Sezimal Divisibility Rules

Simple rules for primes 2, 3 and their multiples up to 100

*Considering the number to be tested as **[abcd...wxyz]**, where **[abcd...]** represent the first digits of the number, and **[...wxyz]** the last digits — Adapted from this Reddit post Seximal divisibility tests*

Divisor	Prime Fact.	Check if
2	2	**[z]** is in [0 2 4]
3	3	**[z]** is in [0 3]
4	2^2	**[y][z]** **[yz]** is in [00 04 12 20 24 32 40 44 52] [0 2 4][0 4] [1 3 5][2]
5	5	[a] + [b] + [c] ... = 5; repeat if result >= 10; or the **Nearest Six Test**
10	2 × 3	**[z]** = [0]
11	11	[a] - [b] + [c] - [d] + ... = 0; repeat if result >= 10; or the **Nearest Six Test**
12	2^3	**[x][yz]** **[xyz]** is in [000 012 024 040 052 104 120 132 144 [0 2 4][00 12 24 40 52] 200 212 224 240 252 304 320 332 344 [1 3 5][04 20 32 44] 400 412 424 440 452 504 520 532 544]
13	3^2	**[yz]** is in [00 13 30 43]
20	2^2 × 3	**[yz]** is in [00 20 40]
24	2^4	**[w][x]** **[yz]** **[w][x]** **[yz]** **[wx][yz]** [0 2 4][0 4][52 24 00] [1 3 5][2][52 24 00] [00 04 12 20 24 32 40 44 52][52 24 00] [1 5][44 20] [3][44 20] [01 05 13 21 25 33 41 45 53][44 20] [2][40 12] [0 4][40 12] [02 10 14 22 30 34 42 50 54][40 12] [3][32 04] [1 5][32 04] [03 11 15 23 31 35 43 51 55][32 04]
30	2 × 3^2	**[yz]** is in [00 30]
40	2^3 3	**[x][yz]** **[xy][z]** **[xyz]** is in [000 040 120 [0 2 4][00 40] [00 04 12 20 24 32 40 44 52][0] 200 240 320 [1 3 5][20] 400 440 520]
43	3^3	**[x][yz]** **[xy][z]** **[xyz]** is in [000 043 130 213 [0 3][43 00] [00 13 30 43][0] 300 343 430 513] [1 4][30] [04 21 34 51][3] [2 5][13]
52	2^5	**[v][wx]** **[yz]** **[v][wx]** **[yz]** [0 2 4][00 12 24 40 52][52 00] [1 3 5][04 20 32 44][52 00] [01 13 25 41 53][44] [05 21 33 45][44] [02 14 30 42 54][40] [10 22 34 50][40] [03 15 31 43 55][32] [11 23 35 51][32] [04 20 32 44][24] [00 12 24 40 52][24] [05 21 33 45][20] [01 13 25 41 53][20] [10 22 34 50][12] [02 14 30 42 54][12] [11 23 35 51][04] [03 15 31 43 55][04]
100	2^2 × 3^2	**[yz]** = [00]

Sezimal Divisibility Rules

Nearest Six Test for 5, 11, 15, 21 and all divisors ending in 5 or 1, and so all other primes

*Considering the number to be tested as **[abcd...wxyz]**, where **[abcd...]** represent the first digits of the number, and **[...wxyz]** the last digits — Adapted from this Reddit post [Seximal divisibility tests]*

Divisor	Rule
5	**[a] + [b] + [c] ... = 5**
	Nearest Six Test
14	check 2, check 5
23	check 3, check 5
32	check 4, check 5
41	**Nearest Six Test**
50	check 10, **[...wxy]** check 5
15	**Nearest Six Test**
34	check 2, check 15
53	check 3, check 15
25	**Nearest Six Test**
54	check 2, check 25

Divisor	Rule
11	**[a] - [b] + [c] - [d] ... = 0**
	Nearest Six Test
22	check 2, check 11
33	check 3, check 11
44	check 4, check 11
55	check 5, check 11
110	check 10, **[...wxy]** check 11
121	**Nearest Six Test**
21	**Nearest Six Test**
42	check 2, check 21

Nearest Six Test — for all divisors ending in 5 and 1

For divisors ending in 5		For divisors ending in 1
[abc...]5	**divisor**	[abc...]1
[abc...] + 1	**Nearest Six**	[abc...]
[...wxy] + ([**nearest six**] × [z])	**result**	[...wxy] - ([**nearest six**] × [z])
if **result** > **divisor**, repeat the step above using **number** = **result**		
the original **number** is divisible by **divisor** when **result** = 0 *OR* **result** = **divisor**		

Test	Divisor	Nearest Six	Divisor	Test
[...wxy] + [z] is in [0 5]	5	1	11	[...wxy] - [z] is in [0 11]
[...wxy] + (2 × [z]) is in [0 15]	15	2	21	[...wxy] - (2 × [z]) is in [0 21]
[...wxy] + (3 × [z]) is in [0 25]	25	3	31	[...wxy] - (3 × [z]) is in [0 31]
[...wxy] + (4 × [z]) is in [0 35]	35	4	*41*	[...wxy] - (4 × [z]) is in [0 41]
[...wxy] + (5 × [z]) is in [0 45]	45	5	51	[...wxy] - (5 × [z]) is in [0 51]
[...wxy] + (10 × [z]) is in [0 55]	*55*	10	101	[...wxy] - (10 × [z]) is in [0 101]

