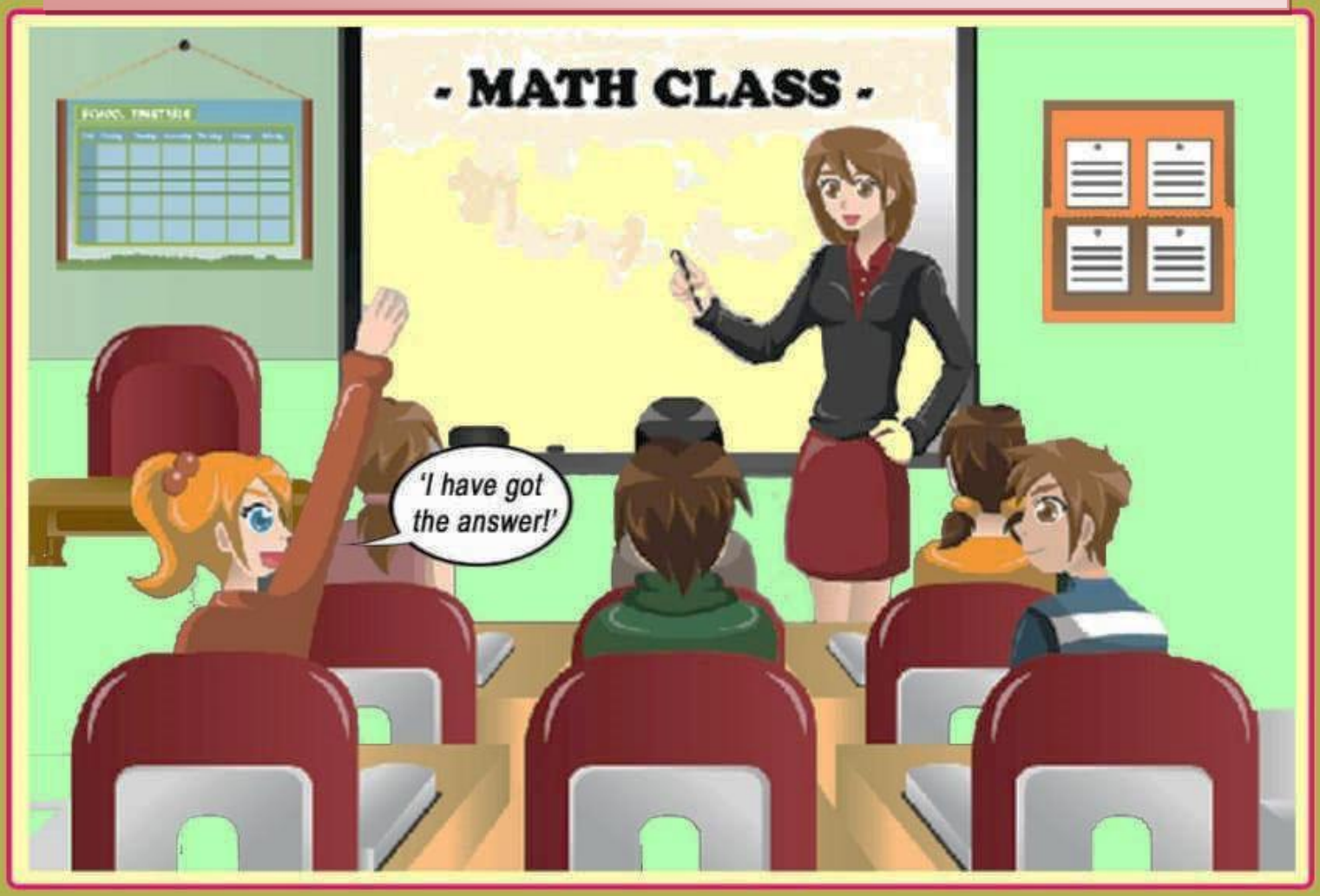
A NEW STRATEGY OF LEARNING CALCULATING SKILLS

Discovery of a New Number System: Bi-Quartet Number System and its Applications.



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INTRODUCTION

Many people find mathematics difficult and boring. We have to overcome this serious problem, for everything around us contains mathematics and therefore it is called "the queen of the sciences." This article aspires on training students to write well (both Arabic numerals and alphabet), write fast and calculate fast. Calculating fast is more than just writing fast but to calculate fast one has to be able to write fast (enclosed herewith practice formats to write both Arabic numerals and alphabet well and fast in Annexue-1&2).

I have recently discovered a new number system, **BI-QUARTET NUMBER SYSTEM,** which enhances the speed of calculation and also highly simplifies the calculating process of all the existing operations: addition, subtraction, multiplication and division. The discovery of the new number system is nothing short of major breakthrough in learning of mathematics. This article will enlighten and assist slow learners in overcoming many hurdles and greatly enhance fast learners' performance. Mathematics is a number game involving symbols and figures and that the students can only learn mathematics efficiently by performing activities. The most effective way of learning mathematics is to apply both head and heart simultaneously. To apply head means to use up to one's best ability and not just give up when stuck somewhere. To apply heart means to have willingness to learn new things sincerely. The unique technique of learning calculating skills in this article is that the students attempt the practice formats and check their performance themselves from the article itself instead of depending on anyone else.

The article focuses on training the students of all standards in the following areas by applying the new number system: 1. Addition, 2.Times tables up to 9 digits. 3. Multiplication.4, Subtraction. 5. Division. 6. Identification of prime numbers between 1 and 100. 7. Test of divisibility by prime numbers between 1 and 100.

This write-up is an extract of the book: **New Strategy of Teaching and Learning Mathematics for Standard I to XII** (with the discovery of new number system**: BI-QUARTET NUMBER SYSTEM** and its applications) which is about to be published shortly. Hoping that the write-up will serve as an introduction to the upcoming book to all the readers and as an experimentation to find the effectiveness of the book.

DISCOVERY OF BI-QUARTET NUMBER SYSTEM.

Brief Background.

In 2018, I applied the New Strategy: Teaching and Learning of Mathematics in standard V, VIII and X. The strategy was a paradigm shift: from teaching the students how the mathematical problems are solved to teaching the students how the mathematical problems can be solved by themselves. The outcome of the application of the new strategy was phenomenal which inspired me to bring out my work into book form. In fact, the strategy was an effort to materialize the application of constructivist approach in learning of mathematics as per NCF 2005. In this strategy, firstly, the students are taught to write well (both Arabic numerals and alphabet), write fast, calculate fast and basics of mathematics (according to the standard of the students, before lesson's transaction) and then only after that the teachers start lesson's transaction in such a way that the students can solve mathematical problems by themselves.

From the beginning of 2019, I went through and analysed all the mathematics text books of standard I to X and then interacted with the students of my school and other private schools.

I identified their various hurdles in learning of mathematics. I could identify many hurdles only in the slow learners. Then, I started developing many techniques so that the slow learners could overcome their hurdles or are at least enlightened and the performance of the fast learners is enhanced. All those techniques, I developed, ultimately resulted in the discovery of the new number system.

BI-QUARTET NUMBER SYSTEM

Statement: The operation of Addition, Subtraction, Multiplication and Division obeys the rule of adding 1,2,3,4 and subtracting 1,2,3,4. In the process of addition, instead of adding 9,8,7,6 to a number, subtract 1,2,3,4 respectively from the number to get the sum. In the process of subtraction, instead of subtracting 9,8,7,6 from a number, add 1,2,3,4 respectively to the number to get the difference.

Symbolically,

+ 9	⟶ -1	- 9	⟶ +1
+ 8	⟶ -2	- 8	⟶ +2
+ 7	⟶ -3	- 7	⟶ +3
+ 6	⟶ -4	- 6	⟶ +4

Note; (i) In the new number system, out of ten single digits; 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 only four digits; 1, 2, 3, 4 are taken into consideration in the calculating process of all the operations; addition, subtraction, multiplication and division.

(ii) In the new number system, the digits; 0, 5, 6, 7, 8, 9 can be expressed in terms of the digits; 1, 2, 3, 4. Verification: 0 =1-1= 2-2 = 3-3 =4-4, 5= 1+4= 2+3, 6 = 1+2+3 = 2+4, 7 =1+2+4= 3+4, 8 =1+3+4, 9 = 2+3+4.

(iii) Conversion numbers to Bi-Quartet number system.

Examples:

a) 456 = (4) (1+4) (2+4)

b) 738 = (3+4) (3) (1+3+4)

c) 567890 = (1+4) (2+4) (3+4) (1+3+4) (2+3+4) (1-1)

d) 6712 = (2+4) (3+4) (1) (2)

(iv) Conversion to Bi-Quartet number system and addition.

Illustrations.

a) 9+6 = (2+3+4) +(2+4) =(1) (1+4) = 15

b) 9+7 = (2+3+4) + (3+4) = (1) (2+4) = 16

c) 9 +17 = (2+3+4) + (1) (3+4) = (2) (2+4) = 26

d) 29 +6 = (2) (2+3+4) +(2+4)= (3) (1+4) =35

e) 38+54 =(3) (1+3+4) + (1+4) (4) = (2+3+4) (2)= 92

f) 624+ 537 = (2+4) (2) (4) + (1+4) (3) (3+4) =(1) (1) (2+4) (1) = 1161

g) 618 + 973 = (2+4) (1) (1+3+4) + (2+3+4) (3+4) (3) = (1) (1+4) (2+3+4) (1) = 1591

h) 765 + 789 = (3+4) (2+4) (1+4) + (3+4) (1+3+4) (2+3+4) = (1) (1+4) (1+4) (4) = 1554

i) 7654 + 4567 = (3+4) (2+4) (1+4) (4) + (4) (1+4) (2+4) (3+4) = (1) (2) (2) (2) (1) = 12221

j) 5678 + 7890 = (1+4) (2+4) (3+4) (1+3+4) + (3+4) (1+3+4) (2+3+4)(1– 1)

= (1) (3) (1+4) (2+4) (1+3+4) =13568

k) 12+34+56 = (1) (2) +(3) (4) +(1+4) (2+4) = (1) (1– 1) (2) = 102

l) 45+67 + 89 = (4) (1+4) +(2+4) (3+4) + (1+3+4) (2+3 +4) = (2) (1–1) (1) = 201

(v) Conversion to Bi-Quartet number system and subtraction.

Illustrations:

a) 17– 9 = (1) (3+4) – (2+3+4) = (1+3+4) = 8

b) 16 – 8 = (1) (2+4) – (1+3+4) =(1+3+4) = 8

c) 15 – 7 = (1) (1+4) – (3+4) = (1+3+4) = 8

d) 14– 6= (1) (4) – (2+4) = (1+3+4) = 8

e) 27– 9 = (2) (3+4) –(2+3+4) = (1) (2+3+4) = 18

f) 76 – 9 = (3+4) (2+4) – (2+3+4) = (2+4) (3+4) = 67

g) 43 – 24 = (4) (3) – (2) (4) = (1) (2+3+4) = 19

h) 56 – 38 = (1+4) (2+4) – (3) (1+3+4) = (1) (1+3+4) = 18

i) 76 – 58 = (3+4) (2+4) – (1+4) (1+3+4) = (1) (1+3+4) = 18

k) 72– 64 = (3+4) (2)-(2+4) (4) = (1) (1+3+4) =8

l) 654 – 578 = (2+4) (1+4) (4) – (1+4) (3+4) (1+3+4) = (3+4) (2+4) =76

m) 978 – 897= (2+3+4) (3+4) (1+3+4) – (1+3+4) (2+3+4) (3+4) = (1+3+4) (1) = 81

n) 4234 – 2345 = (4) (2) (3) (4) – (2) (3) (4) (1+4) = (1) (1+3+4) (1+3+4) (2+3+4) = 1889

o) 8765 – 5678 = (1+3+4) (3+4) (2+4) (1+4) – (1+4) (2+4) (3+4) (1+3+4) =
(3) (1-1) (1+3+4) (3+4) = 3087

p) 67890 – 45678 = (2+4) (3+4) (1+3+4) (2+3+4) (1–1) – (4) (1+4) (2+4) (3+4) (1+3+4)

= (2) (2) (2) (1) (2) = 22212

(vi) The above exercises (iv) and (v) will enhance the skills of actual addition, subtraction, multiplication and division.

(vii) Conversion to the new number system and multiplication.

Illustrations:

(a) 6 x 8 = (2+4) x (1+3+4) = (2) x (1+3+4) + (4) x (1+3+4) = (1) (2+4) + (3) (2)

= (4) (1+3+4) = 48

(b) 16 x 8 = (1) (2+4) x (1+3+4) = (1) (2+4) x(1) + (1) (2+4) x (3) + (1) (1+3+4) x (4)

= (1) (2+4) + (4) (1+3+4) + (2+4) (4) = (1) (2) (1+3+4) = 128

(c) 26 x 5 = (2) (2+4) x (1+4) = (2) (2+4) x (1) + (2) (2+4) x (4)

= (2) (2+4) + (1) (1-1) (4) = (1) (3) (1-1) = 130

d) 27 x 8 = (2) (3+4) x (1+3+4) = (2) (3+4) x (1) + (2) (3+4) x (3) + (2) (3+4) x (4)

=(2) (3+4) + (1+3+4) (1) + (1) (1-1) (1+3+4) = (2) (1) (2+4) = 216

(e) 75 x 4 = (3+4) (1+4) x (4) = (3) (1-1) (1-1) = 300

(f) 23 x 34 = 23 x 30 + 23 x 4 = (2) (3) x (3) (1-1) +(2) (3) x (4)

= (2+4) (2+3+4) (1-1) + (2+3+4) (2) = (3+4) (1+3+4) (2) = 782

(g) 67 x 89 =67 x 80 + 67 x 9 = (2+4) (3+4) x (1+3+4) (1-1) + (2+4) (3+4) x (2+3+4)

=(1+4)(3)(2+4)(1-1) + (2+4)((1-1)(3) = (1+4)(2+3+4)(2+4)(3) =5963

(h) 123 x 45 = 123 x 40 + 123 x 5 = (1)(2)(3) x (4)(1-1) + (1)(2)(3) x (1+4)

= (4) (2+3+4) (2) (1-1) + (2+4) (1) (1+4) = (1+4) (1+4) (3) (1+4) = 5535

(i) 567 x 89 = 567 x 80 + 567 x 9 = (1+4) (2+4) (3+4) x (1+3+4) (1-1) + (1+4) (2+4) (3+4)

=(4) (1+4) (3) (2+4) (1-1) + (1+4) (1) (1-1) (3) = (1+4) (1-1) (4) (2+4)(3) = 50463

(j) 123 x 456 = 123 x 400 + 123 x 50 + 123 x 6

= (1) (2) (3) x (4) (1-1) (1-1) + (1) (2) (3) x (1+4) (1-1) + (1) (2) (3) x (2+4)

= (4) (2+3+4) (2) (1-1) (1-1) + (2+4) (1) (1+4) (1-1) + (3+4) (3) (1+3+4)

= (1+4) (2+4) (1-1) (1+3+4) (1+3+4) = 56088

(k) 987 x 654 = 987 x 600 + 987 x 50 + 987 x 4

= (2+3+4) (1+3+4) x (2+4) (1-1) (1-1) + (2+3+4) (1+3+4) x (1+4)(1-1)

+ (2+3+4) (1+3+4) (4) =(1+4) (2+3+4) (2) (2) (1-1) (1-1)

+ (4)(1+3+4) (3) (1+4) (1-1) + (3) (2+3+4) (4) (1+3+4)

= (2+4) (4) (1+4) (4) (2+3+4) (1+3+4) = 645498

(viii) Conversion to Bi- Quartet number system and division.

(a) 16 ÷ 2 = (1) (2 + 4) ÷ (2) = (1 + 3 + 4) = 8

(b) 28 ÷ 2 = (2) (1 + 3 +4) ÷ (2) = (1)(4) = 14

(c) 12 ÷ 3 = (1) (2) ÷ (3) = (4) = 4

(d) 78 ÷ 3 = (3 + 4) (1+3 +4) ÷ (3) = (2) (2+4) = 26

(e) 264 ÷ 4 = (2) (2+4) (4) ÷ (4) = (2+4) (2+4) = 66

(f) 765 ÷ 5 = (3+4) (2+4) (1+4) ÷ (1+4) = (1) (1+4) (3) = 153

(g) 24 ÷ 6 = (2) (4) ÷ (2+4) = (4) = 4

(h) 6888 ÷ 6 = (2+4) (1+3+4) (1+3+4) (1+3+4) ÷ (2+4) = (1) (1) (3) (1+3+4) =1148

(i) 8886 ÷ 6 = (1+3+4) (1+3+4) (1+3+4) (2+4) ÷ (2+4) = (1) (1+4) (1+3+4) (1) = 1481

(j) 8449 ÷ 7 = (1+3+4) (4) (4) (2+3+4) ÷ (3+4) = ((1) (2) (1 – 1) (3+4) = 1207

(k) 72 ÷ 8 = (3+4) (2) ÷ (1+3+4) = (2+3+4) = 9

(l) 6448 ÷ 8 = (2+4) (4) (4) (1+3+4) ÷ (1+3+4) =(1+3+4) (1 – 1) (2+4) = 806

(m) 234 ÷ 9 = (2) (3) (4) ÷ (2+3+4) = (2) (2+4) = 26

(n) 6786 ÷ 9 = (2+4) (3+4) (1+3+4) (2+4) ÷ (2+3+4) = (3+4) (1+4) (4) = 754

(o) 363 ÷ 11 = (3) (2+4) (3) ÷ (1) (1) = (3) (3) = 33

(p) 7436 ÷ 11 = (3+4) (4) (3) (2+4) ÷ (1) (1) = (2+4) (3+4) (2+4) = 676

(q) 168 ÷ 12 = (1) (2+4) (1+3+4) ÷ (1) (2) = (1) (4) = 14

(r) 6888 ÷ 12 = (2+4) (1+3+4) (1+3+4) (1+3+4) ÷ (1) (2) = (1+4) (3+4) (4) = 574

(s) 115 ÷ 23 = (1) (1) (1+4) ÷ (2) (3) = (1+4) = 5

(t) 175 ÷ 35 = (1)(3+4)(1+4) ÷ (3)(1+4) = (1+4) = 5

(u) 94141 ÷ 47 = (2+3+4) (4) (1) (4) (1) ÷ (4) (3+4) = (2) (1 – 1) (1 – 1) (3) = 2003

(v) 464 ÷ 58 = (4) (2+4) (4) ÷ (1+4) (1+3+4) = (1+3+4) = 8

(w) 603 ÷ 67 = (2+4) (1 – 1) (3) ÷ (2+4) (3+4) = (2+3+4) = 9

(x) 444 ÷ 74 = (4) (4) (4) ÷ (3+4) (4) = (2+4) = 6

(y) 581 ÷ 83 = (1+4) (1+3+4) (1) ÷ (1+3+4) (3) = (3+4) = 7

(z) 736 ÷ 92 = (3+4) (3) (2+4) ÷ (2+3+4) (2) = (1+3+4) = 8

(ix) Simplification

Find the value of 9– 99+999 – 9999+99999 – 999999 + 9999999 – 99999999 + 999999999

Sol: 9– 99+999 – 9999+99999– 999999 + 9999999 – 99999999 + 999999999

= (9+999+99999+ 9999999+ 999999999) – (99+9999+999999+ 99999999)

=1010101005 – 101010096

= 909090909

9	99	
999	9999	
99999	999999	
9999999	+ 99999999	
+ 999999999	101010096	
1010101005		

1010101005
– 101010096
909090909

(x) In the new number system, the students are firstly taught addition, secondly multiplication, thirdly subtraction and lastly division

(xi) The operation of addition leads to the understanding of the operation of multiplication. The operations of subtraction and multiplication lead to the understanding of division. So, the two operations of addition and subtraction are the fundamental operations. So, in the new number system (statement), only the calculating processes of addition and subtraction are taken into consideration.

