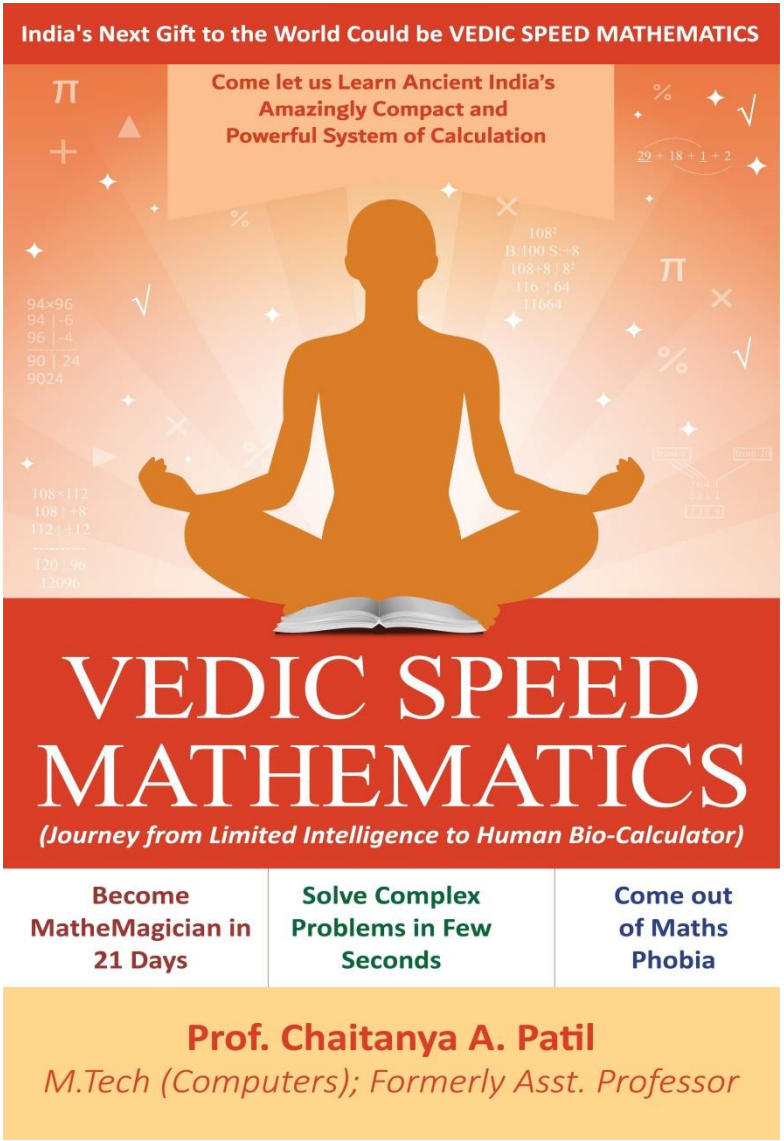

Link: www.Speed16.com/books/vm

Direct Whatsapp: https://wa.me/919764058654/?text=Hi

Location of this file: www.speed16.com/files/vm/appendix.pdf

(Last Updated on 2nd July 2020. Keep visiting above link for updated file.)

Beauty of

Vedic Speed Mathematics

(World's Fastest Mental Calculation System)

(with free workbook inside)

Appendix

Appendix is extra material (extra reading) and this is not included in the book / eBook.

HIGHLY USEFUL FOR: Standard/Grade **3rd** to **Ph.D** Students; Parents, Mathematics Teachers, Math Lovers, Placement & Job Interviews; All Entrance & Competitive Exams (PSAT/NMSQT, UPSC - CSAT, Banking - IBPS, RBI, CAT, MAT, Railways - RRB, PSUs, GATE, IES, SSC, LIC, TET, GRE, GMAT, SAT, ACT, PERT, GED, TASC etc.).