From the list above, only 41 and 55 are not primes

Sezimal Divisibility Rules

Applying the Nearest Six Test

Considering the number to be tested 54'352'155, see if it is divisible by 5, 11, 15, 21, 25, 31, 35, 41;

5 × 11 × 15 × 21 × 25 × 31 = 54'352'155

5	11
5 + 4 + 3 + 5 + 2 + 1 + 5 + 5 = 50; 5 + 0 = ***5***	5 − 4 + 3 − 5 + 2 − 1 + 5 − 5 = ***0***
5 - Nearest Six = 1	**11 - Nearest Six = 1**
5'435'215 + 5 = 5'435'22***4***	5'435'215 − 5 = 5'435'21***0***
543'522 + 4 = 543'53***0***	543'521 − 0 = 543'52***1***
54'353 + 0 = 54'35***3***	54'352 − 1 = 54'35***1***
5435 + 3 = 544***2***	5435 − 1 = 543***4***
544 + 2 = 55***0***	543 − 4 = 53***5***
55 + 0 = 5***5***	53 − 5 = 4***4***
5 + 5 = 1***4***	4 − 4 = ***0***
1 + 4 = ***5***	∴ 54'352'155 **is divisible by 11**
∴ 54'352'155 **is divisible by 5**	
15 - Nearest Six = 2	**21 - Nearest Six = 2**
5'435'215 + (5 × 2) = 5'435'215 + 14 = 5'435'23***3***	5'435'215 − (5 × 2) = 5'435'215 − 14 = 5'435'20***1***
543'523 + (3 × 2) = 543'523 + 10 = 543'53***3***	543'520 − (1 × 2) = 543'520 − 2 = 543'51***4***
54'353 + (3 × 2) = 54'353 + 10 = 54'40***3***	54'351 − (4 × 2) = 54'351 − 12 = 54'33***5***
5440 + (3 × 2) = 5440 + 10 = 545***0***	5433 − (5 × 2) = 5433 − 14 = 541***5***
545 + (0 × 2) = 545 + 0 = 54***5***	541 − (5 × 2) = 541 − 14 = 52***3***
54 + (5 × 2) = 54 + 14 = 11***2***	52 − (3 × 2) = 52 − 10 = 4***2***
11 + (2 × 2) = 11 + 4 = ***15***	4 − (2 × 2) = 4 − 4 = ***0***
∴ 54'352'155 **is divisible by 15**	∴ 54'352'155 **is divisible by 21**
25 - Nearest Six = 3	**31 - Nearest Six = 3**
5'435'215 + (5 × 3) = 5'435'215 + 23 = 5'435'24***2***	5'435'215 − (5 × 3) = 5'435'215 − 23 = 5'435'15***2***
543'524 + (2 × 3) = 543'524 + 10 = 543'53***4***	543'515 − (2 × 3) = 543'515 − 10 = 543'50***5***
54'353 + (4 × 3) = 54'353 + 20 = 54'41***3***	54'350 − (5 × 3) = 54'350 − 23 = 54'32***3***
5441 + (3 × 3) = 5441 + 13 = 545***4***	5432 − (3 × 3) = 5432 − 13 = 541***5***
545 + (4 × 3) = 545 + 20 = 100***5***	541 − (5 × 3) = 541 − 23 = 51***4***
100 + (5 × 3) = 100 + 23 = 12***3***	51 − (4 × 3) = 51 − 20 = **31**
12 + (3 × 3) = 12 + 13 = **25**	∴ 54'352'155 **is divisible by 31**
∴ 54'352'155 **is divisible by 25**	
35 - Nearest Six = 4	**41 - Nearest Six = 4**
5'435'215 + (5 × 4) = 5'435'215 + 32 = 5'435'25***1***	5'435'215 − (5 × 4) = 5'435'215 − 32 = 5'435'14***3***
543'525 + (1 × 4) = 543'525 + 4 = 543'53***3***	543'514 − (3 × 4) = 543'514 − 20 = 543'45***4***
54'353 + (3 × 4) = 54'353 + 20 = 54'41***3***	54'345 − (4 × 4) = 54'345 − 24 = 54'32***1***
5441 + (3 × 4) = 5441 + 20 = 550***1***	5432 − (1 × 4) = 5432 − 4 = 542***4***
550 + (1 × 4) = 550 + 4 = 55***4***	542 − (4 × 4) = 542 − 24 = 51***4***
55 + (4 × 4) = 55 + 24 = 12***3***	51 − (4 × 4) = 51 − 24 = 23
12 + (3 × 4) = 12 + 20 = **32**	∴ 54'352'155 **is not divisible by 41**
∴ 54'352'155 **is not divisible by 35**	