APPLICATIONS:

Firstly, the students are taught to mentally learn the addition of 1, 2, 3, 4 to the numbers 4 to 13 and the subtraction of 1, 2, 3, 4 from the numbers 4 to 13. Then, teach the students the new number system. Every student, including slow learners is expected to easily manage all the existing operations: Addition, Subtraction, Multiplication and Division.

1. ADDITION

In the process of addition, instead of adding 9, 8, 7, 6 to a numbers, we subtract 1, 2, 3, 4 respectively from the number to get the sum.

Symbolically:
+ 9 ⟶ −1
+ 8 ⟶ −2
+ 7 ⟶ −3
+ 6 ⟶ −4

Note:(a) Supplementary rule of addition: If a digit, less than 1, 2, 3, 4 is added to 9, 8, 7, 6 respectively, then the digit is added to 9, 8, 7, 6 respectively to get the sum. If a digit, equal to or more than 1, 2, 3, 4 is added to 9, 8, 7, 6 respectively, then subtract 1, 2, 3, 4 respectively from the digit to get the sum.

(b) For every subtraction of 1, 2, 3 or 4, there is carry over 1.

(c) In the process of series addition, whenever there is a borrowing of 1 in subtracting 1, 2, 3 or 4, there is no carry over 1 in subtracting 1, 2, 3 or 4.

(d) Addition Practice Format is attached (Annexure -3 & 4)**.**

Illustrations: **COLUMN METHOD OF ADDITION.**

(a)

9	9	19	39	49	59
+ 0	+ 1	+ 2	+ 3	+ 5	+ 8
9	10	21	42	54	67
8	8	8	18	28	38
+ 0	+ 1	+2	+ 3	+ 5	+ 7
8	9	10	21	33	45
7	7	7	7	27	37
+ 0	+ 1	+ 2	+ 3	+ 4	+ 6
7	8	9	10	31	43
6	6	6	6	6	26
+ 0	+ 1	+ 2	+ 3	+ 4	+ 5
6	7	8	9	10	31

(b)

67	79	689	678
+ 92	+ 68	+ 798	+ 987
159	147	1487	1665

(c)

67	69	456	777
89	88	783	888
+ 78	+ 79	+ 789	+ 999
234	236	2028	2664

(d)

67	56	456	789
89	89	987	789
56	89	987	656
+ 89	+ 89	+ 987	+ 789
301	323	3417	3023

HORIZONTAL METHOD OF ADDITION

(a) 9 + 6 + 6 = 21 (9 – 4 – 4 = 1, 0 + 2 = 2)

(b) 6 +7 + 7 = 20 (6 – 3 – 3 = 0, 0 + 2 = 2)

(c) 6 + 7 + 8 = 21 (6 – 3 – 2 = 1, 0 + 2 = 2)

(d) 6 + 8 + 8 = 22 (6 – 2 – 2 = 2, 0 + 2 = 2)

(e) 7 + 8 + 9 = 24 (7 – 2 – 1 = 4, 0 + 2 = 2)

(f) 7 + 9 +9 = 25 (7 – 1 – 1 = 5, 0 + 2 = 2)

(g) 17 +8 +8 + 8 = 41 (7 – 2 – 2 – 2 = 1, 1 + 3 = 4)

(h) 26 + 9 + 9 +9 = 53 (6 – 1 – 1 – 1 = 3, 2 + 3 = 5)

(i) 49 + 7 + 8 + 9 = 73 (9 – 3 – 2 – 1 = 3, 4 + 3 = 7)

(j) 59 + 8 + 8 + 8 + 8 = 91 (9 – 2 x 4 = 1, 5 + 4 = 9)

(k) 65 + 9 + 9 + 9 + 9 = 101 (5 – 4 = 1, 6 +4 = 10)

(l) 77 + 9 + 9 + 9 + 9 + 9 + 9 = 131 (7 – 6 = 1, 7 + 6 =13)

(m) 88 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = 151 (8 – 7 = 1, 8 + 7 = 15)

(n) 34 + 8 + 8 + 8 = 58 (14 – 2 – 2 – 2 = 8, 2 + 3 = 5)

(o) 84 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = 133 (14 – 7 = 7, 8 + 6 = 14)

(p) 83 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = 164 (13 – 9 = 4, 8 + 8 = 16)

(q) 47 + 8 + 8 + 8 + 8 + 8 + 8 + 8 + 8 = 111 (17 – 16 = 1, 4+ 7 = 11)

(r) 59 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = 115 (29 – 24 = 5, 5 + 7 = 11)

(s) 53 + 6 + 6 + 6 + 6 + 6 = 83 (23 – 20 = 3, 5 + 3 = 8)

(t) 59 + 6 + 7 + 8 + 9 = 89 (19 – 4 – 3 – 2 – 1 = 9, 5 + 3 = 8)

(u) 59 + 8 + 8 + 8 + 9 + 9 + 9 = 110 (9 – 6 – 3 = 0, 5 + 6 = 11)

(v) 56 + 67 = 123 (6 – 3 = 3, 5 – 4 + 1 = 2, 0 + 1 = 1)

(w) 6 + 66 + 666 + 6666 + 66666 + 666666
= (6+1) (6–4x1+2) (6–4x2–1+3) (16–4x3–1+4) (16–4x4–2+5) (26–4x5)
= (7) (4) (0) (7) (3) (6)
= 740736

(x) 7 + 77 + 777 + 7777 + 77777 + 777777 + 7777777
= (7+1) (7–3x1+2) (7–3x2+3) (7–3x3–1+4) (17–3x4–1+5) (17–3x5–2+6) (27–3x6)
= (8) (6) (4) (1) (9) (6) (9)
= 8641969

(y) 8 + 88 + 888 + 8888 + 88888 + 888888 + 8888888 + 88888888
= (8+1) (8–2x1+2) (8–2x2+3) (8–2x3+4) (8–2x4+5) (8–2x5+6) (8–2x6–1+7) (18–2x7)
= (9) (8) (7) (6) (5) (4) (2) (4)
= 98765424

(z) 9 + 99 + 999 + 9999 + 99999 + 999999 + 9999999 + 99999999 + 999999999
= (9+1) (9–1x1+2) (9–1x2+3) (9–1x3+4) (9–1x4+5) (9–1x5+6) (9–1 x6+7) (9–1x7+8) (9–1x8)
= (10) (10) (10) (10) (10) (10) (10) (10) (1)
= (1) (0 + 1) (0 + 1) (0 + 1) (0 + 1) (0 + 1) (0 + 1) (0 + 1) (0) (1)
= (1) (1) (1) (1) (1) (1) (1) (1) (0) (1)
= 1111111101

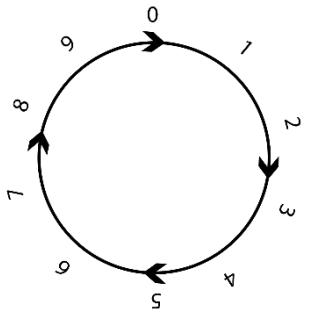
2. WRITING OF TIMES TABLES UPTO 9 DIGITS

(i) ***The new rule for determining a times table of any number from 1-99.***

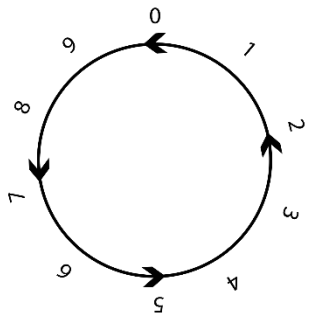
The digits in the ones/tens/hundreds places of the multiples of a number can be determined by skip counting. The ones places of the multiples of a number can be determined by skip counting (addition or subtraction). The quantity of one skip is determined by the digit in ones place of the number.

The digits in the tens/hundreds places of the multiples of a number can be determined by skip counting. The quantity of one skip is determined by the digit in the tens place of the number. One additional rule is that if the digit in the ones place of the multiples of the number is less than the ones place of the number, then, 1more is added to the tens place of the multiple of the number in addition to the value obtained by skip counting.

Note: - The following two diagrams can be utilized to determine the digits in the ones places of the multiples of a number.



For addition



For subtraction

(ii) New technique of writing times table from 1 to 100.

(a) The students will write times table from 1 to 100 without the multiples.

(b) The fill the ones places of the multiples by the skip counting determined by the digit in ones place of the number. The digits in the tens/ hundreds places are determined by the skip counting of the digit in the tens place of the numbers with additional rule that if the digit in ones place of the multiple of the number is less than the ones place of the digit of the number, then, 1more is added to the skip counting.

(iii)Illustrations: -

(a) To write the times table of 8, firstly, write the times table of 8 without the multiples. Secondly, write the ones places of the multiple instead of adding 8, subtract 2. So, the ones places of the multiples of 8 are 8,6,4,2,0,8,6,4,2,0. Thirdly, fill the digits in the tens places of the multiple by the skip counting of the digit in the tens place (in this case, it's 0) with the additional rule that if the digit in ones place of the multiple is less than the digit in ones place of the number, then, add 1 more to the skip counting. So, the times table of 8 can be written as

8 x 1 = 8
8 x 2 = 16
8 x 3 = 24
8 x 4 = 32
8 x 5 = 40
8 x 6 = 48
8 x 7 = 56
8 x 8 = 64
8 x 9 = 72
8 x 10=80

(b) To write the times table of 18, firstly, write the times table of 18 without the multiples. Secondly, write the digits of the ones places of the multiples by skip counting of 8. Instead of adding 8, subtract 2. Thus, the digits of the ones places of the multiples are 8, 6, 4, 2, 0, 8, 6, 4, 2, 0. Thirdly, the digits in tens/hundreds places are determined by skip counting of the digit in the tens place of the number (in this case it's 1) with the additional rule that if the digit in ones place of the multiple is less than the digit in ones place of the number, then, 1 more is added to the skip counting. So, the times table of 18 can be written as

18 x 1 = 18
18 x 2 = 36
18 x 3 = 54
18 x 4 = 72
18 x 5 = 90
18 x 6 = 108
18 x 7 = 126
18 x 8 = 144
18 x 9 = 162
18 10 = 180

(c) To write the times table of 48, firstly, write the times table of 48 without the multiples. Secondly, write the digits of the ones places of the multiples by skip counting of 8. Instead of adding 8, subtract 2. Thus, the digits of the ones places of the multiples are 8, 6, 4, 2, 0, 8, 6, 4, 2, 0. Thirdly, the digits in tens/hundreds places are determined by skip counting of the digit in the tens place of the number (in this case it's 4) with the additional rule that if the digit in ones place of the multiple is less than the digit in ones place of the number, then, 1 more is added to the skip counting. So, the times table of 48 can be written as

48 x 1 = 48
48 x 2 = 96
48 x 3 = 144
48 x 4 = 192
48 x 5 = 240
48 x 6 = 288
48 x 7 = 336
48 x 8 = 384
48 x 9 = 432
48 x10= 480

(d) To write the times table of 89, firstly write the times table of 89 without the multiples. Secondly, write the digits of ones places of the multiples by skip counting of the digit in ones place of the number (in this case, it's 9). Instead of adding 9, we subtract 1. Thus, the digits in ones places of the multiples are 9, 8, 7, 6, 5, 4, 3, 2, 1, 0. Thirdly, write the digits in the tens/hundreds places by skip counting of the digit in the tens place of the number (in this case, it's 8) with the additional rule that if the digit in the ones place of the multiple is less than the digit in the ones place of the number, then, 1 more is added to the skip counting. In this case, of adding 9, we subtract 1. So, the times table of 89 can be written as

89 x 1 = 89
89 x 2 = 178
89 x 3 = 267
89 x 4 = 356
89 x 5 = 445
89 x 6 = 534
89 x 7 = 623
89 x 8 = 712
89 x 9 = 801
89 x10= 890

Note *: (a) Let the students write the time tables again and again by applying the above rule and the new technique of writing times tables in square copy. They will write faster every time they write again.*

(b) While writing a times table of a number, take a pause at 5^{th} multiple .Check that it is half of the 10^{th} multiple. In case of the digit in the tens place is even, the digit in the unit place is 0 in the 5^{th} multiple and the digit in the tens/hundreds/thousands place is divided by 2 to get the 5^{th} multiple .e.g. 20/2 = 10, 40/2 = 20, …, 980/2 = 490, 1080/2 =540.

In case of the digit in the tens place is odd, the digit in ones place is 5 in the 5^{th} multiple and the digit(s) in the tens/hundreds place is obtained by subtracting 1 from the digit in the tens place and dividing the difference by 2 to get the 5^{th} multiple. e.g. 10/2 = 5, 30/2= 15,..., 970/2 = 485,990/2 = 495.

(c) If the times table is of an odd number, the digits; 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 appear exactly once in the ones places of the multiples of the number. If the times table is of an even number, the digits; 0, 2, 4, 6, 8 appear exactly twice (in the same order) in ones places of the multiples of the number.

(d) Tips for remembering the times tables.

(i) 1 x 1 = 1, 2 x 1 = 2, 3 x 1 = 3, ..., 20 x 1 = 20
When a number is multiplied by 1, the product is the number itself.

(ii) 1 x 10 = 10, 2 x 10 = 20, 3 x 10 = 30, ..., 20 x 10 = 200
When a number is multiplied by 10, the product has 0 in the ones place.

(iii) The 5^{th} multiple of a number is half of the 10^{th} multiple of the number.
e.g. 2 x 10 = 20, then 2 x 5 = 10
3 x 10 = 30, then 3 x 5 = 15
10 x 10 = 30, then 10 x 5 = 50

(iv) Multiplication of two numbers is commutative.
e.g. (a) 2 x 8 = 16, 8 x 2 = 16
$\Rightarrow$ 2 x 8 = 8 x 2
(b) 3 x 6 = 6 x 3

(v) The ones places of the multiples of 5 and 15 are alternately 5 and 0.

(vi) The ones places of the multiples of 9 consecutively decrease from 9 to 0 and the tens places of the multiples of 9 consecutively increase from 0 to 9.

(vii) The ones places of the multiples of 19 consecutively decrease from 9 to 0 and the tens/hundreds places start from 1 to 19 (consecutively plus 2).

(viii) The ones place of the multiples of 8 and 18 consecutively decrease by 2 starting from 8 to 0.

(ix) Help the students learn the multiples of 1 to 20 in reverse order i.e. from 10^{th} to 1^{st}. This exercise enhances the student's multiplication skills. e.g. To know the 7^{th}, 8^{th} or 9^{th} multiple of any number, the students count the multiples from reverse order and thereby finding the multiple faster.

(x) 1 x 1 = 1, 2 x 2 = 4, 3 x 3 = 9 ..., 10 x 10 = 100.

(xi) The first five digits in ones places of the multiples of even numbers are repeated in the following multiples in the same order.

(xii) The tens/hundreds places of the multiples of 10, 20,…, 100 are the multiples of 1,2,…,10 respectively.

Note: (a) Teach the students to write the times tables from 1 to 20 correctly and then help them to memorize the times tables by applying group learning method .

(b) Encourage the students to write the time tables from 1 to 100. The digits in the ones places of the multiples of 1, 11, 21, 31…, 91 are equal and that of 2, 12, 22, 32,…, 92 are equal,..., and that of 9, 19, 29, 39,…,99 are equal and that of 10, 20, 30…,100 are equal.

(c) The sum of the digits of the first multiple to tenth multiple of the numbers 09, 18, 27, 36, 45, 54, 63, 72, 81, 90 is 9.

(d) The sum of the digits of the first multiple and the tenth multiple of the numbers from 01 to 100 is equal.

(e) Times Table from 1to 100 is attached (Annexure-5)

(f) Times Tables practice format is also attached (Annexure-6).

(g) The new rule of writing times tables from 100 to 999.

The digits in ones places of the multiples of a number can be determined by skip counting and the quantity of one skip is determined by the digit in ones places of the number.

The digits in tens places of the multiples of a number is determined skip counting and the quantity of one skip is determined by the digit in the tens place of the number with one additional rule that if the digit in tens place of the multiple of the number is less than the ones place of the number, then 1 more is added to the tens places of the multiple of the number in addition to the value obtained by skip counting.

The digits in the hundreds/thousands places of the multiples of a number are determined by skip counting and the quantity of one skip is determined by the digit in the hundreds place of the number with the additional rules that if the digit in the tens place of the multiple number is less than the tens place of the number , then 1 more is added to the hundreds place of the multiple of the number in addition to the value obtained by skip counting and if the digit in the tens place of the multiple of the number is equal or more than the tens place of the number and also has a carry- over 1, then 1 more is added to the hundreds place of the multiple of the number in addition to the value obtained by skip counting.

(h) New technique of writing times table of any number from 100 to 999.

(i) The students will write times table of any number from 100 to 999 without the multiples.

(ii) Fill the ones places of the multiples by skip counting determined by the digit in ones place of the number.

(iii) Fill the tens places of the multiples by the skip counting determined by the digit in the tens place of the number with one additional rule that if the digit in the tens place of

the multiple of the number is less than the ones place of the digit of the number, then 1 more is added to the skip counting.

(iv) Then, fill the hundreds/thousands places of the multiples by skip counting determined by the digit in hundreds place of the number with the additional rules that if the digit in the tens place of the number is less than the digit in the tens place of the number, then 1 more is added to the skip counting and if the digit in the tens place of the multiple of the number is equal or more than the digit in the tens place of the number and also has a carry-over 1,then 1 more is added to the skip counting.

(v) The rule and technique applied to write the times tables of three digit numbers is extendable to larger number of digits. Illustrations of writing times tables up to nine digit numbers are given below.

(i) ***Illustrations:***

(a)
123 x 1 = 123
123 x 2 = 246
123 x 3 = 369
123 x 4 = 492
123 x 5 = 615
123 x 6 = 738
123 x 7 = 861
123 x 8 = 984
123 x 9 = 1107
123 x 10= 1230

(b)
321 x 1 = 321
321 x 2 = 642
321 x 3 = 963
321 x 4 = 1284
321 x 5 = 1605
321 x 6 = 1926
321 x 7 = 2247
321 x 8 = 2568
321 x 9 = 2889
321 x 10= 3210

(c)
456 x 1 = 456
456 x 2 = 912
456 x 3 = 1368
456 x 4 = 1824
456 x 5 = 2280
456 x 6 = 2736
456 x 7 = 3192
456 x 8 = 3648
456 x 9 = 4104
456 x 10= 4560

(d)
654 x 1 = 654
654 x 2 = 1308
654 x 3 = 1962
654 x 4 = 2616
654 x 5 = 3270
654 x 6 = 3924
654 x7 = 4578
654 x 8 = 5232
654 x 9 = 5886
654 x 10 = 6540

(e)
789 x 1 = 789
789 x 2 = 1578
789 x 3 = 2367
789 x 4 = 3156
789 x 5 = 3945
789 x 6 = 4734
789 x 7 = 5523
789 x 8 = 6312
789 x 9 = 7101
789 x 10= 7890

(f)
987 x 1 = 987
987 x 2 = 1974
987 x 3 = 2961
987 x 4 = 3948
987 x 5 = 4935
987 x 6 = 5922
987 x 7 = 6909
987 x 8 = 7896
987 x 9 = 8883
987 x 10 = 9870

(g) 6789 X 1 = 6789
6789 X 2 = 13578
6789 X 3 = 20367
6789 X 4 = 27516
6789 X 5 = 33945
6789 X 6 = 40734
6789 X 7 = 47523
6789 X 8 = 54312
6789 X 9 = 61101
6789 X 10 = 67890

(h) 98765 X 1 = 98765
98765 X 2 = 197530
98765 X 3 = 296295
98765 X 4 = 395060
98765 X 5 = 493825
98765 X 6 = 592590
98765 X 7 = 691355
98765 X 8 = 790120
98765 X 9 = 888885
98765 X 10 = 987650

(i) 456789 X 1 = 456789
456789 X 2 = 913578
456789 X 3 = 1370367
456789 X 4 = 1827156
456789 X 5 = 2283945
456789 X 6 = 2740734
456789 X 7 = 3197523
456789 X 8 = 3654312
456789 X 9 = 4111101
456789 X 10 = 4567890

(j) 3456789 X 1 = 3456789
3456789 X 2 = 6913578
3456789 X 3 = 10370367
3456789 X 4 = 13827156
3456789 X 5 = 17283945
3456789 X 6 = 20740734
3456789 X 7 = 24197523
3456789 X 8 = 27654312
3456789 X 9 = 31111101
3456789 X 10 = 34567890

i) 98765432 X 1 = 98765432
98765432 X 2 = 197530864
98765432 X 3 = 296296296
98765432 X 4 = 395061728
98765432 X 5 = 493827160
98765432 X 6 = 592592592
98765432 X 7 = 691358024
98765432 X 8 = 790123456
98765432 X 9 = 888888888
98765432 X 10 = 987654320

j) 123456789 X 1 = 123456789
123456789 X 2 = 246913578
123456789 X 3 = 370370367
123456789 X 4 = 493827156
123456789 X 5 = 617283945
123456789 X 6 = 740740734
123456789 X 7 = 864197523
123456789 X 8 = 987654312
123456789 X 9 = 1111111101
123456789 X 10 = 1234567890

(vi) I have enclosed annexure – 7: Times tables Samples up to nine digits and annexure – 8: Practice Format ; Times Tables up to nine digits.