Chaitanya A. Patil (Speed16 Academy)

Paperback, eBook, FREE Work Book, Video Course & Online Training on 'Vedic Speed Mathematics', 'C'& Python Programming

Link: www.Speed16.com/books

Direct Whatsapp: https://wa.me/919764058654/?text=Hi

IMP Links:
▪ **Link:** www.Speed16.com/books/vm ▪ Download this PDF for Details: www.speed16.com/files/vm/vm.pdf ▪ **Paperback (India):** ▪ Amazon: https://amzn.to/2Mronn3 **OR** ▪ Instamojo: https://www.instamojo.com/speed16 ▪ **Paperback (International):** ▪ www.Speed16.com/books/vm ▪ **Vedic Speed Maths: Video Course (@just ₹99 / 1.3US$; Thinkific):** ▪ https://speed16.thinkific.com/courses/vsm ▪ **Vedic Speed Maths: Video Course (6 to 12US$; Udemy):** ▪ https://www.udemy.com/course/speedmaths/?referralCode=7852F40112045FBAD598 ▪ **eBooks (Country wise):** ▪ **India:** Part-1: https://amzn.to/2MufSaT**;** Part-2: https://amzn.to/2MqmJSo ▪ **US:** https://amzn.to/2KmO47C ▪ **UK:** https://amzn.to/2Vi1Yj9 ▪ **Other Countries:** https://www.speed16.com/books/vm/

Get all Future Updates:
▪ **Join our Telegram Channel:** ▪ https://t.me/SpeedMaths ▪ **Like our Facebook Page:** ▪ facebook.com/SpeedMaths99 ▪ **Subscribe to our YouTube Channel:** ▪ youtube.com/speedmaths

Sharing is Caring. Share with All.
Click Here to Share on WhatsApp

Unit 1: MULTIPLICATION

1.1 Multiplication using Base Method

Case 5: When both numbers are not nearer to working base:

Working Procedure:

1. Write multiplicand and multiplier one below the other.
2. Write complement / surplus of multiplicand and multiplier to its right side with signs.
3. Here numbers are not nearer to working (functional) base. So we need to choose nearest bases. Find complement or surplus from chosen base.
4. Base Multiple is obtained by removing all ending zeroes from Base.
5. Left Part: **First Step:** Evaluating any of the cross values as per the sign; **Second Step:** Multiply left part with base multiple.
6. Right Part: Product of right side values (Complements/Surpluses)
7. IMP: Total number of digits in the Right Part should be equal to total number of **ending zeroes** in the base. If lesser, add required number of zeroes before the right part. If greater then pass the carry (left most excess digits of right part) to left part.
8. If Right Part is negative, **either** choose appropriate base and add it to right part and Parallelly subtract left part from its base multiple **OR** multiply left part with working base (Base ÷ Base Multiple) & then add right part to it.

Ex.1: 81×86 Base:**80;**BM:**8** 81 +1 86 +6 --------- 87 ¦ 6 87*8 ¦ 6 696 ¦ 6 **6966**	**Ex.1:** 81×86; here we need to multiply 81 and 86. Numbers 81 and 86 are written one below the other. Their surplus +1 and +6 respectively and they are written at right side. Left Part is 87 (81+6 or 86+1). Right Part is product of complements i.e. -+1×+6=-6. Here base is 80. Base Multiple is 8. Multiply left part with base multiple. So Left Part becomes 87*8=696. So, final answer is 6966.

Ex. 2: 64×68 B:**60;** BM:**6** 64 +4 68 +8 ---------- 72 ¦ 32 72*6¦ 32 432 ¦ 32 432+3¦ 2 435 ¦ 2 **4352**	**Ex. 2:** 64×68; surplus: +4 and +8. Left Part is 72 (64+8 or 68+4). Right Part is 32 (8*4). Base is 60. Base Multiple is 6. Multiply left part with base multiple. So Left Part becomes 72*6=432. Base consists of one zero. So Right Part should contain only one digit. Left Part becomes 432+3=435 and Right Part becomes 2. So final answer is 4352.

Ex.3:310×326 B:**300;** BM:**3** 310 +10 326 +26 ---------- 336 ¦ 260 336*3¦260 1008 ¦ 260 1008+2¦60 1010 ¦ 60 **101060**	**Ex. 3:** 310×326; surplus: +10 and +26. Left Part is 336 (310+26 or 326+10). Right Part is 260 (10*26). Base is 300. Base Multiple is 3. Multiply left part with base multiple. So Left Part becomes 336*3=1008. Base consists of two zeroes. So Right Part should contain only two digits. Left Part becomes 1008+2=1010 and Right Part becomes 60. So, final answer is 101060.