Sezimal Divisibility Rules

Rules for powers of 2

*Considering the number to be tested as **[abcd...wxyz]**, where **[abcd...]** represent the first digits of the number, and **[...wxyz]** the last digits*

Divisor	Prime Fact.	Check if
2	2	**[z]** is in [0 2 4]
4	2^2	**[y][z]** **[yz]** is in [00 04 12 20 24 32 40 44 52] [0 2 4][0 4] [1 3 5][2]
12	2^3	**[x][yz]** **[xyz]** is in [000 012 024 040 052 104 120 132 144 [0 2 4][00 12 24 40 52] 200 212 224 240 252 304 320 332 344 [1 3 5][04 20 32 44] 400 412 424 440 452 504 520 532 544]
24	2^4	**[w][x] [yz]** **[w][x] [yz]** **[wx][yz]** [0 2 4][0 4][52 24 00] [1 3 5][2][52 24 00] [00 04 12 20 24 32 40 44 52][52 24 00] [1 5][44 20] [3][44 20] [01 05 13 21 25 33 41 45 53][44 20] [2][40 12] [0 4][40 12] [02 10 14 22 30 34 42 50 54][40 12] [3][32 04] [1 5][32 04] [03 11 15 23 31 35 43 51 55][32 04]
52	2^5	**[v]** **[wx][yz]** **[v]** **[wx][yz]** [0 2 4][00 12 24 40 52][52 00] [1 3 5][04 20 32 44][52 00] [01 13 25 41 53][44] [05 21 33 45][44] [02 14 30 42 54][40] [10 22 34 50][40] [03 15 31 43 55][32] [11 23 35 51][32] [04 20 32 44][24] [00 12 24 40 52][24] [05 21 33 45][20] [01 13 25 41 53][20] [10 22 34 50][12] [02 14 30 42 54][12] [11 23 35 51][04] [03 15 31 43 55][04]
144	2^{10}	**[uv]** **[wx][yz]** **[uv]** **[wx][yz]** [00 04 12 [00 24 52][00] [01 05 13 [20 44][00] 20 24 32 [11 35][04] 21 25 33 [03 31 55][04] 40 44 52] [22 50][12] 41 45 53] [14 42][12] [05 33][20] [01 25 53][20] [20 44][24] [12 40][24] [03 31 55][32] [23 51][32] [14 42][40] [10 34][40] [01 25 53][44] [21 45][44] [12 40][52] [04 32][52]
		[uv] **[wx][yz]** **[uv]** **[wx][yz]** [02 10 14 [12 40][00] [03 11 15 [04 32][00] 22 30 34 [23 51][04] 23 31 35 [15 43][04] 42 50 54] [10 34][12] 43 51 55][02 30 54][12] [21 45][20] [13 41][20] [04 32][24] [00 24 52][24] [15 43][32] [11 35][32] [02 30 54][40] [22 50][40] [13 41][44] [05 33][44] [00 24 52][52] [20 44][52]

Sezimal Divisibility Rules

Rules for powers of 3

*Considering the number to be tested as **[abcd...wxyz]**, where **[abcd...]** represent the first digits of the number, and **[...wxyz]** the last digits*

Divisor	Prime Fact.	Check if
3	3	**[z]** is in [0 3]
13	3^2	**[yz]** is in [00 13 30 43]
43	3^3	**[x][yz]** [0 3][43 00] [1 4][30] [2 5][13] **[xy][z]** [00 13 30 43][0] [04 21 34 51][3] **[xyz]** is in [000 043 130 213 300 343 430 513]
213	3^4	**[wx][yz]** [00 13 30 43][00] [02 15 32 45][13] [04 21 34 51][30] [10 23 40 53][43]
1043	3^5	**[v]** **[wx][yz]** [0 3][00 43][00] [32][13] [21][30] [10 53][43] **[v]** **[wx][yz]** [1 4] [30][00] [15][13] [04 51][30] [40][43] **[v]** **[wx][yz]** [2 5] [13][00] [02 45][13] [34][30] [23][43]
3213	3^{10}	**[uv][wx][yz]** [00 13 30 43][00][00] [02 15 32 45][13][00] [04 21 34 51][30][00] [10 23 40 53][43][00] **[uv][wx][yz]** [05 22 35 52][02][13] [11 24 41 54][15][13] [00 13 30 43][32][13] [02 15 32 45][45][13] **[uv][wx][yz]** [01 14 31 44][04][30] [03 20 33 50][21][30] [05 22 35 52][34][30] [11 24 41 54][51][30] **[uv][wx][yz]** [10 23 40 53][10][43] [12 25 42 55][23][43] [01 14 31 44][40][43] [03 20 33 50][53][43]

Written by **Ari Caldeira**

Shastadari Units
Calculator App
Calendar App
Clock App

Revisions

ISO–213'214–12–43 2026-08-27 — **SYM**–213'214–12–52 — **DCC**–213'214–04–32 — **ADC**–213'214♒▽♂

- added the patterns for the powers of 2 and 3 up to the 10th power;
- added examples for applying the Nearest Six Test;
- small changes in formatting;