumably a new result on arithmetical understanding for the concept of divisibility of number seven.

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Key Words and Phrases: *Integer division, divisibility rules.*

INTRODUCTION

The divisibility rules for numbers through modular arithmetic procedure are well known and studied by several researchers. The purpose of this article to introduce presumably a new concept of arithmetical understanding for the concept of divisibility of number seven.When we compute numerical value for any number, then we find following results- One, if the value for a number is divisible by 7, then number itself also divisible by 7; Two, if the value for a number is NOT divisible by 7, then the number also NOT divisible by 7.

METHODOLOGY FOR COMPUTATION OF NUMERICAL VALUE OF NUMBERS

For any given number we compute its value as
[1]. (1^{st} digit) × 1 + (10^{th} digit)×3+ (100^{th} digit) ×2+ (1000^{th} digit) ×6 + ($10\,000^{th}$ digit) ×4 + ($100\,000^{th}$ digit) ×5.

[II]. Further, when we proceed again same pattern is repeated for other / more digits of numbers as given in the following table:

Place of digit	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^8	10^9	10^{10}	10^{11}
Multiplied by	1	3	2	6	4	5	1	3	2	6	4	5
Place of digit	10^{12}	10^{13}	10^{14}	10^{15}	10^{16}	10^{17}	For other numbers……………………					
Multiplied by	1	3	2	6	4	5	Repeated same pattern…………………					

INTERPRETATION OF RULE BY NUMERICAL EXAMPLES

Example 1: Number 623.

If we divide it by 7, we get 623 / 7 = 89, i.e. divisible by 7.

Now we can compute its vale by above table as
3×1+2×3+6×2= 3+6+12 = 21, which is also divisible by 7.

Example 2: Number 237.

If we divide it by 7, we get 237 / 7 = NOT divisible by 7.

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Now we can compute its vale by above table as
7×1+3×3+2×2= 7+9+4 = 20, which is also NOT divisible by 7.

Example 3: Number 237865293.

If we divide it by 7, we get 237865293 / 7 = NOT divisible by 7.

Now we can compute its vale by above table as
3×1+9×3+2×2+5×6+6×4+8×5+7×1+3×3+2×2 = 3+27+4+30+24+40+7+9+4= 148,
which is also NOT divisible by 7.

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