Ex.4: 7230*7005 B:**7000**; BM: **7** 7230 +230 7005 +5 ---------- 7235 ¦ 1150 7235*7 ¦ 1150 50645 ¦ 1150 50645+1¦150 50646 ¦ 150 **50646150**	**Ex. 4:** 7230*7005; surplus: +230 and +5. Left Part is 7235 (7230+5 or 7005+230). Right Part is 1150 (230*5). Base is 7000. Base Multiple is 7. Multiply left part with base multiple. So Left Part becomes 7235*7=50645. Base consists of three zeroes. So Right Part should contain only three digits. Left Part becomes 50645+1=50646 and Right Part becomes 150. So final answer is 50646150.

Ex.5: 67×78 B:**70**; BM:**7** 67 -3 78 +8 ---------- 75 ¦ -24 75*7 ¦ -24 525 ¦ -24 525-3¦30-24 522 ¦ 6 **5226**	**Ex. 5:** 67×78; Complement and surplus are -3 and +8. Left Part is 75 (67+8 or 78-3). Right Part is -24 (-3*8). Base is 70. Base Multiple is 7. Multiply left part with base multiple. So Left Part becomes 75*7=525. Base consists of one zero. So Right Part should contain only one digit. But Right Part is negative. To make it one digit number we need to choose base as 30 and base multiple as 3. Left Part becomes 525-3=522 and Right Part becomes 30-24=6. So, final answer is 5226. {Our initial base is 70. Its lower working base is 10. Choose base which is multiple of 10 and after subtracting it should give single digit number. So we choose base as 30.}

Ex.6:123×113 B:**120;**BM:**12** 123 +3 113 -7 ---------- 116 ¦ -21 116*12 ¦ -21 1392 ¦ -21 1392-3¦-21+30 1389 ¦ 9 **13899**	**Ex.6:** 123×113; surplus and complements are +3 and -7. Left Part is 116 (123-7 or 113+3). Right Part is -21(3*-7). Base is 120. Base Multiple is 12. Multiply left part with base multiple. So Left Part becomes 116*12=1392. Base consists of one zero. So Right Part should contain only one digit. But Right Part is negative. To make it one digit number we need to choose base as 30 and base multiple as 3. Left Part becomes 1392-3=1389 and Right Part becomes 30-21=9. So final answer is 13899.

Ex.7:206×195 B:**200**; BM:2 206 +6 195 -5 ---------- 201 ¦ -30 201*2 ¦ -30 402 ¦ -30 402-1¦-30+100 401 ¦ 70 **40170**	**Ex. 7:** 206×195; surplus and complements are +6 and -5. Left Part is 201 (206-5 or 195+6). Right Part is -30(6×-5). Base is 200. Base Multiple is 2. Multiply left part with base multiple. So Left Part becomes 201×2=402. Base consists of two zeroes. So Right Part should contain only two digits. But Right Part is negative. To make it two digits number we need to choose base as 100 and base multiple as 1. Left Part becomes 402-1=401 and Right Part becomes 100-30=70. So, final answer is 40170.

Ex.8:410×390 B:**400;**BM:**4** 410 +10 390 -10 ---------- 400 ¦ -100 400*4 ¦ -100 1600 ¦ -100 1600-1¦-100+100 1599 ¦ 00 **159900**	**Ex. 8:** 410×390; surplus and complements are +10 and -10. Left Part is 400 (410-10 or 390+10). Right Part is -100(10*-10). Base is 400. Base Multiple is 4. Multiply left part with base multiple. So Left Part becomes 400*4=1600. Base consists of two zeroes. So Right Part should contain only two digits. But Right Part is negative. To make it two digit number we need to choose base as 100 and base multiple as 1. Left Part becomes 1600-1=1599 and Right Part becomes 100-100=00. So, final answer is 159900.

Ex.9: 720×670 B: **700** BM: **7** 720 +20 670 -30 ---------- 690 ¦ -600 690*7 ¦ -600 4830 ¦ -600 4830-6¦-600+600 4824 ¦ 00 **482400**	**Ex. 9:** 720×670; surplus and complements are +20 and -30. Left Part is 690 (720-30 or 670+20). Right Part is -600(20*-30). Base is 700. Base Multiple is 7. Multiply left part with base multiple. So Left Part becomes 690*7=4830. Base consists of two zeroes. So Right Part should contain only two digits. But Right Part is negative. To make it two digit number we need to choose base as 600 and base multiple as 6. Left Part becomes 4830-6=4824 and Right Part becomes 600-600=00. So, final answer is 482400.