3. MLUTIPLICATION

Multiplication, being successive addition, obeys the rule of the new number system. The students are taught to write up to 10^{th} multiples of the digits from 1 to 9 by applying the new number system, the new rule of writing times tables from 1 to 99 and the new technique of writing times tables from 1 to 100. The students need not memorize the times tables. The students write the first 10 multiples of the digit(s) of the multiplier on the right side of the answer. Another method; write the first ten multiples of the multiplicand on the right hand side of the answer by applying the new number system, and then write the multiple(s) corresponding to the digit(s) of the multiplier from the right hand side and then add the columns to get the product.

Illustration:- (i) FIRST METHOD.

a) Multiply 456 by 2

Sol:- 456 x 2 = 912

∴ the product = 912

2
4
6
8
10
12
14
16
18
20

b) Multiply 456 by 3.

Sol: 456 x 3 = 1368

∴ The product =1368

3
6
9
12
15
18
21
24
27
30

c) Multiply 456 by 23

Sol:- 456 x 23 = 1368 + 912 = 10488

∴the product = 10488

2	3
4	6
6	9
8	12
10	15
12	18
14	21
16	24
18	27
20	30

d) Multiply 789 by 4

Sol: 789 x4 = 3156

∴ The product = 3156

4
8
12
16
20
24
28
32
36
40

e) Multiply 57 by 8

Sol:- 57 × 8 = 456

∴ the product = 456

8
16
24
32
40
48
56
64
72
80

f) Multiply 67 by 8

Sol:- 67 × 8 = 536

∴ the product = 536

8
16
24
32
40
48
56
64
72
80

g) Multiply 67 by 9

Soln. 67 x9 = 603

∴ the product = 603

9
18
27
36
45
54
63
72
81
90

h) Multiply 789 by 45

Soln. 789 x45 = 3945 + 3166 = 35505

∴ the product = 35505

4	5
8	10
12	15
16	20
20	25
24	30
28	35
32	40
36	45
40	50

i) Multiply 567 by 67

Sol:-

567	7	6
×67	14	12
3969	21	18
3402	28	24
37989	35	30
	42	36
	49	42
	56	48
	63	54
	70	60

∴ the product = 53883

j) Multiply 567 by 89

Sol:-

567	8	9
×89	16	18
5103	24	27
4536	32	36
50463	40	45
	48	54
	56	63
	64	72
	72	81
	80	90

∴ the product = 50463

k) Multiply 789 by 89.

Sol:

789	8	9
X89	16	18
7101	24	27
6312	32	36
70221	40	45
	48	54
	56	63
	64	72
	72	81
	80	90

∴ The product =70221

l) Multiply 234 by 567

Sol:

234	5	6	7
x 567	10	12	14
1638	15	18	21
1404	20	24	28
1170	25	30	35
132678	30	36	42
	35	42	49
	40	48	56
	45	54	63
	50	60	70

∴ the product =132678

m) Multiply 234 by 789

Sol:

234	7	8	9
X 789	14	16	18
2106	21	24	27
1872	28	32	36
1638	35	40	45
184626	42	48	54
	49	56	63
	56	64	72
	63	72	81
	70	80	90

∴ The product =184626

n) Multiply 578 by 567

Sol:

578	5	6	7
X 567	10	12	14
4046	15	18	21
3468	20	24	28
3890	25	30	35
327726	30	36	42
	35	42	49
	40	48	56
	45	54	63
	50	60	70

∴ The product =327726

o) Multiply 678 by 789

Sol:

678	7	8	9
X 789	14	16	18
6102	21	24	27
5424	28	32	36
4746	35	40	45
534942	42	48	54
	49	56	63
	56	63	72
	63	72	81
	70	80	90

∴ The product=534942

p) Multiply 876 by 987.

Sol:

876	7	8	9
X 987	14	16	18
6132	21	24	27
7008	28	32	36
7884	35	40	45
864612	42	48	54
	49	56	63
	56	64	72
	63	72	81
	70	80	90

∴ The product =864612

(ii) SECOND METHOD.

(a) Multiply 789 by 468.

Sol :
```
  789
X 468
 6312
4734
3156
369252
```
Product = 369252

```
 789
1578
2367
3156
3945
4734
5523
6312
7101
7890
```

(b) Multiply 789 by 975

Sol :
```
  789
X 975
 3945
5523
7101
769275
```
Product =769275

```
 789
1578
2367
3156
3945
4734
5523
6312
7101
7890
```

(c) Multiply 6789 by 4876.

Sol:
```
  6789
X 4876
 40734
47523
54312
27156
33103164
```
Product = 33103164

```
 6789
13578
20367
27156
33945
40734
47523
54312
61101
67890
```

(d) Multiply 6789 by 9753.

Sol:
```
  6789
X 9753
 20367
33945
47523
61101
65213117
```
Product = 65213117

```
 6789
13578
20367
27156
33945
40734
47523
54312
61101
67890
```

(e) Multiply 456789 by 4876.

Sol:
```
  456789
X 4876
 2740734
3197523
3654312
1827156
2227303164
```
Product =2227303164

```
 456789
913578
1370367
1827156
2283945
2740734
3197523
3654312
4111101
4567890
```

(f) Multiply 456789 by 9753.

Sol:
```
  456789
X 9753
 1370367
2283945
3197523
4111101
4455063117
```
Product =4455063117

```
 456789
913578
1370367
1827156
2283945
2740734
3197523
3654312
4111101
4567890
```

Note; Multiplication Practice Format: Annexure- 9.

4. SUBTRACTION

In the process of subtraction, instead of subtracting 9,8,7,6 from a number, add 1,2,3,4 respectively to the number to get the difference.

Symbolically: $-9 \longrightarrow +1$
$-8 \longrightarrow +2$
$-7 \longrightarrow +3$
$-6 \longrightarrow +4$

Note: (a) Supplementary rule of subtraction. If the digit in the subtrahend is 1,2,3,4 more than the digit in the minuend, then the digit 9, 8, 7, 6 will respectively appear in the difference.

Symbolically: 1 more $\longrightarrow$ 9
2 more $\longrightarrow$ 8
3 more $\longrightarrow$ 7
4 more $\longrightarrow$ 6

(b) For every addition of 1, 2, 3 or 4, there is borrowing of 1. For every application of the supplementary rule, there is borrowing of 1.

(c) In the process of series subtraction, whenever there is a carry over 1 in adding 1, 2, 3 or 4, there is no borrowing of 1 in adding 1, 2, 3 or 4.

(d) Subtraction Practice Format is attached (Annexure -10&11).

Illustrations: COLUMN METHOD OF SUBTRACTION

(a)

17	16	25	34
− 9	− 8	− 7	− 6
8	8	18	28

(b)

12	38	43	26
− 3	− 9	− 5	− 8
9	29	38	18

13	24	43	32
− 6	− 7	− 7	− 6
7	17	36	26

(c)

345	456	456	567
− 89	− 178	− 269	− 389
256	278	187	178

(d)

432	456	356	678
− 253	− 158	− 187	− 289
179	298	169	389

(e)

6786	2342	6328	6788
− 4789	− 678	− 1439	− 3789
1997	1664	4889	2999

(f)

6543	7823	9876	4321
− 3456	− 5934	− 6879	− 1234
3087	1889	2997	3087

HORIZONTAL METHOD OF SUBTRACTION

(a) 31 – 6 – 6 = 19 (1 + 4 + 4 = 9, 3 – 2 = 1) (b) 42 – 6 – 7 = 29 (2 + 4 + 3 = 9, 4 – 2 = 2)

(c) 21 – 7 – 7 = 7 (1 + 3 + 3 = 7, 2 – 2 = 0) (d) 43 – 7 – 8 = 28 (3 + 3 + 2 = 8, 4 – 2 = 2)

(e) 54 – 8 – 8 = 38 (4 + 2 + 2 = 8, 5 – 2 = 3) (f) 64 – 8 – 9 = 47 (4 + 2 + 1 = 7, 6 – 2 = 4)

(g) 41 – 8 – 8 – 9 = 16 (1 + 2 + 2 + 1 = 6, 4 – 3 = 1)

(h) 51 – 8 – 8 – 8 – 8 = 19 (1 + 2 + 2 + 2 + 2 = 9, 5 – 4 = 1)

(i) 60 – 8 – 8 – 9 – 9 = 26 (0 + 2 + 2 + 1 + 1 = 6, 6 – 4 = 2)

(j) 82 – 9 – 9 – 9 – 9 – 9 = 37 (2 + 5= 7, 8 – 5 = 3)

(k) 81 – 9 – 9 – 9 – 9 – 9 – 9 – 9 = 18 (1 + 7 = 8, 8 – 7 = 1)

(l) 91 – 9 – 9 – 9 – 9 – 9 – 9 – 9 – 9 = 19 (1 + 8 = 9, 9 – 8 = 1)

(m) 85 – 9 – 9 – 9 – 9 – 9 – 9 – 9 – 9 – 9 = 4 (5 + 9 = 14, 8 – 8 = 0)

(n) 52 – 6 – 6 – 6 – 6 = 28 (2 + 16 = 18, 5 – 3 = 2)

(o) 78 – 7 – 7 – 7 – 7 – 7 = 43 (8 + 15 = 23, 7 – 3 = 4)

(p) 63 – 6 – 7 – 8 – 9 = 33 (3 + 4 + 3 + 2 + 1 = 13, 6 – 3 = 3)

(q) 45 – 39 = 6 (5 + 1 = 6, 4 – 3 – 1 = 0)

(r) 87 – 58 = 29 (7 + 2 =9, 8 – 5 – 1 = 2)

(s) 687 – 498 = 189 (7 + 2 = 9, 8 +1 – 1 = 8, 6 – 4 – 1 = 1)

(t) 78 – 37 – 29 = 12 (8 + 3 +1 = 12, 7 – 3 – 2 – 1 = 1)

(u) 956 – 389 – 478 = 89 (6 +1 +2 = 9, 5 + 2 +3 – 2 = 8, 9 – 3 – 4 – 2 = 0)

(v) 987 – 498 – 389 = 100 (7 + 2 + 1 = 10, 8 +1 + 2 – 1 = 10, 9 – 4 – 3 – 1 = 1)

(w) 789 – 267 – 397 = 125 (9 + 3 +3 = 15, 8 + 4 + 1– 1 = 12, 7 – 2 – 3 – 1 = 1)

(x) 978 – 267 – 378 – 289 = 44 (8 + 3 + 2 +1 =14, 7 +4 + 3 +2 – 2 = 14, 9 – 2 – 3 – 2– 2 = 0)

(y) 3765–987–798–798= 1182 (5+3+2+2 =12, 6 + 2 +1+1 – 2 = 8, 7+1+3+3–3=11, 3–2=1)

(z) 4235 – 789 – 879 – 979 = 1588 (5 + 1 + 1 + 1 = 8 , 3 + 2 + 3 + 3 – 3 = 8
2 + 3 + 2 + 1 – 3= 5, 4 – 3 = 1)

5. DIVISION

In the process of division, the students are firstly taught the new techniques of subtraction and then, they are taught to write up to the 10^{th} multiple of any number from 1 to 99 by applying the new number system, the new rule of writing times tables from 1 to 99 and the new technique of writing times tables from 1 to 100.The students need not memorize the times tables .Write the first 10 multiples of the divisor on the right hand of the answer.

Illustrations:

a) Divide 345 by 2.

Sol: 2) 345(172

2

14

14

5

4

1

Quotient = 172

Remainder =1

2
4
6
8
10
12
14
16
18
20

b) Divide 567 by 3.

Sol; 3)567(189

3

26

24

27

27

0

Quotient = 189

Remainder = 0

3
6
9
12
15
18
21
24
27
30

c) Divide 567 by 4.

Sol; 4) 567 (141

4

16

16

7

4

3

Quotient = 141

Remainder = 3

4
8
12
16
20
24
28
32
36
40

d) Divide 567 by 5.

Sol: 5) 567 (113

5

6

5

17

15

2

Quotient = 113

Remainder = 2

5
10
15
20
25
30
35
40
45
50

e) Divide 567 by 6.

Sol:6) 567 (94

54

27

24

3

Quotient = 94

Remainder = 3

6
12
18
24
30
36
42
48
54
60

f) Divide 567 by 7.

Sol; 7) 567 (81

56

7

7

0

Quotient = 81

Remainder= 0

7
14
21
28
35
42
49
56
63
70

g) Divide 267 by 9

Sol:- 9)267(29

18

87

81

6

∴ Quotient= 29

and remainder = 6

9
18
27
36
45
54
63
72
81
90

h) Divide 567 by 8

Sol:- 8)567(70

56

7

∴ Quotient= 70

and remainder = 7

8
16
24
32
40
48
56
64
72
80

i) Divide 3456 by 17.

Sol; 17) 3456 (203
34
56
51
5

Quotient = 203
Remainder = 5

17
34
51
68
85
102
119
136
153
170

k) Divide 3456 by 29.

Sol: 29) 3456 (119
29
55
29
266
261
5

Quotient = 119
Reminder = 5

29
58
87
116
145
174
203
232
261
290

n) Divide 3456 by 32.

Sol: 32) 3456 (108
32
256
256
0

Quotient = 108
Remainder = 0

32
64
96
128
160
192
224
256
288
320

m) Divide 5678 by 49.

Sol: 49) 5678 (115
49
77
49
288
245
43

Quotient = 115
Remainder = 43

49
98
147
196
245
294
343
392
441
490

n) Divide 6789 by 54.

Sol: 54) 6789 (125
54
138
108
309
270
39

Quotient = 125
Remainder = 39

54
108
162
216
270
324
378
432
486
540

o) Divide 3456 by 65.

Sol: 65) 3456 (53
325
206
195
11

Quotient= 53
Remainder = 11

65
130
195
260
325
390
455
520
585
650

p) Divide 34567 by 75.

Sol:75) 34567 (460
300
456
450
67

Quotient = 460
Remainder = 67

75
150
225
300
375
450
525
600
675
750

q) Divide 5678 by 89.

Sol: 89) 5678 (63
534
338
267
71

Quotient = 63
Remainder = 71

89
178
267
356
445
534
623
712
801
890

s) Divide 5678 by 97.

Sol; 97) 5678 (58

485

828

776

52

Quotient = 58

Remainder = 52

97
194
291
388
485
582
679
776
873
970

t) Divide 123456 by 78.

Sol: 78)123456 (1582

78

454

390

645

624

216

156

60

Quotient =1582

Remainder = 60

78
156
234
312
390
468
546
624
702
780

u) Divide 123456789 by 87.

Sol: 87) 123456789 (1419043

87

364

348

165

87

786

783

378

348

309

261

48

Quotient = 1419043

Remainder = 48

87
174
261
348
435
522
609
696
783
870

v) Divide 123456789 by 98

Sol: 98) 123456789 (1259763

98

254

196

585

490

956

882

747

686

618

588

309

294

15

Quotient = 1259763

Remainder = 15

98
196
294
392
490
588
686
784
882
980

w) Divide 987654321 by 123.

Sol: 123) 987654321(8029709

984

365

246

1194

1107

873

861

1221

1197

24

Quotient = 8029709

Remainder = 24

123
246
369
492
615
738
861
984
1107
1230

x) Divide 123456789 by 456.

Sol: 456) 123456789 (270738

912

3225

3192

3367

3192

1758

1368

3909

3648

261

Quotient = 270738

Remainder = 261

456
912
1368
1824
2280
2736
3192
3648
4104
4560

y) Divide 987654321 by 789.

Sol: 789) 987654321 (1251779

789

1986

1578

4085

3945

1404

789

6153

5523

6302

5523

7791

7101

690

789
1578
2367
3156
3945
4734
5523
6312
7101
7890

Quotient = 125177, Remainder = 690

z) Divide 123456789 by 987.

Sol: 987) 123456789 (125082

987

2475

1974

5016

4935

8178

7896

2829

1974

855

987
1974
2961
3948
4935
5922
6909
7896
8783
9870

Quotient = 125082

Remainder = 855

Note; Divide 9876543210 by 789.