Ex.10: 592×624?	**Ex.11: 410×428?**	**Ex.12: 1324×1308?**	**Ex.13: 4824×4986?**
(Base = 600)	(Base = 400)	(Base=1300)	(Base = 5000)
592 -8 624 +24 ---------- 616 ¦ -192 616×6 ¦ -192 3696 ¦ -192 3696-6 ¦ -192+600 3690 ¦ 408 3690+4 ¦ 08 3694 ¦ 08	410 +10 428 +28 ---------- 438 ¦ 280 438×4 ¦ 280 1752 ¦ 280 1752+2 ¦ 80 1754 ¦ 80	1324 +24 1308 +8 ---------- 1332 ¦ 192 1332×13¦192 17316 ¦ 192 17316+1 ¦ 92 17317 ¦ 92	4824 -176 4986 -14 ---------- 4810 ¦ 2464 4810×5 ¦ 2464 4810×5 ¦ 2464 24050 ¦ 2464 24050+2 ¦ 464 24052 ¦ 464
369408	**175480**	**1731792**	**24052464**

Unit 2: DIVISION

Division Using Base Method

Formula Used: 2. Nikhilam Navataścaramam Daśatah (निखिलं नवतश्चरमं दशतः). Meaning: All from 9 and Last from 10.

Note: This Formula is preferred when divisor is below or above the Working base.

Keywords: Divisor, Dividend, Quotient, Remainder, Division, Complement, Left Part, Right Part, Vertical Line (¦).

In Ex. 1: Divisor (9), Dividend (12), Quotient (1), Remainder (3), Division (Operation), $C^{\#}$ - Negation of Complement (1), Left Part (1), Right Part (2), Vertical Line (¦).

When Divisor is Below the Working Base

Working Procedure:

1. **First Line:** Split the dividend into two parts (Left and Right) using vertical line (¦). Total number of digits in the Right Part should be equal to total number of zeroes in the Base.
2. **Second Line:** Left Part = Blank; Right Part = (p * $C^{\#}$); where 'p' is Left Part of First Line and '$C^{\#}$' is negation of Complement of Divisor.
3. **Third Line or Answer Line:** Left Part: Fetch Left Part Value of First Line to Third Line as it is. Right Part: Add both the Right Part values. **Left Part is Quotient & Right Part is Remainder.**
4. **Note:** If Remainder is greater than divisor, then divide Remainder by same divisor using above process. For Quotient: Add Quotient Parts of all Iterations and for Remainder just consider Remainder Part of Last Iteration.

Ex.1:12÷9 B:10; C#:1 9) 1 ¦ 2 ¦ 1 --------- 1 ¦ 3 Q:**1;** R:**3**	**Ex.1:** Here divisor is 9 and Dividend is 12. As divisor is of one digit, right part contains only one digit. So left part is 1 and right part is 2. In the second line, left part is blank and right part is 1×1=1 (Left Part is 1 and negation of complement is 1). In the third line we fetch left part value as it is from first line. In the right part, we add both the right part values (2+1=3). Left part is quotient and right part is Remainder. So **Q** is **1** and **R** is **3**.

Ex.2: 21÷8	**Ex.3: 12÷7**	**Ex.4: 10÷6**	**Ex.5: 11÷6**
B: 10; C#: 2	B: 10; C#: 3	B: 10; C#: 4	B: 10; C#: 4
8) 2 ¦ 1 ¦ 4 --------- 2 ¦ 5	7) 1 ¦ 2 ¦ 3 --------- 1 ¦ 5	6) 1 ¦ 0 ¦ 4 --------- 1 ¦ 4	6) 1 ¦ 1 ¦ 4 --------- 1 ¦ 5
Q: **2;** R: **5**	Q: **1;** R: **5**	Q: **1;** R: **4**	Q:**1;** R:**5**

Ex.6: 74÷9 (B: 10; C#: 1)		
9) 7 ¦ 4 ¦ 7 --------- 7 ¦ 11 ----- **(a)**	9) 1 ¦ 1 ¦ 1 ------------ 1 ¦ 2 ------ **(b)**	(a+b) ¦ b (7+1) ¦ 2 8 ¦ 2 Q: **8;** R: **2**

Ex.6: 74÷9; divisor is 9 and Dividend is 74; Base:10; Negation of Complement (C#):1; In the first line, left part is 7 and right part is 4. In the second line right part is 7 (7×1). Third Line: Left part is 7 and right part is 11. Now, 11 is greater than divisor. So divide 11 by 9 in the next iteration (section) and that gives Quotient as 1 & Remainder as 2. For final Quotient, add quotient parts of all sections (7+1) and final remainder is same as remainder of last section.

Ex.7: 42÷8 (B: 10; C#: 2)		
8) 4 ¦ 2 ¦ 8 --- 4 ¦ 10 -- (a)	8) 1 ¦ 0 ¦ 2 --- 1 ¦ 2 -- (b)	(a+b) ¦ b (4+1) ¦ 2 5 ¦ 2 Q: **5;** R: **2**

Ex.8: 94÷7 (B: 10; C#: 3)			
7) 9 ¦ 4 ¦ 27 --- 9 ¦ 31 -- (a)	7) 3 ¦ 1 ¦ 9 --- 3 ¦ 10 --(b)	7) 1 ¦ 0 ¦ 3 --- 1 ¦ 3 --(c)	(a+b+c) ¦ c (9+3+1) ¦ 3 13 ¦ 3 Q: **13;** R: **3**

Ex.9: 89÷6 (B: 10; C#: 4)				
6) 8 ¦ 9 ¦ 32 --- 8 ¦ 41-(a)	6) 4 ¦ 1 ¦ 16 --- 4 ¦ 17 (b)	6) 1 ¦ 7 ¦ 4 --- 1 ¦ 11 -(c)	6) 1 ¦ 1 ¦ 4 --- 1 ¦ 5 -(d)	(a+b+c+d) ¦ d (8+4+1+1) ¦5 14 ¦ 5 Q: **14;** R: **5**

Ex.10: 38÷7 (B: 10; C#: 3)			
7) 3 ¦ 8 ¦ 9 --- 3 ¦ 17 -(a)	7) 1 ¦ 7 ¦ 3 --- 1 ¦ 10 -(b)	7) 1 ¦ 0 ¦ 3 --- 1 ¦ 3 -(c)	(a+b+c) ¦ c (3+1+1) ¦ 3 5 ¦ 3 Q: **5**; R: **3**

Ex.10: 38÷7; divisor is 7 and Dividend is 38; Base:10; Negation of Complement:3; In the first line, left part is 3 and right part is 8. In the second line right part is 9 (3×3). Third Line: Left part is 3 and right part is 17 (8+9). Now, 17 is **greater than divisor**. So divide 17 by 7 in the next section. Q is 1 and R is 10. Again 10 is greater than divisor (7). So divide 10 by 7 in the next section. Q is 1and R is 3. Now 3 is smaller than divisor and we stop here. For final Q, we consider Q parts of all iterations (sections) and for final R we consider R part of last iteration (section).

Ex.11: 834÷184	
Our divisor is 184. We need to divide our divisor by 2. So, 184÷2=92. Now, our new divisor is 92.	
(B: 100; C#: 8)	
92) 8 ¦ 34 ¦ 64 ---------- 8 ¦ 98	We divided our divisor by 2. So we need to divide our intermediate quotient by 2 to get final quotient. Remainder is constant.
For **834÷92;** Q: 8 and R: 98. For **834÷184;** Q:8÷2=4 and R: 98	
Q=4 and **R=98**	

Ex.12: 3646÷282	
Our divisor is 282. We need to divide our divisor by 3. So, 282÷3=94. Now, our new divisor is 94.	
(B: 100; C#: 6)	
94) 36 ¦ 46 ¦ 216 ---------- 36 ¦ 262	We divided our divisor by 3. So we need to divide our intermediate quotient by 3 to get final quotient. Remainder is constant.
For **3646÷94;** Q: 36 and R: 262. For **3646÷282;** Q:36÷3=12 and R: 262	
Q=12 and **R=262**	

Ex.13: 2827÷834 (B: 1000; C#: 166)		
834) 2¦827 ¦332 ---------- 2¦1159 -(a)	834) 1¦159 ¦166 ---------- 1¦325(b)	(a+b) ¦ b (2+1) ¦ 325 3 ¦ 325 Q: **3**; R: **325**

Ex.14: 7893÷191	
Our divisor is 191. It is not divisible by 2 or 3. So, we will multiply 191 by 5. 191×5=955. Now, our new divisor is 955.	
(B: 1000; C#: 45)	
955) 7 ¦ 893 ¦ 315 ---------- 7 ¦ 1208 7+1 ¦ 1208-955 8 ¦ 253	We multiplied our divisor by 5. So we need to multiply our intermediate quotient by 5 to get final quotient. Remainder is constant.
For **7893÷955;** Q: 8 and R: 253. For **7893÷191;** Q:8×5=40 and R: 253	
Q=40 and **R=253**	