Sol : 789) 9876543210 (12517798.745

789

1986

1578

4085

3945

1404

789

6153

5523

6302

5523

7791

7101

6900

6312

5880

5523

3570

3156

4140

3945

195

789
1578
2367
3156
3945
4734
5523
6312
7101
7890

Quotient = 12517798.745… =12517798.75 (appx)

Note; *Division Practice Format is attached (Annexure -12).*

6. IDENTIFICATION OF PRIME NUMBERS BETWEEN 1 AND 100.

NUMBERS	FACTORS	NUMBER OF FACTORS	NUMBERS	FACTORS	NUMBER OF FACTORS
1.	**1**	**1**	26.	**1,2,13,26**	**4**
2.	**1,2**	**2**	27.	**1,3,9,27**	**4**
3.	**1,3**	**2**	28.	**1,2,4,7,14,28**	**6**
4.	**1,2,4**	**3**	29.	**1,29**	**2**
5.	**1,5**	**2**	30.	**1,2,3,5,6,10,15,30**	**8**
6.	**1,2,3,6**	**4**	31.	**1,31**	**2**
7.	**1,7**	**2**	32.	**1,2,4,8,16,32**	**6**
8.	**1,2,4,8**	**4**	33.	**1,3,11,33**	**4**
9.	**1,3,9**	**3**	34.	**1,2,17,34**	**4**
10.	**1,2,5,10**	**4**	35.	**1,5,7,35**	**4**
11.	**1,11**	**2**	36.	**1,2,3,4,6,9,12,18,36**	**9**
12.	**1,2,3,4,6,12**	**6**	37.	**1,37**	**2**
13.	**1,13**	**2**	38.	**1,2,19,38**	**4**
14.	**1,2,7,14**	**4**	39.	**1,3,13,39**	**4**
15.	**1,3,5,15**	**4**	40.	**1,2,4,5,8,10,20,40**	**8**
16.	**1,2,4,8,16**	**5**	41.	**1,41**	**2**
17.	**1,17**	**2**	42.	**1,2,3,6,7,14,21,42**	**8**
18.	**1,2,3,6,9,18**	**6**	43.	**1,43**	**2**
19.	**1,19**	**2**	44.	**1,2,4,11,22,44**	**6**
20.	**1,2,4,5,10,20**	**6**	45.	**1,3,5,9,15,45**	**6**
21.	**1,3,7,21**	**4**	46.	**1,2,23,46**	**4**
22.	**1,2,11,22**	**4**	47.	**1,47**	**2**
23.	**1,23**	**2**	48.	**1,2,3,4,6,8,12,16,24,48**	**10**
24.	**1,2,3,4,6,8,12,24**	**8**	49.	**1,7,49**	**3**
25.	**1,5,25**	**3**	50.	**1,2,5,10,25,50**	**6**

NUMBERS	FACTORS	NUMBER OF FACTORS	NUMBERS	FACTORS	NUMBER OF FACTORS
51.	**1,3,17,51**	**4**	76.	**1,2,4,19,38,76**	**6**
52.	**1,2,4,13,26,52**	**6**	77.	**1,7,11,77**	**4**
53.	**1,53**	**2**	78.	**1,2,3,6,13,26,39,78**	**8**
54.	**1,2,3,6,9,18,27,54**	**8**	79.	**1,79**	**2**
55.	**1,5,11,55**	**4**	80.	**1,2,4,5,8,10,16,20,40,80**	**10**
56.	**1,2,4,7,8,14,28,56,**	**8**	81.	**1,3,9,27,81**	**5**
57.	**1,3,19,57**	**4**	82.	**1,2,41,82**	**4**
58.	**1,2,29,58**	**4**	83.	**1,83**	**2**
59.	**1,59**	**2**	84.	**1,2,3,4,6,7,12,14,21,28,42,84**	**12**
60.	**1,2,3,4,6,10,15,20, 30,60**	**10**	85.	**1,5,17,85**	**4**
61.	**1,61**	**2**	86.	**1,2,43,86**	**4**
62.	**1,2,31,62**	**4**	87.	**1,3,29,87**	**4**
63.	**1,3,7,9,21,63,**	**6**	88.	**1,2,4,8,11,22,44,88**	**8**
64.	**1,2,4,8,16,32,64**	**7**	89.	**1,89**	**2**
65.	**1,5,13,65**	**4**	90.	**1,2,3,5,6,9,10,15,18,30,45,90**	**12**
66.	**1,2,3,6,11,22,33,66**	**8**	91.	**1,7,13,91**	**4**
67.	**1,67**	**2**	92.	**1,2,4,23,46,92**	**6**
68.	**1,2,4,17,34,68**	**6**	93.	**1,3,31,93**	**4**
69.	**1,3,23,69**	**4**	94.	**1,2,47,94**	**4**
70.	**1,2,5,7,10,14,35,70**	**8**	95.	**1,5,19,95**	**4**
71.	**1,71**	**2**	96.	**1,2,3,4,6,8,12,16,24,32,48,96**	**12**
72.	**1,2,3,4,6,8,9,12,18, 24,36,72**	**12**	97.	**1,97**	**2**
73.	**1,73**	**2**	98.	**1,2,7,14,49,98**	**6**
74.	**1,2,37,74**	**4**	99.	**1,3,9,11,33,99**	**6**
75.	**1,3,5,15,25,75**	**6**	100.	**1,2,4,5,10,20,25,50,100**	**9**

Prime numbers have exactly two factors. So, they are 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.

The number of prime numbers between 1 and 100 is 25.

Note: (a) Factor(s): Factor(s) of a number is/are exact divisor(s) of the number.

e.g. (i) The factors of 6 are 1,2, 3, 6.

(ii) The factors of 28 are 1, 2, 4, 7, 14, 28.

(b) Prime number is a (natural) number which has exactly two factors.

e.g. 2, 3, 5, 7, 11, 13, 17, 19 etc.

(c) Composite number is number which has more than two factors. e.g. 4, 6, 8, 9 etc.

(d) 1 is the only number which has only one factor.

(e) 1 is neither prime nor composite number.

(f) Illustration:- To find the factors of a number, say 48, we write it as a product of primes i.e. 48 = 2 x 2 x 2 x 2 x 3. *Any number is divisible by 1. Therefore, 1 is the factor of 48.Taking the factors of 48, one prime factor at a time, we get 2 and3 as the factors of 48. Taking the factors of 48, two prime factors at a time, we get* 2 x 2 = 4 *and* 2 x 3 = 6 *as the factors of 48. Taking the factors of 48, three prime factors at a time, we get* 2 x 2 x 2 = 8 *and* 2 x 2 x 3 = 12 *as the factors of 48. Taking the factors of 48, four prime factors at a time, we get* 2 x 2 x 2 x 2=16 *and* 2 x 2 x 2 x 3 = 24 *as the factors of 48. Taking all the factors of 48 at a time, we get* 2 x 2 x 2 x 2 x 3 = 48 *as the factor of 48. Thus the factors of 48 are 1, 2, 3, 4, 6, 8, 12, 16, 24 and 48.*

(g) 2 is the only prime number which is even.

(h) The number of factors of 1 to 100 are even except perfect squares which are odd.

(i) The product of the pairs of the factors of the numbers which has even number of factors is the number.

(j) In case of the odd number of the factor(s), the product of the two square roots of the number (perfect square) is the number and product of the remaining pairs of factors is the number.

(k) Teach the students to identify all the prime numbers between 1 and 100.
The sample of the identification of prime numbers (practice format) are attached (Annexure-13).

(l) The students need to memorize all the prime numbers between 1 and 100 in ascending order. This exercise is to enhance the speed of calculation.

(m)The students are advised to mentally find the factors of the numbers from 1to 100 after finding the factors by applying prime factorization method.

7. Test of divisibility of numbers by Prime Number between 1 and 100 (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).

A number is divisible by 2 if it has any of the digits 0, 2, 4, 6, 8 in its ones place.
e.g. 32, 56, 98, 370, 3504 are divisible by 2.
Note;(i) The whole numbers which are divisible by 2 are 0, 2. 4, 6, 8, 10, 12, …
(ii) The single digit numbers divisible by 2 are 0, 2, 4, 6 and 8.

If the sum of the digits of a number is divisible by 3, then the number is divisible by 3. e.g. 57, 87, 321, 777, 4443 are divisible by 3.
Note; The single digit numbers divisible by 3 are 0, 3, 6 and 9.

A number which has either 0 or 5 in its ones place is divisible 5. e.g. 30, 95, 760, 2205 are divisible by 5.
Note; The single digit numbers divisible by 5 are 0, 5.

To test the divisibility of a number by 7, delete the digit in ones place and from the number so obtained subtract twice the deleted digit. If the difference is 0 or the multiple of 7, then the given number is divisible by 7, otherwise not. If the difference is large, repeat the same process on it. For example, 8778 is divisible by 7, for 877- 8x2 = 877- 16 = 861, 86 – 1x2 = 86 – 2=84 and 8- 4x2 = 8 – 8=0.

Alternative method; To test the divisibility of a number (which is not divisible by 2, 3 or 5) by 7, memorize/write the first nine multiples of 7 by applying the new method of writing times table, namely 7, 14, 21,28, 35, 42, 49, 56, 63. Counting from the left-hand side, write the nearest multiple of 7 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected digit(s). The same process is repeated and if the last number on the right side is 0 or multiple of 7, then the number is divisible by 7, otherwise not. Illustrations;

(i) 91 → 7/21 ⇒ 91 ÷ 7 = 13

(ii) 133 → 7/63 ⇒ 133 ÷ 7 = 19

(iii) 343 → 28/63 ⇒ 343 ÷ 7 = 49

(iv) 2401 → 21/301 → 28/21 ⇒ 2401 ÷ 7 = 343

(v) 12103 → 7/5103 → 49/203 → 14/63 ⇒ 12103 ÷ 7 = 1729

Note; (i) *The single digit numbers divisible by 7 are 0, 7.*
(ii) 140 → 14/0 ⇒ 140 ÷ 7 = 20
(iii) 2100 → 21/00 ⇒ 2100 ÷ 7 = 300

If the difference between the sum of the digits at odd places (from the right) and the sum of the digits at even places (from the right) of the number is either 0 or divisible by 11, then the number is divisible by 11. e.g. 121, 1331, 6996, 29381 are divisible by 11.

Alternative method; To test the divisibility of a number (which is not divisible by 2, 3, 5 or 7) by 11, memorize/write the first nine multiples of 11 by applying the new method of writing times table, namely 11, 22, 33, 44, 55, 66, 77, 88, 99. Counting from the left-hand side, write the nearest multiple of 11 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 11, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 11, then the number is divisible by 11, otherwise not.
Illustrations;

(i) 121 → 11/11 ⇒ 121 ÷ 11 = 11

(ii) 187 → 11/77 ⇒ 187 ÷ 11 = 17

(iii) 209 → 11/99 ⇒ 209 ÷ 11 = 19

(iv) 1331 → 11/231 → 22/11 ⇒ 1331 ÷ 11 = 121

(v) 2717 → 22/517 → 44/77 ⇒ 2717 ÷ 11 = 247

(vi) 14641 → 11/3641 → 33/341 → 33/11 ⇒ 14641 ÷ 11 = 1331

(vii) 45089 → 44/1089 → 99/99 ⇒ 45089 ÷ 11= 4099

(viii) 46189 → 44/2189 → 11/1089 → 99/99 ⇒ 46189 ÷ 11 = 4199

Note; (i) The only single digit number divisible by 11 is 0.
(ii) 220 → 22/0 ⇒ 220 ÷ 11 = 20
(iii) 7700 → 77/00 ⇒ 7700 ÷ 11 = 700
(iv) 0 is divisible by any prime number.

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7 or11) by 13, memorize/write the first nine multiples of 13 by applying the new method of writing times table, namely 13, 26, 39 ,52, 65, 78, 91, 104, 117. Counting from the left-hand side, write the nearest multiple of 13 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 13, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 13, then the number is divisible by 13, otherwise not. Illustrations;

(i) 169 → 13/69 ⇒ 169 ÷ 13 = 13

(ii) 247 → 13/117 ⇒ 247 ÷ 13 = 19

(iii) 2197 → 13/897 → 78/117⇒ 2197 ÷ 13 = 169

(iv) 2873 → 26/273 → 26/13⇒ 2873 ÷ 13 = 221

(v) 6409 → 52/1209 → 117/39 → 91/51 ⇒ 6409 ÷ 13 = 493

(vi) 9217 → 91/117 ⇒ 9217 ÷ 13 = 709

(vii) 121771 → 117/4771 → 39/871 → 78/91 ⇒ 121771 ÷ 13 = 9367

Note; (i) The only single digit number divisible by 13 is 0.
(ii) 260 → 26/0 ⇒ 260 ÷ 13 = 20
(iii) 3900 → 39/00 ⇒ 3900÷ 13 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11 or13) by 17, memorize/write the first nine multiples of 17 by applying the new method of writing times table, namely 17, 34, 51,68, 85, 102, 119, 136, 153. Counting from the left-hand side, the nearest multiple of 17 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 17, then insert 0 in the quotient.
The same process is repeated and if the last number is 0 or multiple of 17, then the number is divisible by 17, otherwise not. Illustrations;

(i) 289 → 17/119 ⇒ 289 ÷ 17 = 17

(ii) 323 → 17/153 ⇒ 323 ÷ 17 = 19

(iii) 493 → 34/153 ⇒ 493 ÷ 17 = 29

(iv) 4913 → 34/1513 → 136/153⇒ 4913 ÷ 17 = 289

(v) 10319 → 102/119 ⇒ 10319 ÷ 17 = 607

(vi) 83521 → 68/15521 → 153/221→ 17/51 ⇒ 83521 ÷ 17 = 4913

(vii) 215441 → 17/45441 → 34/11441 → 102/1241 → 119/51 ⇒ 215441÷ 17 = 12673

Note; (i) The only single digit number divisible by 17 is 0.
(ii) 340 → 34/0 ⇒ 340 ÷ 17 = 20
(iii) 5100 → 51/00 ⇒ 510 ÷ 17 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13 or17) by 19, memorize/write the first nine multiples of 19 by applying the new method of writing times table, namely 19, 38, 57,76, 95, 114, 135, 152, 171. Counting from the left-hand side, the nearest multiple of 19 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 19, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 19, then the number is divisible by 19, otherwise not. Illustrations;

(i) 361 → 19/171 ⇒ 361 ÷ 19 = 19

(ii) 551 → 38/171 ⇒ 551 ÷ 19 = 29

(iii) 6859 → 57/1159 → 114/19⇒ 6859 ÷ 19 = 361

(iv) 12673 → 114/1273 → 114 /133 ⇒ 12673 ÷ 19 = 667

(v) 13471 → 133 /171 ⇒ 13471 ÷ 19 = 709

(vi) 130321 → 114/16321 → 152/1121 → 95/171 ⇒ 130321 ÷ 19 = 6859

(vii) 392863 → 38/12863 → 114/1463 → 133/133 ⇒392863 ÷ 19 = 20677

Note; (i)The only single digit number divisible by 19 is 0.
(ii) 380 → 38/0 ⇒ 380 ÷ 19 = 20
(iii) 5700 → 57/00 ⇒ 5700 ÷ 19 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13,17or19) by 23, memorize/write the first nine multiples of 19 by applying the new method of writing times table, namely 23, 46, 69,92,115,138,161, 184,207. Counting from the left-hand side, the nearest multiple of 23 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 23, then insert 0 in the quotient.

The same process is repeated and if the last number is 0 or multiple of 23, then the number is divisible by 23, otherwise not. Illustrations;

(i) 529 → 46/69 ⇒ 529 ÷ 23 = 23

(ii) 667 → 46/23 ⇒ 667 ÷ 23 = 29

(iii) 12167 → 115/667 → 46/207 ⇒ 12167 ÷ 23= 529

(iv) 44689 → 23/21289 → 207/989 → 92/69 ⇒ 44689 ÷ 23= 1943

(v) 69161 → 69/161 ⇒ 69161 ÷ 23 = 3007

(vi)149477 → 138/11477 → 22/2277 → 207/207 ⇒ 14947 ÷ 23 = 6499

(vii) 4633787 → 46/33787 → 23/10787 → 92/1587→ 138/207⇒ 4633787 ÷ 23 = 201469

Note; (i) The only single digit number divisible by 23 is 0.

(ii) 460 → 46/0 ⇒ 460 ÷ 23 = 20

(iii) 6900 → 69/00 ⇒ 6900 ÷ 23 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19 or 23) by 29, memorize/write the first nine multiples of 29 by applying the new method of writing times table, namely29, 58, 87,116, 145, 174, 203, 232,261. Counting from the left-hand side, the nearest multiple of 29 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 29, then insert 0 in the quotient. The process is repeated and if the last number is 0 or multiple of 29, then the number is divisible by 29, otherwise not. Illustrations;

(i) 841 → 58/261 ⇒ 841 ÷ 29 = 29

(ii) 1943 → 174/203 ⇒ 1943 ÷ 29 = 67

(iii) 3161 → 29/261 ⇒ 3161 ÷ 29 = 109

(iv) 38657 → 29 / 9657 → 87/957 → 87/87 ⇒ 38657 ÷ 29 = 1333

(v) 104081 → 87/17081 → 145/2581 → 232/261 ⇒ 104081 ÷ 29 = 3589

(vi) 1253206 → 116/93206 → 87/6206 → 58/406 → 29/116 ⇒ 1253206 ÷ 29 = 43214

Note; (i) The only single digit number divisible by 29 is 0.

(ii) 580 → 58/0 ⇒ 580 ÷ 29 = 20

(iii) 8700 → 87/00 ⇒ 8700 ÷ 29 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23 or29) by 31, memorize/write the first nine multiples of 31 by applying the new method of writing times table, namely 31, 62, 93, 124, 155, 186, 217, 248, 279. Counting from the left-hand side, the nearest multiple of 31 which is less than or equal to the number on the left-hand side, write slash and then write the difference along with the remaining unaffected

digit(s). In case, the remainder with the next digit is less than 31, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 31, then the number is divisible by 31, otherwise not. Illustrations;

(i) 961 → 93/31 ⇒ 961 ÷ 31 = 31

(ii) 1147 → 93/217 ⇒ 1147 ÷ 31 = 37

(iii) 1457 → 124/217 ⇒ 1457 ÷ 31 = 47

(iv) 29791 → 279/1891 → 186/31 ⇒ 29791 ÷ 31 = 961

(v) 47027 → 31/16027 → 155/527 → 31/217 ⇒ 47027 ÷ 31 = 1517

(vi) 126697 → 124/2697 → 248/217 ⇒ 126697 ÷ 31 = 4087

Note; (i) The only single digit number divisible by 31 is 0.
(ii) 620 → 62/0 ⇒ 620 ÷ 31 = 20
(iii) 9300 → 93/00 ⇒ 9300 ÷ 31 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29 or 31) by 37, memorize/write the first nine multiples of 37 by applying the new method of writing times table, namely 37, 74, 111, 148, 185, 222, 259, 296, 333. Counting from the left - hand side, the nearest multiple of 37 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 37, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 37, then the number is divisible by 37, otherwise not. Illustrations;

(i) 1369 → 111/259 ⇒ 1369 ÷ 37 = 37

(ii) 1517 → 148/37 ⇒ 1517 ÷ 37 = 41

(iii) 50653 → 37/13653 → 111/2553 → 222/333 ⇒ 50653 ÷ 37 = 1369

(iv) 65231 → 37/28231 → 259/2331 → 222/111 ⇒ 65231 ÷ 37 = 1763

(v) 195841 → 185/10841 → 74/3441 → 333/111 ⇒ 195841 ÷ 37 = 5293

Note; (i) The only single digit number divisible by 37 is 0.
(ii) 370 → 37/0 ⇒ 370 ÷ 37 = 37
(iii) 7400 → 74/00 ⇒ 7400 ÷ 37 = 200

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31 or 37) by 41, memorize/write the first nine multiples of 41 by applying the new method of writing times table, namely 41, 82, 123, 164, 205, 246, 287, 328, 369. Counting from the left - hand side, the nearest multiple of 41 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder

with the next digit is less than 41, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 41, then the number is divisible by 41, otherwise not. Illustrations;

(i) 1681 → 164/41 ⇒ 1681 ÷ 41 = 41

(ii) 1927 → 164/287 ⇒ 1927 ÷ 41 = 47

(iii) 3977 → 369/287 ⇒ 3977 ÷ 41 = 97

(iv) 68921 → 41/27921 → 246/3321 → 328/41 ⇒ 68921 ÷ 41 = 1681

(v) 129109 → 123/6109 → 41/2009 → 164/369 ⇒ 129109 ÷ 41 = 3149

(vi) 4391633 → 41/291633 → 287/4633 → 41/533 → 41/123 ⇒ 4391633 ÷ 41 =107113

Note; (i) The only single digit number divisible by 41 is 0.
(ii) 410 → 41/0 ⇒ 410 ÷ 41 = 10
(iii) 82000 → 82/000 ⇒ 82000 ÷ 41 = 2000

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37 or 41) by 43, memorize/write the first nine multiples of 31 by applying the new method of writing times table, namely 43, 86, 129, 172, 215, 258, 301, 344, 387. Counting from the left - hand side, the nearest multiple of 43 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 43, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 43, then the number is divisible by 43, otherwise not. Illustrations;

(i) 1849 → 172/129 ⇒ 1849 ÷ 43 = 43

(ii) 2021 → 172/301 ⇒ 2021 ÷ 43 = 47

(iii) 4171 → 387/301 ⇒ 4171 ÷ 43 = 97

(iv) 79507 → 43/36507 → 344/2107 → 172/387 ⇒ 79507 ÷ 43 = 1849

(v) 107113 → 86/21113 → 172/3913 → 387/43 ⇒ 107113 ÷ 43 = 2491

(vi) 279457 → 258/21457 → 172/4257 → 387/387 ⇒ 279457 ÷ 43 = 6499
(vii) 6319667 → 43/2019667 → 172/299667 → 258/41667 → 387/2967 → 258/387
⇒ 6319667 ÷ 43 =146969

Note; (i) The only single digit number divisible by 43 is 0.
(ii) 860 → 86/0 ⇒ 860 ÷ 43 = 20
(iii) 12900 → 129/00 ⇒ 12900 ÷ 43 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31,37, 41 or 43) by 47, memorize/write the first nine multiples of 47 by applying the new method of writing

times table, namely 47, 94, 141, 188, 235, 282, 329, 376, 423. Counting from the left - hand side, the nearest multiple of 47 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 47, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 47, then the number is divisible by 47, otherwise not. Illustrations;

(i) 2209 → 188/329 ⇒ 2209 ÷ 47 = 47

(ii) 2491 → 235/141 ⇒ 2491 ÷ 47 = 53

(iii) 103823 → 94/9823 → 94/423 ⇒ 103823 ÷ 43 = 2209

(iv) 146969 → 141/5969 → 47/1269 → 94/329 ⇒ 146969 ÷ 47 = 3127

(v) 305453 → 282/23453 → 188/4653 → 423/423 ⇒ 305453 ÷ 47 = 6499

(vi) 8965109 → 47/4265109 → 423/35109 → 329/2209 → 188/329
⇒8965109 ÷ 47 = 190747

Note; (i) The only single digit number divisible by 47 is 0.
(ii) 470 → 47/0 ⇒ 470 ÷ 47 = 10
(iii) 14100 → 141/00 ⇒ 14100 ÷ 47 = 300

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To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41 or 47) by 53, memorize/write the first nine multiples of 31 by applying the new method of writing times table, namely 53, 106, 159, 212, 265, 318, 371, 424, 477. Counting from the left - hand side, the nearest multiple of 53 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 53, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 53, then the number is divisible by 53, otherwise not.
Illustrations;

(i) 2809 → 265/159 ⇒ 2809 ÷ 53 = 53

(ii) 3127 → 265/477 ⇒ 3127 ÷ 53 = 59

(iii) 5141 → 477/371 ⇒5141 ÷ 53 = 97

(iv) 148877 → 106/42877 → 424/477 ⇒148877 ÷ 53 = 2809

(v) 190747 → 159/31747 → 265/5247 → 477/477 ⇒190747÷ 53 = 3599

(vi) 252121 → 212/40121 → 371/3021 → 265/371 ⇒252121 ÷ 53 = 4757

(vii) 12780049 → 106/2180049 → 212/60049 → 53/7049 → 53/1749 → 159/159

⇒12780049 ÷ 53 = 241133

Note; (i) The only single digit number divisible by 53 is 0.

(ii) 1060 → 106/0 ⇒1060 ÷ 53 = 20
(iii) 15900 → 159/00 ⇒15900 ÷ 53 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47 or 53) by 59, memorize/write the first nine multiples of 59 by applying the new method of writing times table, namely 59, 118, 177, 236, 295, 354, 413, 472, 531. Counting from the left - hand side, the nearest multiple of 59 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 59, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 59, then the number is divisible by 59, otherwise not. Illustrations;

(i) 3481 → 295/531 ⇒ 3481÷ 59 = 59

(ii) 5723 → 531/413 ⇒ 5723 ÷ 59 = 97

(iii) 205379 → 177/28379 → 236/4779 → 472/59 ⇒205379 ÷ 59 = 3481

(iv) 241133 → 236/5133 → 472/413 ⇒241133÷ 59 = 4087

(v) 509347 → 472/37347 → 354/1947 → 177/177 ⇒509347 ÷ 59 = 8633

(vi) 17120443 → 118/5320443 → 531/10443 → 59/4543 → 413/413
⇒17120443 ÷ 59 = 290177

Note; (i) The only single digit number divisible by 59 is 0.
(ii) 1180 → 118/0 ⇒1180 ÷ 59 = 20
(iii) 17700 → 177/00 ⇒17700 ÷ 59 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53 or 59) by 61, memorize/write the first nine multiples of 61 by applying the new method of writing times table, namely 61, 122, 183,244, 305, 366, 427, 488, 549. Counting from the left - hand side, the nearest multiple of 61 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 61, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 61, then the number is divisible by 61, otherwise not. Illustrations;

(i) 3721 → 366/61 ⇒ 3721÷ 61 = 61

(ii) 5429 → 488/549 ⇒ 5429 ÷ 61 = 89

(iii) 226981 → 183/43981 → 427/1281 → 122/61 ⇒22698 ÷ 61 = 3721

(iv) 290177 → 244/46177 → 427/4277→ 305/427 ⇒290177÷ 61 = 4757

(v) 351787 → 305/46787 → 427/4687 → 366/427 ⇒351787 ÷ 61= 5767

(vi) 28147169 → 244/3747169 → 366/87169→ 61/26169→ 244/1769 → 122/549

⇒28147169 ÷ 61 = 461429

Note; (i) The only single digit number divisible by 61 is 0.

(ii) 1220 → 122/0 ⇒ 1220 ÷ 61 = 20

(iii) 18300 → 183/00 ⇒ 18300 ÷ 61 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53, 59 or 61) by 67, memorize/write the first nine multiples of 67 by applying the new method of writing times table, namely 67, 134, 201, 268, 335, 402, 469, 536, 603. Counting from the left - hand side, the nearest multiple of 67 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 67, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 67, then the number is divisible by 67, otherwise not. Illustrations;

(i) 4489 → 402/469 ⇒ 4489÷ 67 = 67

(ii) 6499 → 603/469 ⇒ 6499 ÷ 67 = 97

(iii) 3000763 → 268/432763 → 268/5963 → 536/603 ⇒300763÷ 67 = 4489

(iv) 347261 → 335/12261 → 67/5561 → 536/201 ⇒347261÷ 67 = 5183

(v) 439319→ 402/37319 → 335/3819 → 335/469 ⇒ 439319 ÷ 67= 6557

(vi) 27433619 → 268/633619 → 603/30619→ 268/3819→ 335/469 → 122/549

⇒27433619 ÷ 67 = 409457

Note; (i) The only single digit number divisible by 67 is 0.

(ii) 1340 → 134/0 ⇒1340 ÷ 67 = 20

(iii) 20100 → 201/00 ⇒20100 ÷ 67 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53, 59, 61or 67) by 71, memorize/write the first nine multiples of 71 by applying the new method of writing times table, namely 71, 142, 213, 284, 355, 426, 497, 568, 639. Counting from the left - hand side, the nearest multiple of 71 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 71, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 71, then the number is divisible by 71, otherwise not. Illustrations;

(i) 5041 → 497/71 ⇒ 5041÷ 71 = 71

(ii) 6319 → 568/639 ⇒ 6319 ÷ 71 = 89

(iii) 357911 → 355/2911→ 284/71 ⇒357911÷ 71 = 5041

(iv) 409457 → 355/54457 → 497/4757 → 426/ 497 ⇒ 409457÷ 71 = 5767

(v) 524477→ 497/27477 → 213/6177 → 568/497 ⇒524477÷ 71= 7387

(vii) 33984931 → 284/5584931 → 497/614931→ 568/46931→ 426/4331 → 426/71
⇒33984931 ÷ 71 = 478661

Note; (i) The only single digit number divisible by 71 is 0.
(ii) 1420 → 142/0 ⇒1420 ÷ 71 = 20
(iii) 21300 → 213/00 ⇒21300 ÷ 71 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53, 59, 61, 67 or 71) by 73, memorize/write the first nine multiples of 73 by applying the new method of writing times table, namely 73, 146, 219, 292, 365, 438, 511, 584, 657. Counting from the left - hand side, the nearest multiple of 73 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 73, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 73, then the number is divisible by 73, otherwise not. Illustrations;

(i) 5329 → 511/219 ⇒ 5329÷ 73 = 73

(ii) 6497 → 584/657 ⇒ 6497 ÷ 73 = 89

(iii) 389017 → 365/24017→ 219/2117 → 146/657 ⇒389017÷ 73 = 5329

(iv) 478661 → 438/40661 → 365/4161 → 365/511 ⇒478661÷ 73 = 6557

(v) 539251→ 511/28251 → 219/6351 → 584/511 ⇒539251÷ 73= 7387

(viii) 42600829 → 365/6100829 → 584/260829→ 219/41829→ 365/5329 → 511/219
⇒ 42600829 ÷ 73 = 583573

Note; (i) The only single digit number divisible by 73 is 0.
(ii) 1460 → 146/0 ⇒1460 ÷ 73 = 20
(iii) 21900 → 219/00 ⇒21900 ÷ 73 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53, 59, 61, 67, 71 or 73) by 79, memorize/write the first nine multiples of 79 by applying the new method of writing times table, namely 79, 158, 237, 316, 395, 474, 553, 632, 711. Counting from the left - hand side, the nearest multiple of 79 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 79, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 79, then the number is divisible by 79, otherwise not. Illustrations;

(i) 6241 → 553/711 ⇒ 6241÷ 79 = 79

(ii) 7663 → 711/553 ⇒ 7663 ÷ 79 = 97

(iii) 493039 → 474/19039→ 158/3239 → 316/79 ⇒493039÷ 79 = 6241

(iv) 583573 → 553/30573 → 237/6873 → 632/553 ⇒583573÷ 79 = 7387

(v) 682007→ 632/50007 → 474/260 → 237/237 ⇒682007 ÷ 79= 8633

(vi) 56606581 → 553/1306581 → 79/516581→ 474/42581→ 395/3081 → 237/711
⇒56606581 ÷ 79 = 716539

Note; (i) The only single digit number divisible by 79 is 0.
(ii) 1580 → 158/0 ⇒1580 ÷ 79 = 20
(iii) 23700 → 237/00 ⇒23700 ÷ 79 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53, 59, 61, 67, 71, 73 or 79) by 83, memorize/write the first nine multiples of 83 by applying the new method of writing times table, namely 83, 166, 249, 332, 415, 498, 581, 664, 747. Counting from the left - hand side, the nearest multiple of 83 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 83, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 83, then the number is divisible by 83, otherwise not. Illustrations;

(i) 6889 → 664/249 ⇒ 6889÷ 83 = 83

(ii) 7663 → 664/747 ⇒ 7387 ÷ 83= 89

(iii) 571787 → 498/ 73787→ 664/7387 → 664/747 ⇒571787÷ 83= 6889

(iv) 672217 → 664/8217 → 747/747 ⇒672217÷ 83 = 8099

(v) 55794011→ 498/5994011 → 581/184011→ 166/18011 → 166/1411→ 83/581
⇒ 55794011 ÷ 83 = 672217

(vi) 59827313 → 581/1727313 → 166/67313→ 664/913→ 83/83
⇒59827313 ÷ 83 = 720811

Note; (i) The only single digit number divisible by 83is 0.
(ii) 1660 → 166/0 ⇒1660 ÷ 83 = 20
(iii) 24900 → 249/00 ⇒24900 ÷ 83 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53, 59, 61, 67, 71, 73, 79 or 83) by 89, memorize/write the first nine multiples of 89 by applying the new method of writing times table, namely 89, 178, 267, 356, 445, 534, 623, 712, 801.

Counting from the left - hand side, the nearest multiple of 89 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 89, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 89, then the number is divisible by 89, otherwise not. Illustrations;

(i) 7921 → 712/801 ⇒ 7921÷ 89= 89

(ii) 8663 → 801/623 ⇒ 8633 ÷ 89= 97

(iii) 704969→ 623/ 81969→ 801/1869→ 178/89 ⇒704969÷ 89= 7921

(iv) 768337→ 712/56337 → 534/ 2937 → 267/267 ⇒768337÷ 89 = 8633

(v) 837401 → 801/36401 → 356/801→ 166/18011 → 166/1411→ 83/581
⇒837401 ÷ 89 = 9409

(vi) 74528689 → 712/3328689 → 267/ 658689→ 623/35689 → 356/89
⇒74528689 ÷ 89 = 837401

Note; (i) The only single digit number divisible by 89 is 0.
(ii) 178→ 178/0 ⇒1780 ÷ 89 = 20
(iii) 26700 → 267/00 ⇒24900 ÷ 89 = 300

To test the divisibility of a number (which is not divisible by 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 47, 53, 59, 61, 67, 71, 73, 79,83 or 89) by 97, memorize/write the first nine multiples of 97 by applying the new method of writing times table, namely 97, 194, 291, 388, 485, 582, 679, 776, 873. Counting from the left - hand side, the nearest multiple of 97 which is less than or equal to the number on the left - hand side, write slash and then write the difference along with the remaining unaffected digit(s). In case, the remainder with the next digit is less than 97, then insert 0 in the quotient. The same process is repeated and if the last number is 0 or multiple of 97, then the number is divisible by 97, otherwise not. Illustrations;

(i) 9409→ 873/679 ⇒ 9409 ÷ 97= 97

(ii) 912673 → 873/39673 → 388/873
⇒ 912673 ÷ 97 = 9409

(iii) 88529281 → 873/1229281 → 97/ 259281→ 194/65281 → 582/7081→ 679/291
⇒88529281 ÷ 97 = 912673

Note; (i) The only single digit number divisible by 97 is 0.
(ii) 194 → 194/0 ⇒1940 ÷ 97 = 20
(iii) 29100 → 291/00 ⇒29100 ÷ 97 = 300

(iv) 0 is divisible by any prime number.

Proof : By using Euclid's Division Lemma, for any two non-negative integers a & b, we have, $a = bq + r$ ---- (i), where $b < r \leq 0$ and $b \neq 0$.

Now, for $a = 0$, we have

$0 = bq + r$ ----- (ii)

But $0 = b \times 0 + 0$ ----- (iii)

Comparing (ii) & (iii), we have

$q = 0$ and $r = 0$

$\therefore$ from (i), we have

$0 = b \times 0 + 0$

$\Rightarrow 0 = b \times 0$

$\Rightarrow$ 0 is divisible by b (which is a non-negative integer) and the quotient = 0.

$\Rightarrow$ 0 is divisible by any prime number (Since the set of prime numbers is the proper subset of the set of non-negative integers).

(j) Multiples: The multiples of a number are the products of the number and the natural numbers.

e.g. (i) The multiples of 6 are 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 72, …

(ii) The multiples of 8 are 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, …

(k) Prime factor(s): Prime factor (s) of a number is/are factor (s) of the number which is/are prime.

e.g. (i) The prime factors of 6 are 2, 3.

(ii) The prime factors of 28 are 2, 7.

(l) Applications of Prime Factorization Method.

Illustrations; (i) Find the LCM and HCF of (a) 24 and 90 (b)18, 24 and 72

Sol: (a) $24 = 2 \times 2 \times 2 \times 3$

$90 = 2 \times 3 \times 3 \times 5$

LCM $= 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$

HCF $= 2 \times 3 = 6$

2	24
2	12
2	6
	3

2	90
3	45
3	15
	5

(b) $18 = 2 \times 3 \times 3$

$24 = 2 \times 2 \times 2 \times 3$

$74 = 2 \times 2 \times 2 \times 3 \times 3$

LCM $= 2 \times 2 \times 2 \times 3 \times 3 = 72$

HCF $= 2 \times 3 = 6$

2	18
3	9
	3

2	24
2	12
2	6
	3

2	72
2	36
2	18
3	9
	3

(ii) Find the quotient of

(a) 1254 ÷ 114 (b) 11165 ÷ 1595

Soln: (a) 1254 ÷ 114 $= \frac{1254}{114} = \frac{2 \times 3 \times 11 \times 19}{2 \times 3 \times 19} = 11$

2	1254
3	627
11	209
	19

2	114
3	57
	19

(b) 11165 ÷ 1595 $= \frac{11165}{1595} = \frac{5 \times 7 \times 11 \times 29}{5 \times 11 \times 29} = 7$

5	11165
7	2233
11	319
	29

5	1595
11	319
	29

(iii) Find the square root of

(a) 36 *(b) 4489*

Soln: (a) 36 = 2 x 2 x 3 x 3

$= 2^2 \times 3^2$

$\therefore \sqrt{36} = 2 \times 3 = 6$

2	36
2	18
3	9
	3

(b) *4489* = *67* x 67 = 67^2

$\therefore \sqrt{4489} = 67$

67	4489
	67

(iv) Find the cube root of (a) 343 (b) 103823

Soln: (a) 343 = 7 x 7 x 7 = 7^3

$\therefore \sqrt[3]{343} = 7$

7	342
7	49
	7

(b) 103823 = 47 x 47 x 47 = 47^3

$\therefore \sqrt[3]{103823} = 47$

47	103823
47	2209
	47

(m) Teach the students how to find LCM and HCF of two and three numbers by applying division method.

Illustrations; By applying Division Method, find the LCM and HCF of the numbers;

(a) 36 and 108 *(b)* 33, 99, 121

Sol; (a) LCM =2x2x3x3x3 = 108

HCF = 36

2	36, 108
2	18, 54
3	9, 27
3	3, 9
	1, 3

36)108(3
108
0

(b) LCM = 3x3x11x11= 1089

HCF = 11

3	33, 99, 121
11	11, 33, 11
	1, 3, 11

99)121(1
99
22)99(4
88
11)22(2
22
0

11)33(3
33
0

***Annexure*-1**: Arabic numerals from 0 to 9

0													
١													
2													
3													
4													
5													
6													
7													
8													
9													

ANNEXURE - 2 : Cursive writing on four lined copy

ANNEXURE – 3

PRACTICE FORMAT: COLUMN METHOD OF ADDITION

(a)

9	9	19	39	49	59
+ 0	+ 1	+ 2	+ 3	+ 5	+ 8
8	8	8	18	28	38
+ 0	+ 1	+ 2	+ 3	+ 5	+ 7
7	7	7	7	27	37
+ 0	+ 1	+ 2	+ 3	+ 4	+ 6
6	6	6	6	6	26
+ 0	+ 1	+ 2	+ 3	+ 4	+ 5

(b)

67	79	689	678
+ 92	+ 68	+ 798	+ 987

(c)

67	69	456	777
89	88	783	888
+ 78	+ 79	+ 789	+ 999

(d)

67	56	456	789
89	89	987	789
56	89	987	656
+ 89	+ 89	+ 987	+ 789

ANNEXURE – 4
PRACTICE FORMAT OF HORZONTAL METHOD OF ADDITION

HORIZONTAL METHOD OF ADDITION

(a) 9 + 6 + 6 = ( ) (b) 6 +7 + 7 = ( )

(c) 6 + 7 + 8 = ( ) (d) 6 + 8 + 8 = ( )

(e) 7 + 8 + 9 = ( ) (f) 7 + 9 +9 = ( )

(g) 17 +8 +8 + 8 = ( )

(h) 26 + 9 + 9 +9 = ( )

(i) 49 + 7 + 8 + 9 = ( )

(j) 59 + 8 + 8 + 8 + 8 = ( )

(k) 65 + 9 + 9 + 9 + 9 = ( )

(l) 77 + 9 + 9 + 9 + 9 + 9 + 9 = ( )

(m)88 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = ( )

(n) 34 + 8 + 8 + 8 = ( )

(o) 84 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = ( )

(p) 83 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = ( )

(q) 47 + 8 + 8 + 8 + 8 + 8 + 8 + 8 + 8 + 8 = ( )

(r) 59 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = ( )

(s) 53 + 6 + 6 + 6 + 6 + 6 = ( )

(t) 59 + 6 + 7 + 8 + 9 = ( )

(u) 59 + 8 + 8 + 8 + 9 + 9 + 9 = ( )

(v) 56 + 67 = ( )

(w) 78 + 98 = ( )

(x) 456 + 789 = ( )

(y) 678 + 956 + 789 = ( )