Ex.15: 47816÷3240	
Our divisor is 3240. Now, 3240÷4=810 **and** 3240×3=9720. We can solve this example by using divisor either as 810 or 9720. Here we will solve using 9720.	
(B: 10000; C#: 280)	
9720) 4 ¦ 7816 ¦ 1120 ---------- 4 ¦ 8936	We multiplied our divisor by 3. So we need to multiply our intermediate quotient by 3 to get final quotient. Remainder is constant.
For **47816÷9720;** Q: 4 and R: 8936. For **47816÷3240;** Q:4×3=12 and R: 8936	
Our Remainder is greater than divisor. 12 ¦ 8936 12+1+1 ¦ 8936-3240-3240 14 ¦ 2456	
Q=14 and **R=2456**	

Ex.16: 110÷87	**Ex.17: 247÷84**	**Ex.18: 320÷81**	**Ex.19: 41049÷980**
B: 100; C#: 13	B: 100; C#: 16	B: 100; C#: 19	B: 1000; C#: 20
87) 1¦10 ¦13 ---------- 1¦23	84) 2¦47 ¦32 ---------- 2¦79	81) 3 ¦ 20 ¦ 57 ---------- 3 ¦ 77	980) 41¦049 ¦820 ---------- 41 ¦ 869
Q: **1**; R: **23**	Q: **2**; R: **79**	Q: **3**; R: **77**	Q: **41**; R: **869**

Ex.20: 6784÷331	
Our divisor is 331. Now, 331×3=993.	
(B: 1000; C#: 7)	
993) 6 ¦ 784 ¦ 42 ---------- 6 ¦ 826	We multiplied our divisor by 3. So we need to multiply our intermediate quotient by 3 to get final quotient. Remainder is constant.
For **6784÷993;** Q: 6 and R: 826. For **6784÷331;** Q:6×3=18 and R: 826	
Our Remainder is greater than divisor. 18 ¦ 826 18+1+1 ¦ 826-331-331 20 ¦ 164	
Q=20 and **R=164**	

Ex.21: 57468÷499	
Our divisor is 499. Now, 499×2=998.	
(B: 1000; C#: 2)	
998) 57 ¦ 468 ¦ 114 ---------- 57 ¦ 582	We multiplied our divisor by 2. So we need to multiply our intermediate quotient by 2 to get final quotient. Remainder is constant.

For **57468÷998;** Q: 57 and R: 582. For **57468÷499;** Q:57×2=114 and R: 582
Our Remainder is greater than divisor. 114 ¦ 582 114+1 ¦ 582-499 115 ¦ 83
Q=115 and **R=83**

Ex.22: 195÷67 (B: 100; $C^{\#}$: 33)		
67) 1¦95 ¦33 --- 1¦128 -(a)	67) 1¦28 ¦33 --- 1¦61 -(b)	(a+b) ¦ b (1+1) ¦ 61 2 ¦ 61 Q: **2**; R: **61**

Ex.23: 756÷86 (B: 100; $C^{\#}$: 14)		
86) 7¦56 ¦98 --- 7¦154 - (a)	86) 1¦54 ¦14 --- 1¦68 -(b)	(a+b) ¦ b (7+1) ¦ 68 8 ¦ 68 Q: **8**; R: **68**

When Divisor is Above the Working Base

Working Procedure:

1. **First Line:** Split the dividend into two parts (Left and Right) using vertical line (¦). Total number of digits in the Right Part should be equal to total number of zeroes in the Base.
2. **Second Line:** Left Part = Blank; Right Part = (p * $S^{\#}$); where 'p' is Left Part of First Line and '$S^{\#}$' is Negation of Surplus of Divisor.

3. **Third Line or Answer Line:** Left Part: Fetch Left Part Value of First Line to Third Line as it is. Right Part: Evaluate Right Part Values (Top Value – Bottom Value). **Left Part is Quotient and Right Part is Remainder.**
4. **Note:** If Remainder is greater than divisor, then divide Remainder by same divisor using above process. For Quotient: Add Quotient Parts of all Iterations and for Remainder just consider Remainder Part of Last Iteration.

Ex.1: 19÷13	**Ex.2: 346÷112**	**Ex.3: 7368÷1024**
B:10; $S^{\#}$: -3	B: 100; $S^{\#}$: -12	B: 1000; $S^{\#}$: -24
12) 1 ¦ 9 ¦ -3 --- 1 ¦ 6	112) 3 ¦ 46 ¦ -36 --- 3 ¦ 10	1024) 7 ¦ 368 ¦ -168 --- 7 ¦ 200
Q: **1;** R: **6**	Q: **3;** R: **10**	Q: **7;** R: **200**

Ex.4: 278÷124	**Ex.5: 356÷116**	**Ex.6: 2478÷1036**
B:100; $S^{\#}$: -24	B: 100; $S^{\#}$: -16	B: 1000; $S^{\#}$: -36
124) 2 ¦ 78 ¦ -48 --- 2 ¦ 30	116) 3 ¦ 56 ¦ -48 --- 3 ¦ 8	1036) 2 ¦ 478 ¦ -72 --- 2 ¦ 406
Q: **2;** R: **30**	Q: **3;** R: **8**	Q: **2;** R: **406**

Unit: SQUARES

Squares Using Complements/Surpluses

Corollary 7: Yāvadūnam Tāvadūnīkrtya Vargaňca Yojayet (यावदूनं तावदूनीकृत्य वर्गं च योजयेत्) Meaning: Lessen by the Deficiency and set up the square of that deficiency.

Note: This formula is used to obtain square of numbers which are closer to bases (10, 100, 1000 etc.).

Case 3: When Number is less than nearest Base.

Working Procedure:

1. Note given number, its Base, Base Multiple and Complement.
2. Answer consists of Two Parts (Left Part and Right Part).
3. Right Part is Square of Complement.
4. Left part = Base Multiple × (Given Number + Complement)
5. **Note:** Total number of digits in the Right Part should be same as total number of zeroes in the base. If lesser add required number of zeroes, if greater pass the carry (leftmost excess digits of right part) to left part.

Ex.1: 47^2	**Ex.2: 38^2**	**Ex.3: 168^2**
Base: 50 (10×5)	Base: 40 (10×4)	Base: 170 (10×17)
Complement: -03	Complement: -02	Complement: -02
5×(47-3) ¦ 3^2 5×44 ¦ 9 220 ¦ 9	4×(38-2) ¦ 2^2 4×36 ¦ 4 144 ¦ 4	17×(168-2) ¦ 2^2 17×166 ¦ 4 2822 ¦ 4
2209	**1444**	**28224**

Case 4: When Number is greater than nearest Base.

Working Procedure:

1. Note given number, its Base, Base Multiple and Surplus.
2. Answer consists of Two Parts (Left Part and Right Part).
3. Right Part is Square of Surplus.
4. Left part = Base Multiple × (Given Number + Surplus)
5. **Note:** Total number of digits in the Right Part should be same as total number of zeroes in the base. If lesser add required number of zeroes, if greater pass the carry (leftmost excess digits of right part) to left part.

Ex.1: 47^2	**Ex.2: 53^2**	**Ex.3: 182^2**
Base: 40 (10×4)	Base: 50 (10×5)	Base: 180 (10×18)
Surplus: +7	Surplus: +3	Surplus: +2
4×(47+7) ¦ 7^2 4×54 ¦ 49 216 ¦ 49 216+4 ¦ 9 220 ¦ 9	5×(53+3) ¦ 3^2 5×56 ¦ 9 280 ¦ 9	18×(182+2) ¦ 2^2 18×184 ¦ 4 3312 ¦ 4
2209	**2809**	**33124**

Square Using Proportionately

Corollary 1: Ānurūpyena; (आनुरूप्येण) Meaning: Proportionately

Note: This sutra is used to obtain squares and cubes of given numbers (Prefer this formula if there are 2 or 3 digits in a given number).

General Formula:

For Two Digit Numbers: $(ab)^2 = a^2 ¦ 2\times a\times b ¦ b^2$

(a is first Digit & b is Second Digit of a Given Number)

{How to remember? it is same as: $(a+b)^2 = a^2+2ab+b^2$**}**

For Three Digit Numbers: $(abc)^2 = (ab)^2 ¦ 2\times(ab)\times c ¦ c^2$
(ab is first two Digits & b is Third Digit)
OR $(abc)^2 = (a)^2 ¦ 2\times a\times(bc) ¦ (bc)^2$
(a is first Digit & bc is Last Two Digits)