(z) 893 + 456 + 789 = ( )

Annexure 5
TIMES TABLE FROM 1 TO 100

1 X 1 = 1 1 X 2 = 2 1 X 3 = 3 1 X 4 = 4 1 X 5 = 5 1 X 6 = 6 1 X 7 = 7 1 X 8 = 8 1 X 9 = 9 1 X 10=10	2 X 1 = 2 2 X 2 = 4 2 X 3 = 6 2 X 4 = 8 2 X 5 = 10 2 X 6 = 12 2 X 7 = 14 2 X 8 = 16 2 X 9 = 18 2 X 10=20	3 X 1 = 3 3 X 2 = 6 3 X 3 = 9 3 X 4 = 12 3 X 5 = 15 3 X 6 = 18 3 X 7 = 21 3 X 8 = 24 3 X 9 = 27 3 X 10= 30	4 X 1 = 4 4 X 2 = 8 4 X 3 = 12 4 X 4 = 16 4 X 5 = 20 4 X 6 = 24 4 X 7 = 28 4 X 8 = 32 4 X 9 = 36 4 X 10 =40	5 X 1 = 5 5 X 2 = 10 5 X 3 = 15 5 X 4 = 20 5 X 5 = 25 5 X 6 = 30 5 X 7 = 35 5 X 8 = 40 5 X 9 = 45 5 X 10= 50
6 X 1 = 6 6 X 2 = 12 6 X 3 = 18 6 X 4 = 24 6 X 5 = 30 6 X 6 = 36 6 X 7 = 42 6 X 8 = 48 6 X 9 = 54 6 X 10= 60	7 X 1 = 7 7 X 2 = 14 7 X 3 = 21 7 X 4 = 28 7 X 5 = 35 7 X 6 = 42 7 X 7 = 49 7 X 8 = 56 7 X 9 = 63 7 X 10= 70	8 X 1 = 8 8 X 2 = 16 8 X 3 = 24 8 X 4 = 32 8 X 5 = 40 8 X 6 = 48 8 X 7 = 56 8 X 8 = 64 8 X 9 = 72 8 X 10= 80	9 X 1 = 9 9 X 2 = 18 9 X 3 = 27 9 X 4 = 36 9 X 5 = 45 9 X 6 = 54 9 X 7 = 63 9 X 8 = 72 9 X 9 = 81 9 X 10= 90	10 X 1 = 10 10 X 2 = 20 10 X 3 = 30 10 X 4 = 40 10 X 5 = 50 10 X 6 = 60 10 X 7 = 70 10 X 8 = 80 10 X 9 = 90 10 X 10=100
11 X 1 = 11 11 X 2 = 22 11 X 3 = 33 11 X 4 = 44 11 X 5 = 55 11 X 6 = 66 11 X 7 = 77 11 X 8 = 88 11 X 9 = 99 11 X 10= 110	12 X 1 = 12 12 X 2 = 24 12 X 3 = 36 12 X 4 = 48 12 X 5 = 60 12 X 6 = 72 12 X 7 = 84 12 X 8 = 96 12 X 9 = 108 12 X 10=120	13 X 1 = 13 13 X 2 = 26 13 X 3 = 39 13 X 4 = 52 13 X 5 = 65 13 X 6 = 78 13 X 7 = 91 13 X 8 = 104 13 X 9 = 117 13 X 10=130	14 X 1 = 14 14 X 2 = 28 14 X 3 = 42 14 X 4 = 56 14 X 5 = 70 14 X 6 = 84 14 X 7 = 98 14 X 8 = 112 14 X 9 = 126 14 X 10=140	15 X 1 = 15 15 X 2 = 30 15 X 3 = 45 15 X 4 = 60 15 X 5 = 75 15 X 6 = 90 15 X 7 = 105 15 X 8 = 120 15 X 9 = 135 15 X 10=150
16 X 1 = 16 16 X 2 = 32 16 X 3 = 48 16 X 4 = 64 16 X 5 = 80 16 X 6 = 96 16 X 7 = 112 16 X 8 = 128 16 X 9 = 144 16 X 10=160	17 X 1 = 17 17 X 2= 34 17 X 3 = 51 17 X 4 = 68 17 X 5 = 85 17 X 6 = 102 17 X 7 = 119 17 X 8 = 136 17 X 9 = 153 17 X 10=170	18 X 1 = 18 18 X 2 = 36 18 X 3 = 54 18 X 4 = 72 18 X 5 = 90 18 X 6 = 108 18 X 7 = 126 18 X 8 = 144 18 X 9 = 162 18 X 10=180	19 X 1 = 19 19 X 2 = 38 19 X 3 = 57 19 X 4 = 76 19 X 5 = 95 19 X 6 = 114 19 X 7 = 133 19 X 8 = 152 19 X 9 = 171 19 X 10=190	20 X 1 = 20 20 X 2 = 40 20 X 3 = 60 20 X 4 = 80 20 X 5 = 100 20 X 6 = 120 20 X 7 = 140 20 X 8 = 160 20 X 9 = 180 20 X 10=200

21 X 1 = 21 21 X 2 = 42 21 X 3 = 63 21 X 4 = 84 21 X 5 = 105 21 X 6 = 126 21 X 7 = 147 21 X 8 = 168 21 X 9 = 189 21 X 10=210	22 X 1 = 22 22 X 2 = 44 22 X 3 = 66 22 X 4 = 88 22 X 5 = 110 22 X 6 = 132 22 X 7 = 154 22 X 8 = 176 22 X 9 = 198 22 X 10=220	23 X 1 = 23 23 X 2 = 46 23 X 3 = 69 23 X 4 = 92 23 X 5 = 115 23 X 6 = 138 23 X 7 = 161 23 X 8 = 184 23 X 9 = 207 23 X 10=230	24 X 1 = 24 24 X 2 = 48 24 X 3 = 72 24 X 4 = 96 24 X 5 = 120 24 X 6 = 144 24 X 7 = 168 24 X 8 = 192 24 X 9 = 216 24 X 10=240	25 X 1 = 25 25 X 2 = 50 25 X 3 = 75 25 X 4 = 100 25 X 5 = 125 25 X 6 = 150 25 X 7 = 175 25 X 8 = 200 25 X 9 = 225 25 X 10=250
26 X 1 = 26 26 X 2 = 52 26 X 3 = 78 26 X 4 = 104 26 X 5 = 130 26 X 6 = 156 26 X 7 = 182 26 X 8 = 208 26 X 9 = 234 26 X 10=260	27 X 1 = 27 27 X 2 = 54 27 X 3 = 81 27 X 4 = 108 27 X 5 = 135 27 X 6 = 162 27 X 7 = 189 27 X 8 = 216 27 X 9 = 243 27 X 10=270	28 X 1 = 28 28 X 2 = 56 28 X 3 = 84 28 X 4 = 112 28 X 5 = 140 28 X 6 = 168 28 X 7 = 196 28 X 8 = 224 28 X 9 = 252 28 X 10=280	29 X 1 = 29 29 X 2 = 58 29 X 3 = 87 29 X 4 = 116 29 X 5 = 145 29 X 6 = 174 29 X 7 = 203 29 X 8 = 232 29 X 9 = 261 29 X 10=290	30 X 1 = 30 30 X 2 = 60 30 X 3 = 90 30 X 4 = 120 30 X 5 = 150 30 X 6 = 180 30 X 7 = 210 30 X 8 = 240 30 X 9 = 270 30 X 10=300
31 X 1 = 31 31 X 2 = 62 31 X 3 = 93 31 X 4 = 124 31 X 5 = 155 31 X 6 = 186 31 X 7 = 217 31 X 8 = 248 31 X 9 = 279 31 X 10=310	32 X 1 = 32 32 X 2 = 64 32 X 3 = 96 32 X 4 = 128 32 X 5 = 160 32 X 6 = 192 32 X 7 = 224 32 X 8 = 256 32 X 9 = 288 32 X 10=320	33 X 1 = 33 33 X 2 = 66 33 X 3 = 99 33 X 4 = 132 33 X 5 = 165 33 X 6 = 198 33 X 7 = 231 33 X 8 = 264 33 X 9 = 297 33 X 10=330	34 X 1 = 34 34 X 2 = 68 34 X 3 = 102 34 X 4 = 136 34 X 5 = 170 34 X 6 = 204 34 X 7 = 238 34 X 8 = 272 34 X 9 = 306 34 X 10=340	35 X 1 = 35 35 X 2 = 70 35 X 3 = 105 35 X 4 = 140 35 X 5 = 175 35 X 6 = 210 35 X 7 = 245 35 X 8 = 280 35 X 9 = 315 35 X 10=350
36 X 1 = 36 36 X 2 = 72 36 X 3 = 108 36 X 4 = 144 36 X 5 = 180 36 X 6 = 216 36 X 7 = 252 36 X 8 = 288 36 X 9 = 324 36 X 10=360	37 X 1 = 37 37 X 2 = 74 37 X 3 = 111 37 X 4 = 148 37 X 5 = 185 37 X 6 = 222 37 X 7 = 259 37 X 8 = 296 37 X 9 = 333 37 X 10=370	38 X 1 = 38 38 X 2 = 76 38 X 3 = 114 38 X 4 = 152 38 X 5 = 190 38 X 6 = 228 38 X 7 = 266 38 X 8 = 304 38 X 9 = 342 38 X 10=380	39 X 1 = 39 39 X 2 = 78 39 X 3 = 117 39 X 4 = 156 39 X 5 = 195 39 X 6 = 234 39 X 7 = 273 39 X 8 = 312 39 X 9 = 351 39 X 10=390	40 X 1 = 40 40 X 2 = 80 40 X 3 = 120 40 X 4 = 160 40 X 5 = 200 40 X 6 = 240 40 X 7 = 280 40 X 8 = 320 40 X 9 = 360 40 X 10=400

41 X 1 = 41 41 X 2 = 82 41 X 3 = 123 41 X 4 = 164 41 X 5 = 205 41 X 6 = 246 41 X 7 = 287 41 X 8 = 328 41 X 9 = 369 41 X 10=410	42 X 1 = 42 42 X 2 = 84 42 X 3 = 126 42 X 4 = 168 42 X 5 = 210 42 X 6 = 252 42 X 7 = 294 42 X 8 = 336 42 X 9 = 378 42 X 10=420	43 X 1 = 43 43 X 2 = 86 43 X 3 = 129 43 X 4 = 172 43 X 5 = 215 43 X 6 = 258 43 X 7 = 301 43 X 8 = 344 43 X 9 = 387 43 X 10=430	44 X 1 = 44 44 X 2 = 88 44 X 3 = 132 44 X 4 = 176 44 X 5 = 220 44 X 6 = 264 44 X 7 = 308 44 X 8 = 352 44 X 9 = 396 44 X 10=440	45 X 1 = 45 45 X 2 = 90 45 X 3 = 135 45 X 4 = 180 45 X 5 = 225 45 X 6 = 270 45 X 7 = 315 45 X 8 = 360 45 X 9 = 405 45 X 10=450
46 X 1 = 46 46 X 2 = 92 46 X 3 = 138 46 X 4 = 184 46 X 5 = 230 46 X 6 = 276 46 X 7 = 322 46 X 8 = 368 46 X 9 = 414 46 X 10=460	47 X 1 = 47 47 X 2 = 94 47 X 3 = 141 47 X 4 = 188 47 X 5 = 235 47 X 6 = 282 47 X 7 = 329 47 X 8 = 376 47 X 9 = 423 47 X 10=470	48 X 1 = 48 48 X 2 = 96 48 X 3 = 144 48 X 4 = 192 48 X 5 = 240 48 X 6 = 288 48 X 7 = 336 48 X 8 = 384 48 X 9 = 432 48 X 10=480	49 X 1 = 49 49 X 2 = 98 49 X 3 = 147 49 X 4 = 196 49 X 5 = 245 49 X 6 = 294 49 X 7 = 343 49 X 8 = 392 49 X 9 = 441 49 X 10=490	50 X 1 = 50 50 X 2 = 100 50 X 3 = 150 50 X 4 = 200 50 X 5 = 250 50 X 6 = 300 50 X 7 = 350 50 X 8 = 400 50 X 9 = 450 50 X 10=500
51 X 1 = 51 51 X 2 = 102 51 X 3 = 153 51 X 4 = 204 51 X 5 = 255 51 X 6 = 306 51 X 7 = 357 51 X 8 = 408 51 X 9 = 459 51 X 10=510	52 X 1 = 52 52 X 2 = 104 52 X 3 = 156 52 X 4 = 208 52 X 5 = 260 52 X 6 = 312 52 X 7 = 364 52 X 8 = 416 52 X 9 = 468 52 X 10=520	53 X 1 = 53 53 X 2 = 106 53 X 3 = 159 53 X 4 = 212 53 X 5 = 265 53 X 6 = 318 53 X 7 = 371 53 X 8 = 424 53 X 9 = 477 53 X 10=530	54 X 1 = 54 54 X 2 = 108 54 X 3 = 162 54 X 4 = 216 54 X 5 = 270 54 X 6 = 324 54 X 7 = 378 54 X 8 = 432 54 X 9 = 486 54 X 10=540	55 X 1 = 55 55 X 2 = 110 55 X 3 = 165 55 X 4 = 220 55 X 5 = 275 55 X 6 = 330 55 X 7 = 385 55 X 8 = 440 55 X 9 = 495 55 X 10=550
56 X 1 = 56 56 X 2 = 112 56 X 3 = 168 56 X 4 = 224 56 X 5 = 280 56 X 6 = 336 56 X 7 = 392 56 X 8 = 448 56 X 9 = 504 56 X 10=560	57 X 1 = 57 57 X 2 = 114 57 X 3 = 171 57 X 4 = 228 57 X 5 = 285 57 X 6 = 342 57 X 7 = 399 57 X 8 = 456 57 X 9 = 513 57 X 10=570	58 X 1 = 58 58 X 2 = 116 58 X 3 = 174 58 X 4 = 232 58 X 5 = 290 58 X 6 = 348 58 X 7 = 406 58 X 8 = 464 58 X 9 = 522 58 X 10=580	59 X 1 = 59 59 X 2 = 118 59 X 3 = 177 59 X 4 = 236 59 X 5 = 295 59 X 6 = 354 59 X 7 = 413 59 X 8 = 472 59 X 9 = 531 59 X 10=590	60 X 1 = 60 60 X 2 = 120 60 X 3 = 180 60 X 4 = 240 60 X 5 = 300 60 X 6 = 360 60 X 7 = 420 60 X 8 = 480 60 X 9 = 540 60 X 10=600

61 X 1 = 61	62 X 1 = 62	63 X 1 = 63	64 X 1 = 64	65 X 1 = 65
61 X 2 = 122	62 X 2 = 124	63 X 2 = 126	64 X 2 = 128	65 X 2 = 130
61 X 3 = 183	62 X 3 = 186	63 X 3 = 189	64 X 3 = 192	65 X 3 = 195
61 X 4 = 244	62 X 4 = 248	63 X 4 = 252	64 X 4 = 256	65 X 4 = 260
61 X 5 = 305	62 X 5 = 310	63 X 5 = 315	64 X 5 = 320	65 X 5 = 325
61 X 6 = 366	62 X 6 = 372	63 X 6 = 378	64 X 6 = 384	65 X 6 = 390
61 X 7 = 427	62 X 7 = 434	63 X 7 = 441	64 X 7 = 448	65 X 7 = 455
61 X 8 = 488	62 X 8 = 496	63 X 8 = 504	64 X 8 = 512	65 X 8 = 520
61 X 9 = 549	62 X 9 = 558	63 X 9 = 567	64 X 9 = 576	65 X 9 = 585
61 X 10=610	62 X 10=620	63X 10= 630	64 X 10=640	65 X 10=650
66 X 1 = 66	67 X 1 = 67	68 X 1 = 68	69 X 1 = 69	70 X 1 = 70
66 X 2 = 132	67 X 2 = 134	68 X 2 = 136	69 X 2 = 138	70 X 2 = 140
66 X 3 = 198	67 X 3 = 201	68 X 3 = 204	69 X 3 = 207	70 X 3 = 210
66 X 4 = 264	67 X 4 = 268	68 X 4 = 272	69 X 4 = 276	70 X 4 = 280
66 X 5 = 330	67 X 5 = 335	68 X 5 = 340	69 X 5 = 345	70 X 5 = 350
66 X 6 = 396	67 X 6 = 402	68 X 6 = 408	69 X 6 = 414	70 X 6 = 420
66 X 7 = 462	67 X 7 = 469	68 X 7 = 476	69 X 7 = 483	70 X 7 = 480
66 X 8 = 528	67 X 8 = 536	68 X 8 = 544	69 X 8 = 552	70 X 8 = 560
66 X 9 = 594	67 X 9 = 603	68 X 9 = 612	69 X 9 = 621	70 X 9 = 630
66 X 10=660	67 X 10=670	68 X 10=680	69 X 10=690	70 X 10=700
71 X 1 = 71	72 X 1 = 72	73 X 1 = 73	74 X 1 = 74	75 X 1 = 75
71 X 2 = 142	72 X 2 = 144	73 X 2 = 146	74 X 2 = 148	75 X 2 = 150
71 X 3 = 213	72 X 3 = 216	73 X 3 = 219	74 X 3 = 222	75 X 3 = 225
71 X 4 = 284	72 X 4 = 288	73 X 4 = 292	74 X 4 = 296	75 X 4 = 300
71 X 5 = 355	72 X 5 = 360	73 X 5 = 365	74 X 5 = 370	75 X 5 = 375
71 X 6 = 426	72 X 6 = 432	73 X 6 = 438	74 X 6 = 444	75 X 6 = 450
71 X 7 = 497	72 X 7 = 504	73 X 7 = 511	74 X 7 = 518	75 X 7 = 525
71 X 8 = 568	72 X 8 = 576	73 X 8 = 584	74 X 8 = 592	75 X 8 = 600
71 X 9 = 639	72 X 9 = 648	73 X 9 = 657	74 X 9 = 666	75 X 9 = 675
71 X 10=710	72 X 10=720	73 X 10=730	74 X 10=740	75 X 10=750
76 X 1 = 76	77 X 1 = 77	78 X 1 = 78	79 X 1 = 79	80 X 1 = 80
76 X 2 = 152	77 X 2 = 154	78 X 2 = 156	79 X 2 = 158	80 X 2 = 160
76 X 3 = 228	77 X 3 = 231	78 X 3 = 234	79 X 3 = 237	80 X 3 = 240
76 X 4 = 304	77 X 4 = 308	78 X 4 = 312	79 X 4 = 316	80 X 4 = 320
76 X 5 = 380	77 X 5 = 385	78 X 5 = 390	79 X 5 = 395	80 X 5 = 400
76 X 6 = 456	77 X 6 = 462	78 X 6 = 468	79 X 6 = 474	80 X 6 = 480
76 X 7 = 532	77 X 7 = 539	78 X 7 = 546	79 X 7 = 553	80 X 7 = 560
76 X 8 = 608	77 X 8 = 616	78 X 8 = 624	79 X 8 = 632	80 X 8 = 640
76 X 9 = 684	77 X 9 = 693	78 X 9 = 702	79 X 9 = 711	80 X 9 = 720
76 X 10=760	77 X 10=770	78 X 10=780	79 X 10=790	80 X 10=800

81 X 1 = 81	82 X 1 = 82	83 X 1 = 83	84 X 1 = 84	85 X 1 = 85
81 X 2 = 162	82 X 2 = 164	83 X 2 = 166	84 X 2 = 168	85 X 2 = 170
81 X 3 = 243	82 X 3 = 246	83 X 3 = 249	84 X 3 = 252	85 X 3 = 255
81 X 4 = 324	82 X 4 = 328	83 X 4 = 332	84 X 4 = 336	85 X 4 = 340
81 X 5 = 405	82 X 5 = 410	83 X 5 = 415	84 X 5 = 420	85 X 5 = 425
81 X 6 = 486	82 X 6 = 492	83 X 6 = 498	84 X 6 = 504	85 X 6 = 510
81 X 7 = 567	82 X 7 = 574	83 X 7 = 581	84 X 7 = 588	85 X 7 = 595
81 X 8 = 648	82 X 8 = 656	83 X 8 = 664	84 X 8 = 672	85 X 8 = 680
81 X 9 = 729	82 X 9 = 738	83 X 9 = 747	84 X 9 = 756	85 X 9 = 765
81 X 10=810	82 X 10=820	83 X 10=830	84 X 10=840	85 X 10=850
86 X 1 = 86	87 X 1 = 87	88 X 1 = 88	89 X 1 = 89	90 X 1 = 90
86 X 2 = 172	87 X 2 = 174	88 X 2 = 176	89 X 2 = 178	90 X 2 = 180
86 X 3 = 258	87 X 3 = 261	88 X 3 = 264	89 X 3 = 267	90 X 3 = 270
86 X 4 = 344	87 X 4 = 358	88 X 4 = 352	89 X 4 = 356	90 X 4 = 360
86 X 5 = 430	87 X 5 = 435	88 X 5 = 440	89 X 5 = 445	90 X 5 = 450
86 X 6 = 516	87 X 6 = 522	88 X 6 = 528	89 X 6 = 534	90 X 6 = 540
86 X 7 = 602	87 X 7 = 609	88 X 7 = 616	89 X 7 = 623	90 X 7 = 630
86 X 8 = 288	87 X 8 = 696	88 X 8 = 704	89 X 8 = 712	90 X 8 = 720
86 X 9 = 774	87 X 9 = 783	88 X 9 = 792	89 X 9 = 801	90 X 9 = 810
86 X 10=860	87 X 10=870	88 X 10=880	89 X 10=890	90 X 10=900
91 X 1 = 91	92 X 1 = 92	93 X 1 = 93	94 X 1 = 94	95 X 1 = 95
91 X 2 = 182	92 X 2 = 184	93 X 2 = 186	94 X 2 = 188	95 X 2 = 190
91 X 3 = 273	92 X 3 = 276	93 X 3 = 279	94 X 3 = 282	95 X 3 = 285
91 X 4 = 364	92 X 4 = 368	93 X 4 = 372	94 X 4 = 376	95 X 4 = 380
91 X 5 = 455	92 X 5 = 460	93 X 5 = 465	94 X 5 = 470	95 X 5 = 475
91 X 6 = 546	92 X 6 = 552	93 X 6 = 558	94 X 6 = 564	95 X 6 = 570
91 X 7 = 637	92 X 7 = 644	93 X 7 = 651	94 X 7 = 658	95 X 7 = 665
91 X 8 = 728	92 X 8 = 736	93 X 8 = 744	94 X 8 = 752	95 X 8 = 760
91 X 9 = 819	92 X 9 = 828	93 X 9 = 837	94 X 9 = 846	95 X 9 = 855
91 X 10=910	92 X 10=920	93 X 10=930	94 X 10=940	95 X 10=950
96 X 1 = 96	97 X 1 = 97	98 X 1 = 98	99 X 1 = 99	100 X 1 = 100
96 X 2 = 192	97 X 2 = 194	98 X 2 = 196	99 X 2 = 198	100 X 2 = 200
96 X 3 = 288	97 X 3 = 291	98 X 3 = 294	99 X 3 = 297	100 X 3 = 300
96 X 4 = 384	97 X 4 = 388	98 X 4 = 392	99 X 4 = 396	100 X 4 = 400
96 X 5 = 480	97 X 5 = 485	98 X 5 = 490	99 X 5 = 495	100 X 5 = 500
96 X 6 = 576	97 X 6 = 582	98 X 6 = 588	90 X 6 = 594	100 X 6 = 600
96 X 7 = 672	97 X 7 = 579	98 X 7 = 686	90 X 7 = 693	100 X 7 = 700
96 X 8 = 768	97 X 8 = 776	98 X 8 = 784	90 X 8 = 792	100 X 8 = 800
96 X 9 = 864	97 X 9 = 873	98 X 9 = 882	90 X 9 = 891	100 X 9 = 900
96 X 10=960	97 X 10=970	98 X 10=980	90 X 10=990	100X10=1000

Annexure 6

TIMES TABLESPRACTICE FORMAT

1 X 1 = 1 X 2 = 1 X 3 = 1 X 4 = 1 X 5 = 1 X 6 = 1 X 7 = 1 X 8 = 1 X 9 = 1 X 10=	2 X 1 = 2 X 2 = 2 X 3 = 2 X 4 = 2 X 5 = 2 X 6 = 2 X 7 = 2 X 8 = 2 X 9 = 2 X 10=	3 X 1 = 3 X 2 = 3 X 3 = 3 X 4 = 3 X 5 = 3 X 6 = 3 X 7 = 3 X 8 = 3 X 9 = 3 X 10=	4 X 1 = 4 X 2 = 4 X 3 = 4 X 4 = 4 X 5 = 4 X 6 = 4 X 7 = 4 X 8 = 4 X 9 = 4 X 10=	5 X 1 = 5 X 2 = 5 X 3 = 5 X 4 = 5 X 5 = 5 X 6 = 5 X 7 = 5 X 8 = 5 X 9 = 5 X 10=
6 X 1 = 6 X 2 = 6 X 3 = 6 X 4 = 6 X 5 = 6 X 6 = 6 X 7 = 6 X 8 = 6 X 9 = 6 X 10=	7 X 1 = 7 X 2 = 7 X 3 = 7 X 4 = 7 X 5 = 7 X 6 = 7 X 7 = 7 X 8 = 7 X 9 = 7 X 10=	8 X 1 = 8 X 2 = 8 X 3 = 8 X 4 = 8 X 5 = 8 X 6 = 8 X 7 = 8 X 8 = 8 X 9 = 8 X 10=	9 X 1 = 9 X 2 = 9 X 3 = 9 X 4 = 9 X 5 = 9 X 6 = 9 X 7 = 9 X 8 = 9 X 9 = 9 X 10=	10 X 1 = 10 X 2 = 10 X 3 = 10 X 4 = 10 X 5 = 10 X 6 = 10 X 7 = 10 X 8 = 10 X 9 = 10 X 10=
11 X 1 = 11 X 2 = 11 X 3 = 11 X 4 = 11 X 5 = 11 X 6 = 11 X 7 = 11 X 8 = 11 X 9 = 11 X 10=	12 X 1 = 12 X 2 = 12 X 3 = 12 X 4 = 12 X 5 = 12 X 6 = 12 X 7 = 12 X 8 = 12 X 9 = 12 X 10=	13 X 1 = 13 X 2 = 13 X 3 = 13 X 4 = 13 X 5 = 13 X 6 = 13 X 7 = 13 X 8 = 13 X 9 = 13 X 10=	14 X 1 = 14 X 2 = 14 X 3 = 14 X 4 = 14 X 5 = 14 X 6 = 14 X 7 = 14 X 8 = 14 X 9 = 14 X 10=	15 X 1 = 15 X 2 = 15 X 3 = 15 X 4 = 15 X 5 = 15 X 6 = 15 X 7 = 15 X 8 = 15 X 9 = 15 X 10=
16 X 1 = 16 X 2 = 16 X 3 = 16 X 4 = 16 X 5 = 16 X 6 = 16 X 7 = 16 X 8 = 16 X 9 = 16 X 10=	17 X 1 = 17 X 2 = 17 X 3 = 17 X 4 = 17 X 5 = 17 X 6 = 17 X 7 = 17 X 8 = 17 X 9 = 17 X 10=	18 X 1 = 18 X 2 = 18 X 3 = 18 X 4 = 18 X 5 = 18 X 6 = 18 X 7 = 18 X 8 = 18 X 9 = 18 X 10=	19 X 1 = 19 X 2 = 19 X 3 = 19 X 4 = 19 X 5 = 19 X 6 = 19 X 7 = 19 X 8 = 19 X 9 = 19 X 10=	20 X 1 = 20 X 2 = 20 X 3 = 20 X 4 = 20 X 5 = 20 X 6 = 20 X 7 = 20 X 8 = 20 X 9 = 20 X 10=

21 X 1 = 21 X 2 = 21 X 3 = 21 X 4 = 21 X 5 = 21 X 6 = 21 X 7 = 21 X 8 = 21 X 9 = 21 X 10=	22 X 1 = 22 X 2 = 22 X 3 = 22 X 4 = 22 X 5 = 22 X 6 = 22 X 7 = 22 X 8 = 22 X 9 = 22 X 10=	23 X 1 = 23 X 2 = 23 X 3 = 23 X 4 = 23 X 5 = 23 X 6 = 23 X 7 = 23 X 8 = 23 X 9 = 23 X 10=	24 X 1 = 24 X 2 = 24 X 3 = 24 X 4 = 24 X 5 = 24 X 6 = 24 X 7 = 24 X 8 = 24 X 9 = 24 X 10=	25 X 1 = 25 X 2 = 25 X 3 = 25 X 4 = 25 X 5 = 25 X 6 = 25 X 7 = 25 X 8 = 25 X 9 = 25 X 10=
26 X 1 = 26 X 2 = 26 X 3 = 26 X 4 = 26 X 5 = 26 X 6 = 26 X 7 = 26 X 8 = 26 X 9 = 26 X 10=	27 X 1 = 27 X 2 = 27 X 3 = 27 X 4 = 27 X 5 = 27 X 6 = 27 X 7 = 27 X 8 = 27 X 9 = 27 X 10=	28 X 1 = 28 X 2 = 28 X 3 = 28 X 4 = 28 X 5 = 28 X 6 = 28 X 7 = 28 X 8 = 28 X 9 = 28 X 10=	29 X 1 = 29 X 2 = 29 X 3 = 29 X 4 = 29 X 5 = 29 X 6 = 29 X 7 = 29 X 8 = 29 X 9 = 29 X 10=	30 X 1 = 30 X 2 = 30 X 3 = 30 X 4 = 30 X 5 = 30 X 6 = 30 X 7 = 30 X 8 = 30 X 9 = 30 X 10=
31 X 1 = 31 X 2 = 31 X 3 = 31 X 4 = 31 X 5 = 31 X 6 = 31 X 7 = 31 X 8 = 31 X 9 = 31 X 10=	32 X 1 = 32 X 2 = 32 X 3 = 32 X 4 = 32 X 5 = 32 X 6 = 32 X 7 = 32 X 8 = 32 X 9 = 32 X 10=	33 X 1 = 33 X 2 = 33 X 3 = 33 X 4 = 33 X 5 = 33 X 6 = 33 X 7 = 33 X 8 = 33 X 9 = 33 X 10=	34 X 1 = 34 X 2 = 34 X 3 = 34 X 4 = 34 X 5 = 34 X 6 = 34 X 7 = 34 X 8 = 34 X 9 = 34 X 10=	35 X 1 = 35 X 2 = 35 X 3 = 35 X 4 = 35 X 5 = 35 X 6 = 35 X 7 = 35 X 8 = 35 X 9 = 35 X 10=
36 X 1 = 36 X 2 = 36 X 3 = 36 X 4 = 36 X 5 = 36 X 6 = 36 X 7 = 36 X 8 = 36 X 9 = 36 X 10=	37 X 1 = 37 X 2 = 37 X 3 = 37 X 4 = 37 X 5 = 37 X 6 = 37 X 7 = 37 X 8 = 37 X 9 = 37 X 10=	38 X 1 = 38 X 2 = 38 X 3 = 38 X 4 = 38 X 5 = 38 X 6 = 38 X 7 = 38 X 8 = 38 X 9 = 38 X 10=	39 X 1 = 39 X 2 = 39 X 3 = 39 X 4 = 39 X 5 = 39 X 6 = 39 X 7 = 39 X 8 = 39 X 9 = 39 X 10=	40 X 1 = 40 X 2 = 40 X 3 = 40 X 4 = 40 X 5 = 40 X 6 = 40 X 7 = 40 X 8 = 40 X 9 = 40 X 10=

41 X 1 = 41 X 2 = 41 X 3 = 41 X 4 = 41 X 5 = 41 X 6 = 41 X 7 = 41 X 8 = 41 X 9 = 41 X 10=	42 X 1 = 42 X 2 = 42 X 3 = 42 X 4 = 42 X 5 = 42 X 6 = 42 X 7 = 42 X 8 = 42 X 9 = 42 X 10=	43 X 1 = 43 X 2 = 43 X 3 = 43 X 4 = 43 X 5 = 43 X 6 = 43 X 7 = 43 X 8 = 43 X 9 = 43 X 10=	44 X 1 = 44 X 2 = 44 X 3 = 44 X 4 = 44 X 5 = 44 X 6 = 44 X 7 = 44 X 8 = 44 X 9 = 44 X 10=	45 X 1 = 45 X 2 = 45 X 3 = 45 X 4 = 45 X 5 = 45 X 6 = 45 X 7 = 45 X 8 = 45 X 9 = 45 X 10=
46 X 1 = 46 X 2 = 46 X 3 = 46 X 4 = 46 X 5 = 46 X 6 = 46 X 7 = 46 X 8 = 46 X 9 = 46 X 10=	47 X 1 = 47 X 2 = 47 X 3 = 47 X 4 = 47 X 5 = 47 X 6 = 47 X 7 = 47 X 8 = 47 X 9 = 47 X 10=	48 X 1 = 48 X 2 = 48 X 3 = 48 X 4 = 48 X 5 = 48 X 6 = 48 X 7 = 48 X 8 = 48 X 9 = 48 X 10=	49 X 1 = 49 X 2 = 49 X 3 = 49 X 4 = 49 X 5 = 49 X 6 = 49 X 7 = 49 X 8 = 49 X 9 = 49 X 10=	50 X 1 = 50 X 2 = 50 X 3 = 50 X 4 = 50 X 5 = 50 X 6 = 50 X 7 = 50 X 8 = 50 X 9 = 50 X 10=
51 X 1 = 51 X 2 = 51 X 3 = 51 X 4 = 51 X 5 = 51 X 6 = 51 X 7 = 51 X 8 = 51 X 9 = 51 X 10=	52 X 1 = 52 X 2 = 52 X 3 = 52 X 4 = 52 X 5 = 52 X 6 = 52 X 7 = 52 X 8 = 52 X 9 = 52 X 10=	53 X 1 = 53 X 2 = 53 X 3 = 53 X 4 = 53 X 5 = 53 X 6 = 53 X 7 = 53 X 8 = 53 X 9 = 53 X 10=	54 X 1 = 54 X 2 = 54 X 3 = 54 X 4 = 54 X 5 = 54 X 6 = 54 X 7 = 54 X 8 = 54 X 9 = 54 X 10=	55 X 1 = 55 X 2 = 55 X 3 = 55 X 4 = 55 X 5 = 55 X 6 = 55 X 7 = 55 X 8 = 55X 9 = 55 X 10=
56 X 1 = 56 X 2 = 56 X 3 = 56 X 4 = 56 X 5 = 56 X 6 = 56 X 7 = 56 X 8 = 56 X 9 = 56 X 10=	57 X 1 = 57 X 2 = 57 X 3 = 57 X 4 = 57 X 5 = 57 X 6 = 57 X 7 = 57 X 8 = 57 X 9 = 57 X 10=	58 X 1 = 58 X 2 = 58 X 3 = 58 X 4 = 58 X 5 = 58 X 6 = 58 X 7 = 58 X 8 = 58 X 9 = 58 X 10=	59 X 1 = 59 X 2 = 59 X 3 = 59 X 4 = 59 X 5 = 59 X 6 = 59 X 7 = 59 X 8 = 59 X 9 = 59 X 10=	60 X 1 = 60 X 2 = 60 X 3 = 60 X 4 = 60 X 5 = 60 X 6 = 60 X 7 = 60 X 8 = 60 X 9 = 60 X 10=

61 X 1 = 61 X 2 = 61 X 3 = 61 X 4 = 61 X 5 = 61 X 6 = 61 X 7 = 61 X 8 = 61 X 9 = 61 X 10=	62 X 1 = 62 X 2 = 62 X 3 = 62 X 4 = 62 X 5 = 62 X 6 = 62 X 7 = 62 X 8 = 62 X 9 = 62 X 10=	63 X 1 = 63 X 2 = 63 X3 = 63 X 4 = 63 X 5 = 63 X 6 = 63 X 7 = 63 X 8 = 63 X 9 = 63 X 10=	64 X 1 = 64 X 2 = 64 X 3 = 64 X 4 = 64 X 5 = 64 X 6 = 64 X 7 = 64 X 8 = 64 X 9 = 64 X 10=	65 X 1 = 65 X 2 = 65 X 3 = 65 X 4 = 65 X 5 = 65 X 6 = 65 X 7 = 65 X 8 = 65 X 9 = 65 X 10=
66 X 1 = 66 X 2 = 66 X 3 = 66 X 4 = 66 X 5 = 66 X 6 = 66 X 7 = 66 X 8 = 66 X 9 = 66 X 10=	67 X 1 = 67 X 2 = 67 X 3 = 67 X 4 = 67 X 5 = 67 X 6 = 67 X 7 = 67 X 8 = 67 X 9 = 67 X 10=	68 X 1 = 68 X 2 = 68 X 3 = 68 X 4 = 68 X 5 = 68 X 6 = 68 X 7 = 68 X 8 = 68 X 9 = 68 X 10=	69 X 1 = 69 X 2 = 69 X 3 = 69 X 4 = 69 X 5 = 69 X 6 = 69 X 7 = 69 X 8 = 69 X 9 = 69 X 10=	70 X 1 = 70 X 2 = 70 X 3 = 70 X 4 = 70 X 5 = 70 X 6 = 70 X 7 = 70 X 8 = 70 X 9 = 70 X 10=
71 X 1 = 71 X 2 = 71 X 3 = 71 X 4 = 71 X 5 = 71 X 6 = 71 X 7 = 71 X 8 = 71 X 9 = 71 X 10=	72 X 1 = 72 X 2 = 72 X 3 = 72 X 4 = 72 X 5 = 72 X 6 = 72 X 7 = 72 X 8 = 72 X 9 = 72 X 10=	73 X 1 = 73 X 2 = 73 X 3 = 73 X 4 = 73 X 5 = 73 X 6 = 73 X 7 = 73 X 8 = 73 X 9 = 73 X 10=	74 X 1 = 74 X 2 = 74 X 3 = 74 X 4 = 74 X 5 = 74 X 6 = 74 X 7 = 74 X 8 = 74 X 9 = 74 X 10=	75 X 1 = 75 X 2 = 75 X 3 = 75 X 4 = 75 X 5 = 75 X 6 = 75 X 7 = 75 X 8 = 75 X 9 = 75 X 10=
76 X 1 = 76 X 2 = 76 X 3 = 76 X 4 = 76 X 5 = 76 X 6 = 76 X 7 = 76 X 8 = 76 X 9 = 76 X 10=	77 X 1 = 77 X 2 = 77 X 3 = 77 X 4 = 77 X 5 = 77 X 6 = 77 X 7 = 77 X 8 = 77 X 9 = 77 X 10=	78 X 1 = 78 X 2 = 78 X 3 = 78 X 4 = 78 X 5 = 78 X 6 = 78 X 7 = 78 X 8 = 78 X 9 = 78 X 10=	79 X 1 = 79 X 2 = 79 X 3 = 79 X 4 = 79 X 5 = 79 X 6 = 79 X 7 = 79 X 8 = 79 X 9 = 79 X 10=	80 X 1 = 80 X 2 = 80 X 3 = 80 X 4 = 80 X 5 = 80 X 6 = 80 X 7 = 80 X 8 = 80 X 9 = 80 X 10=