Ex.1: 94^2	**Ex.2: 58^2**	**Ex.3: 129^2**
9^2¦ 2×9×4 ¦4^2	5^2¦ 2×5×8 ¦8^2	12^2¦ 2×12×9 ¦9^2
81 ¦ 72 ¦ 16	25 ¦ 80 ¦ 64	144 ¦ 216 ¦ 81
81 ¦ 72+1 ¦ 6	25 ¦ 80+6 ¦ 4	144 ¦ 216+8 ¦ 1
81 ¦ 73 ¦ 6	25 ¦ 86 ¦ 4	144 ¦ 224 ¦ 1
81+7 ¦ 3 ¦ 6	25+8 ¦ 6 ¦ 4	144+22 ¦ 4 ¦ 1
88 ¦ 3 ¦ 6	33 ¦ 6 ¦ 4	166 ¦ 4 ¦ 1
8836	**3364**	**16641**

Ex.4: 77^2	**Ex.5: 753^2**	**Ex.6: 635^2**
7^2¦ 2×7×7 ¦7^2	75^2¦ 2×75×3 ¦3^2	6^2¦ 2×6×35 ¦35^2
49 ¦ 98 ¦ 49	5625 ¦ 450 ¦ 9	36 ¦ 420 ¦ 1225
49 ¦ 98+4 ¦ 9	5625+45 ¦ 0 ¦ 9	36 ¦ 420+12 ¦ 25
49 ¦ 102 ¦ 9	5670 ¦ 0 ¦ 9	36 ¦ 432 ¦ 25
49+10 ¦ 2 ¦ 9		36+4 ¦ 32 ¦ 25
59 ¦ 2 ¦ 9		40 ¦ 32 ¦ 25
5929	**567009**	**403225**

Note: In the second and third part there should be only one digit (case: Two Digit Numbers) and only two digits (case: Three Digit Numbers). Start observation from third part, if greater pass the carry (leftmost excess digits) to its immediate left.

Reach Us:

- Contact Person: Mr. Chaitanya A. Patil
- Email: info@speed16.com
- Call: +91-97640-58-654
- Direct WhatsApp
- Direct Telegram

- **Join our Telegram Channels:**
- https://t.me/SpeedMaths
- https://t.me/speed16_IT

- **Subscribe to our YouTube Channels:**
- **Vedic Maths:** youtube.com/speedmaths
- **Python:** Click Here

- **Like our Facebook Pages:**
- **1:** facebook.com/SpeedMaths99
- **2:** facebook.com/Speed16Academy
- **3:** facebook.com/ChaitanyaPatil88 (Send me friend Request)

- **Follow our Linkedin Page:**
- linkedin.com/company/speed16

- **Connect with us on LinkedIn:**
- linkedin.com/in/cp488/

- **Follow us on Twitter:**
- twitter.com/chait_patil

- **Follow us on Instagram:**
- instagram.com/chaitanya.1600

- **Follow & Ask Questions on Quora:**
- quora.com/profile/Chaitanya-Patil-128

- **Follow us on Quora Space:**
- quora.com/q/cmztxptoeyvanirp

IMP Links:

- **Link:** www.Speed16.com/books/vm
- Download this PDF for Details: www.speed16.com/files/vm/vm.pdf

- **Paperback (India):**
- Amazon: https://amzn.to/2Mronn3 **OR**
- Instamojo: https://www.instamojo.com/speed16

- **Paperback (International):**
- www.Speed16.com/books/vm

- **Vedic Speed Maths: Video Course (@just ₹99 / 1.3US$; Thinkific):**
- https://speed16.thinkific.com/courses/vsm

- **Vedic Speed Maths: Video Course (6 to 12US$; Udemy):**
- https://www.udemy.com/course/speedmaths/?referralCode=7852F40112045FBAD598

- **eBooks (Country wise):**
- **India:** Part-1: https://amzn.to/2MufSaT**;** Part-2: https://amzn.to/2MqmJSo
- **US:** https://amzn.to/2KmO47C
- **UK:** https://amzn.to/2Vi1Yj9
- **Other Countries:** https://www.speed16.com/books/vm/

Get all Future Updates:

- **Join our Telegram Channel:**
- https://t.me/SpeedMaths
- **Like our Facebook Page:**
- facebook.com/SpeedMaths99
- **Subscribe to our YouTube Channel:**
- youtube.com/speedmaths

Sharing is Caring. Share with All.

Click Here to Share on WhatsApp