81 X 1 = 81 X 2 = 81 X 3 = 81 X 4 = 81 X 5 = 81 X 6 = 81 X 7 = 81 X 8 = 81 X 9 = 81 X 10=	82 X 1 = 82 X 2 = 82 X 3 = 82 X 4 = 82 X 5 = 82 X 6 = 82 X 7 = 82 X 8 = 82 X 9 = 82 X 10=	83 X 1 = 83 X 2 = 83 X 3 = 83 X 4 = 83 X 5 = 83 X 6 = 83 X 7 = 83 X 8 = 83 X 9 = 83 X 10=	84 X 1 = 84 X 2 = 84 X 3 = 84 X 4 = 84 X 5 = 84 X 6 = 84 X 7 = 84 X 8 = 84 X 9 = 84 X 10=	85 X 1 = 85 X 2 = 85 X 3 = 85 X 4 = 85 X 5 = 85 X 6 = 85 X 7 = 85 X 8 = 85 X 9 = 85 X 10=
86 X 1 = 86 X 2 = 86 X 3 = 86 X 4 = 86 X 5 = 86 X 6 = 86 X 7 = 86 X 8 = 86 X 9 = 86 X 10=	87 X 1 = 87 X 2 = 87 X 3 = 87 X 4 = 87 X 5 = 87 X 6 = 87 X 7 = 87 X 8 = 87 X 9 = 87 X 10=	88 X 1 = 88 X 2 = 88 X 3 = 88 X 4 = 88 X 5 = 88 X 6 = 88 X 7 = 88 X 8 = 88 X 9 = 88 X 10=	89 X 1 = 89 X 2 = 89 X 3 = 89 X 4 = 89 X 5 = 89 X 6 = 89 X 7 = 89 X 8 = 89 X 9 = 89 X 10=	90 X 1 = 90 X 2 = 90 X 3 = 90 X 4 = 90 X 5 = 90 X 6 = 90 X 7 = 90 X 8 = 90 X 9 = 90 X 10=
91 X 1 = 91 X 2 = 91 X 3 = 91 X 4 = 91 X 5 = 91 X 6 = 91 X 7 = 91 X 8 = 91 X 9 = 91 X 10=	92 X 1 = 92 X 2 = 92 X 3 = 92 X 4 = 92 X 5 = 92 X 6 = 92 X 7 = 92 X 8 = 92 X 9 = 92 X 10=	93 X 1 = 93 X 2 = 93 X 3 = 93 X 4 = 93 X 5 = 93 X 6 = 93 X 7 = 93 X 8 = 93 X 9 = 93 X 10=	94 X 1 = 94 X 2 = 94 X 3 = 94 X 4 = 94 X 5 = 94 X 6 = 94 X 7 = 94 X 8 = 94 X 9 = 94 X 10=	95 X 1 = 95 X 2 = 95 X 3 = 95 X 4 = 95 X 5 = 95 X 6 = 95 X 7 = 95 X 8 = 95 X 9 = 95 X 10=
96 X 1 = 96 X 2 = 96 X 3 = 96 X 4 = 96 X 5 = 96 X 6 = 96 X 7 = 96 X 8 = 96 X 9 = 96 X 10=	97 X 1 = 97 X 2 = 97 X 3 = 97 X 4 = 97 X 5 = 97 X 6 = 97 X 7 = 97 X 8 = 97 X 9 = 97 X 10=	98 X 1 = 98 X 2 = 98 X 3 = 98 X 4 = 98 X 5 = 98 X 6 = 98 X 7 = 98 X 8 = 98 X 9 = 98 X 10=	99 X 1 = 99 X 2 = 99 X 3 = 99 X 4 = 99 X 5 = 99 X 6 = 99 X 7 = 99 X 8 = 99 X 9 = 99 X 10=	100 X 1 = 100 X 2 = 100 X 3 = 100 X 4 = 100 X 5 = 100 X 6 = 100 X 7 = 100 X 8 = 100 X 9 = 100 X 10=

ANNEXURE – 7
TIMES TABLES SAMPLES UPTO NINE DIGITS

1 X 1 = 1	21 X 1 = 21	321 X 1 = 321
1 X 2 = 2	21 X 2 = 42	321 X 2 = 642
1 X 3 = 3	21 X 3 = 63	321 X 3 = 963
1 X 4 = 4	21 X 4 = 84	321 X 4 = 1284
1 X 5 = 5	21 X 5 = 105	321 X 5 = 1605
1 X 6 = 6	21 X 6 = 126	321 X 6 = 1926
1 X 7 = 7	21 X 7 = 147	321 X 7 = 2247
1 X 8 = 8	21 X 8 = 168	321 X 8 = 2568
1 X 9 = 9	21 X 9 = 189	321 X 9 = 2889
1 X 10 =10	21 X 10 =210	321 X10 = 3210

4321 X 1 = 4321	54321 X 1 = 54321	654321 X 1 = 654321
4321 X 2 = 8642	54321 X 2 = 108642	654321 X 2 = 1308642
4321 X 3 =12963	54321 X 3 = 162963	654321 X 3 = 1962963
4321 X 4 =17284	54321 X 4 = 217284	654321 X 4 = 2617284
4321 X 5 =21605	54321 X 5 = 271605	654321 X 5 = 3271605
4321 X 6 =25926	54321 X 6 = 325926	654321 X 6 = 3925926
4321 X 7 =30247	54321 X 7 = 380247	654321 X 7 = 4580247
4321 X 8 =34568	54321 X 8 = 434568	654321 X 8 = 5234568
4321 X 9 =38889	54321 X 9 = 488889	654321 X 9 = 5888889
4321 X10 =43210	54321 X10 = 543210	654321 X10 = 6543210

7654321 X 1 = 7654321	87654321 X 1 = 87654321	987654321 X 1 = 987654321
7654321 X 2 = 15308642	87654321 X 2 = 175308642	987654321 X 2 = 1975308642
7654321 X 3 = 22962963	87654321 X 3 = 262962963	987654321 X 3 = 2962962963
7654321 X 4 = 30617284	87654321 X 4 = 250617284	987654321 X 4 = 3950617284
7654321 X 5 = 38271605	87654321 X 5 = 438271605	987654321 X 5 = 4938271604
7654321 X 6 = 45924926	87654321 X 6 = 525925926	987654321 X 6 = 5925925926
7654321 X 7 = 53580247	87654321 X 7 = 613580247	987654321 X 7 = 6913580247
7654321 X 8 = 61234568	87654321 X 8 = 701234568	987654321 X 8 = 7901234568
7654321 X 9 = 68888889	87654321 X 9 = 788888889	987654321 X 9 = 8888888889
7654321 X10= 76543210	87654321 X10 = 876543210	987654321 X10 = 9876543210

9 X 1 = 9	89 X 1 = 89	789 X 1 = 789
9 X 2 = 18	89 X 2 = 178	789 X 2 = 1578
9 X 3 = 27	89 X 3 = 267	789 X 3 = 2367
9 X 4 = 36	89 X 4 = 356	789 X 4 = 3156
9 X 5 = 45	89 X 5 = 445	789 X 5 = 3945
9 X 6 = 54	89 X 6 = 534	789 X 6 = 4734
9 X 7 = 63	89 X 7 = 623	789 X 7 = 5523
9 X 8 = 72	89 X 8 = 712	789 X 8 = 6312
9 X 9 = 81	89 X 9 = 801	789 X 9 = 7101
9 X 10 = 90	89 X 10 = 890	789 X 10 = 7890
6789 X 1 = 6789	56789 X 1 = 56789	456789 X 1 = 456789
6789 X 2 = 13578	56789 X 2 = 113578	456789 X 2 = 913578
6789 X 3 = 20367	56789 X 3 = 170367	456789 X 3 = 1370367
6789 X 4 = 27156	56789 X 4 = 227156	456789 X 4 = 1827156
6789 X 5 = 33945	56789 X 5 = 283945	456789 X 5 = 2283945
6789 X 6 = 40734	56789 X 6 = 340734	456789 X 6 = 2740734
6789 X 7 = 47523	56789 X 7 = 397523	456789 X 7 = 3197523
6789 X 8 = 54312	56789 X 8 = 454312	456789 X 8 = 3654312
6789 X 9 = 61101	56789 X 9 = 511101	456789 X 9 = 4111101
6789 X10 = 67890	56789 X 10 = 567890	456789 X10 = 4567890
3456789 X 1 = 3456789	23456789 X 1 = 23456789	123456789 X 1 = 123456789
3456789 X 2 = 6913578	23456789 X 2 = 46913578	123456789 X 2 = 246913578
3456789 X 3 = 10370367	23456789 X 3 = 7037O367	123456789 X 3 = 370370367
3456789 X 4 = 13827156	23456789 X 4 = 93827156	123456789 X 4 = 493827156
3456789 X 5 = 17283945	23456789 X 5 = 117283945	123456789 X 5 = 617283945
3456789 X 6 = 20740734	23456789 X 6 = 140740734	123456789 X 6 = 740740734
3456789 X 7 = 24197523	23456789 X 7 = 164197523	123456789 X 7 = 864197523
3456789 X 8 = 27654312	23456789 X 8 = 187654312	123456789 X 8 = 987654312
3456789 X 9 = 31111101	23456789 X 9 = 211111101	123456789 X 9 =1111111101
3456789 X10 = 34567890	23456789 X 10 = 234567890	123456789 X10 =1234567890

ANNEXURE – 8

PRACTICE FORMAT:TIMES TABLES SAMPLE UPTO NINE DIGITS

1 X 1 =	21 X 1 =	321 X 1 =
1 X 2 =	21 X 2 =	321 X 2 =
1 X 3 =	21 X 3 =	321 X 3 =
1 X 4 =	21 X 4 =	321 X 4 =
1 X 5 =	21 X 5 =	321 X 5 =
1 X 6 =	21 X 6 =	321 X 6 =
1 X 7 =	21 X 7 =	321 X 7 =
1 X 8 =	21 X 8 =	321 X 8 =
1 X 9 =	21 X 9 =	321 X 9 =
1 X 10 =	21 X 10 =	321 X 10 =

4321 X 1 =	54321 X 1 =	654321 X 1 =
4321 X 2 =	54321 X 2 =	654321 X 2 =
4321 X 3 =	54321 X 3 =	654321 X 3 =
4321 X 4 =	54321 X 4 =	654321 X 4 =
4321 X 5 =	54321 X 5 =	654321 X 5 =
4321 X 6 =	54321 X 6 =	654321 X 6 =
4321 X 7 =	54321 X 7 =	654321 X 7 =
4321 X 8 =	54321 X 8 =	654321 X 8 =
4321 X 9 =	54321 X 9 =	654321 X 9 =
4321 X 10=	54321 X 10=	654321 X10 =

7654321 X 1 =	87654321 X 1 =
7654321 X 2 =	87654321 X 2 =
7654321 X 3 =	87654321 X 3 =
7654321 X 4 =	87654321 X 4 =
7654321 X 5 =	87654321 X 5 =
7654321 X 6 =	87654321 X 6 =
7654321 X 7 =	87654321 X 7 =
7654321 X 8 =	87654321 X 8 =
7654321 X 9 =	87654321 X 9 =
7654321 X10=	87654321 X 10 =

987654321 X 1 =

987654321 X 2 =

987654321 X 3 =

987654321 X 4 =

987654321 X 5 =

987654321 X 6 =

987654321 X 7 =

987654321 X 8 =

987654321 X 9 =

987654321 X10 =

9 X 1 =	89 X 1 =	789 X 1 =
9 X 2 =	89 X 2 =	789 X 2 =
9 X 3 =	89 X 3 =	789 X 3 =
9 X 4 =	89 X 4 =	789 X 4 =
9 X 5 =	89 X 5 =	789 X 5 =
9 X 6 =	89 X 6 =	789 X 6 =
9 X 7 =	89 X 7 =	789 X 7 =
9 X 8 =	89 X 8 =	789 X 8 =
9 X 9 =	89 X 9 =	789 X 9 =
9 X 10 =	89 X 10 =	789 X 10 =
6789 X 1 =	56789 X 1 =	456789 X 1 =
6789 X 2 =	56789 X 2 =	456789 X 2 =
6789 X 3 =	56789 X 3 =	456789 X 3 =
6789 X 4 =	56789 X 4 =	456789 X 4 =
6789 X 5 =	56789 X 5 =	456789 X 5 =
6789 X 6 =	56789 X 6 =	456789 X 6 =
6789 X 7 =	56789 X 7 =	456789 X 7 =
6789 X 8 =	56789 X 8 =	456789 X 8 =
6789 X 9 =	56789 X 9 =	456789 X 9 =
6789 X10 =	56789 X 10 =	456789 X10 =

3456789 X 1 =

3456789 X 2 =

3456789 X 3 =

3456789 X 4 =

3456789 X 5 =

3456789 X 6 =

3456789 X 7 =

3456789 X 8 =

3456789 X 9 =

3456789 X10 =

23456789 X 1 =

23456789 X 2 =

23456789 X 3 =

23456789 X 4 =

23456789 X 5 =

23456789 X 6 =

23456789 X 7 =

23456789 X 8 =

23456789 X 9 =

23456789 X 10 =

123456789 X 1 =

123456789 X 2 =

123456789 X 3 =

123456789 X 4 =

123456789 X 5 =

123456789 X 6 =

123456789 X 7 =

123456789 X 8 =

123456789 X 9 =

123456789 X10 =

ANNEXURE – 9

PRACTICE FORMAT: MULTIPLICATION

(i) FIRST METHOD.

c) Multiply 456 by 23

Sol:- 456

x 23

_____

∴the product =

d) Multiply 789 by 4

Sol: 789

x4

∴ the product =

g) Multiply 67 by 9

Soln. 67

x9

∴ the product =

h) Multiply 789 by 45

Soln. 789

x45

_____

∴ the product =

i) Multiply 567 by 67

Sol:- 567

×67

_____

∴ the product =

j) Multiply 567 by 89

Sol:- 567

×89

_____

∴ the product =

o) Multiply 678 by 789

Sol: 678

X 789

_____

∴ the product=

p) Multiply 876 by 987.

Sol: 876

X 987

_____

∴ the product =

(ii) SECOND METHOD.

(a) Multiply 789 by 468.

Sol : 789

X 468

_____

Product =

(b) Multiply 789 by 975

Sol : 789

X 975

_____

Product =

(c) Multiply 6789 by 4876.

Sol: 6789

X 4876

_____

Product =

(d) Multiply 6789 by 9753.

Sol: 6789

X 9753

_____

Product =

(e) Multiply 456789 by 4876.

Sol: 456789

X 4876

_____

Product =

(f) Multiply 456789 by 9753.

Sol: 456789

X 9753

_____

Product =

ANNEXURE – 10
PRACTICE FORMAT: COLUMN METHOD OF SUBTRACTION

(a)

17	16	25	34
− 9	− 8	− 7	− 6

(b)

12	38	43	26
− 3	− 9	− 5	− 8
13	24	43	32
− 6	− 7	− 7	− 6

(c)

345	456	456	567
− 89	− 178	− 269	− 389

(d)

432	456	356	678
− 253	− 158	− 187	− 289

(e)

6786	2342	6328	6788
− 4789	− 678	− 1439	− 3789

(f)

6543	7823	9876	4321
− 3456	− 5934	− 6879	− 1234

ANNEXURE – 11

PRACTICE FORMAT: HORIZONTAL METHOD SUBTRACTION

HORIZONTAL METHOD OF SUBTRACTION

(a) 31 – 6 – 6 = ( ) (b) 42 – 6 – 7 = ( )

(c) 21 – 7 – 7 = ( ) (d) 43 – 7 – 8 = ( )

(e) 54 – 8 – 8 = ( ) (f) 64 – 8 – 9 = ( )

(g) 41 – 8 – 8 – 9 = ( )

(h) 51 – 8 – 8 – 8 – 8 = ( )

(i) 60 – 8 – 8 – 9 – 9 = ( )

(j) 82 – 9 – 9 – 9 – 9 – 9 = ( )

(k) 81 – 9 – 9 – 9 – 9 – 9 – 9 – 9 = ( )

(l) 91 – 9 – 9 – 9 – 9 – 9 – 9 – 9 – 9 = ( )

(m) 85 – 9 – 9 – 9 – 9 – 9 – 9 – 9 – 9 – 9 = ( )

(n) 52 – 6 – 6 – 6 – 6 = ( )

(o) 78 – 7 – 7 – 7 – 7 – 7 = ( )

(p) 63 – 6 – 7 – 8 – 9 = ( )

(q) 45 – 39 = ( )

(r) 87 – 58 = ( )

(s) 687 – 498 = ( )

(t) 78 – 37 – 29 = ( )

(u) 956 – 389 – 478 = ( )

(v) 987 – 498 – 389 = ( )

(w) 789 – 267 – 397 = ( )

(x) 978 – 267 – 378 – 289 = ( )

(y) 3765 – 987 – 798 – 798 = ( )

(z) 4235 – 789 – 879 – 979 = ( )

ANNEXURE – 12
PRACTICE FORMAT: DIVISION

a) Divide 345 by 2.
Sol: 2) 345 (

Quotient =
Remainder =

b) Divide 567 by 3.
Sol; 3) 567 (

Quotient =
Remainder =

c) Divide 567 by 4.
Sol; 4) 567 (

Quotient =
Remainder =

d) Divide 567 by 5.
Sol: 5) 567 (

Quotient =
Remainder =

e) Divide 567 by 6.
Sol:6) 567 (

Quotient =
Remainder =

f) Divide 567 by 7.
Sol; 7) 567 (

Quotient =
Remainder=

g) Divide 267 by 9
Sol:- 9) 267 (

∴ Quotient=
and remainder =

h) Divide 567 by 8
Sol:- 8) 567 (

∴ Quotient=
and remainder =

i) Divide 3456 by 17.
Sol; 17) 3456 (

Quotient =
Reminder =

k) Divide 3456 by 29.
Sol: 29) 3456 (

Quotient =
Remainder =

s) Divide 5678 by 97.

Sol; 97) 5678 (

Quotient =

Remainder =

t) Divide 123456 by 78.

Sol: 78) 123456 (

Quotient =

Remainder =

y) Divide 987654321 by 789.

Sol: 789) 987654321 (

Quotient =

Remainder =

z) Divide 123456789 by 987.

Sol: 987) 123456789 (

Quotient = Remainder =

Note; Divide 9876543210 by 789.

Sol : 789) 9876543210 (

Quotient = = (appx)

ANNEXURE-13

FORMAT FOR IDENTIFICATION OF PRIME NUMBERS BETWEEN 1 AND 100

NUMBERS	FACTORS	NUMBER OF FACTORS	NUMBERS	FACTORS	NUMBER OF FACTORS
1			26.		
2			27.		
3			28.		
4			29.		
5			30.		
6			31.		
7			32.		
8			33.		
9			34.		
10			35.		
11			36.		
12			37.		
13			38.		
14			39.		
15			40.		
16			41.		
17			42.		
18			43.		
19			44.		
20			45.		
21			46.		
22			47.		
23			48.		
24			49.		
25			50.		

NUMBERS	FACTORS	NUMBER OF FACTORS	NUMBERS	FACTORS	NUMBER OF FACTORS
51			76.		
52			77.		
53			78.		
54			79.		
55			80.		
56			81.		
57			82.		
58			83.		
59			84.		
60			85.		
61			86.		
62			87.		
63			88.		
64			89.		
65			90.		
66			91.		
67			92.		
68			93.		
69			94.		
70			95.		
71			96.		
72			97.		
73			98.		
74			99.		
75			100.		

Prime numbers have exactly two factors. So, they are:…….
……
……
……

The number of prime numbers between 1 and 100 is …….