EXAM GURU

"SUCCESS MATTERS"

# Concept of Divisibility rules form 1 to 30

The concept of divisibility rule is very important to know the real power of numbers. After knowing all the concept of divisibility rule students convert their long answer into a short and simple way. In the given table GURU JI try to explain all rule of divisibility rule in a short and simple manner.

| Divisor | Divisibility condition | Examples |
|---|---|---|
| 1 | Any integer is completely divisible by 1. | 1, 2, 3, 4, 5, 6……∞ is divisible by 1. |
| 2 | If the last digit of a number is even (0, 2, 4, 6, or 8). then the whole number is completely divisible by 2 | 12, 234, 3456, 5432, 54678 …… many more |
| 3 | If the sum of the digits of any number is divisible by 3 then the whole number is completely divisible by 3. | 6579 → 6 + 5 + 7 + 9 = 27 and 21636 → 2 + 1 + 6 + 3 + 6 = 18 it is clear that both the number is completely divisible by 3. |
| 4 | If the last two digits of a number is divisible by 4 then the whole number is completely divisible by 4. | 234560, 5677854324, 76876312492, …… given numbers is completely divisible by 4. |
| 5 | If the unit digit (last digit)of a number are 0 or 5 that type of number is completely divisible by 5. | 234560, 5677854325, 76876312495, …… given numbers is completely divisible by 5. |
| 6 | If a number is divisible by 2 and by 3 that type of number is completely divisible by 6. | 24, 420, 8466 hence the number is divisible by 6. |
| | If power of 2 is an odd number and that number is divide by 6 then the remainder always come 2. | $2^3, 2^5, 2^{27}, 2^{59}$ … … .. |
| | If power of 2 is an even number and that number is divide by 6 then the remainder always come 4. | $2^2, 2^{46}, 2^{58}, 2^{68}$ … … .. |
| 7 | If u went to divide a six digit number like (111111, 222222, 333333, 434343, 565656 | 787878÷ 7 = (112554× 7) it means after divide by 7 number is completely divisible. |

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| | …… and many more number of this type) by 7 always you get the remainder "ZERO". | |
| | Adding 5 times the last digit to the rest gives a multiple of 7. | 952 → 95 + (2 × 5) → 105 → 15 × 7. |
| | Subtracting 2 times the last digit from the rest gives a multiple of 7. | 672 → 67 − (2 × 2) → 63→9 × 7. |
| | Subtracting 9 times the last digit from the rest gives a multiple of 7. | 483 →48 − (3 × 9) → 21 → 7 × 3. |
| | Adding the last two digits to twice the rest gives a multiple of 7. | 278208 → 08 + (2782 × 2) → 5572→ 72 + (55 × 2) → 182 → 82 + (1×2) → 84 → 12 × 7 |
| | Multiply each digit (from right to left) by the digit in the corresponding position in this pattern (from left to right): 1, 3, 2, −1, −3, −2. Adding the results gives a multiple of 7. | 483595: (4 × (−2)) + (8 × (−3)) + (3 × (−1)) + (5 × 2) + (9 × 3) + (5 × 1) = 7. |
| **8** | If the hundreds digit of any number is even and the number formed by the last two digits must be divisible by 8 this type of number is completely divisible by 8. | 648 → 6 is an even number and last two digit is 48 which is divisible by 8 so complete number is also divisible by 8.<br>824 → 8 is an even number and last two digit is 24 which is divisible by 8 so complete number is also divisible by 8. |
| | Add the last digit to twice the rest. The result must be divisible by 8. | 1656→ (165 × 2) + 6 = 336→(33 × 2) + 6→72 |
| | If the last three digits of any number are divisible by 8 then the whole number is also completely divisible by 8. | 56728, 678640, 343211944 |
| | The sum of the ones digit, double the tens digit, and four times the hundreds digit is divisible by 8. | 152→ 4 × 1 + 5 × 2 + 2 × 1 = 16 |
| **9** | The sum of the digits must be divisible by 9. | 2,8872 → 2 + 8 + 8 + 7 + 2 = 27. |
| | Subtracting 8 times the last digit from the rest gives a multiple of 9. | 13455→1345 – (5 x 8) = 1345 - 40 = 1305→130 – (5 x 8) = 90. |
| **10** | If the last digit of a number is 0. | 2340,8776540,81357690 |

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| | If a number is divisible by 2 and by 5 then this type of number is completely divisible by 10. | 130→ it is divisible by 2 and by 5 |
| **11** | Form the alternating sum of the even places and odd places digits or if the difference of the sum of digits at odd position and sum of digits at even position in a number is 0 or 11 or a multiple of 11 then this type of number is completely divisible by 11. | 295548 →(8 + 5 + 9) – (4 + 5 + 2) = 22 – 11 = 11 |
| | Add the digits in blocks of two from right to left. The result must be divisible by 11. | 295548 →(29+55+48) = 132 →(1+32) = 33<br>1529462→ (1 + 52 + 94 + 62) → 209 → (2 + 09) = 11 |
| | Subtract the last digit from the rest. The result must be divisible by 11. | 627→ 62 − 7 = 55 = 5 × 11. |
| | Add 10 times the last digit to the rest. The result must be divisible by 11. | 627→ 62 + 7 × 10 = 132→ 13 + 2 × 10 = 33 = 3 × 11. |
| **12** | It is divisible by 3 and by 4. | 324→ it is divisible by 3 and by 4. |
| | Subtract the last digit from twice the rest. The result must be divisible by 12. | 324→ (32 × 2) − 4 = 60 = 5 × 12. |
| **13** | Form the alternating sum of blocks of three from right to left. The result must be divisible by 13. | 593931→ 931 − 593 = 338 = 13 × 26 |
| | Add 4 times the last digit to the rest. The result must be divisible by 13. | 637 → 63 + (7 × 4) = 91 → 7 × 13. |
| | Subtract the last two digits from four times the rest. The result must be divisible by 13. | 923→ 9 × 4 − 23 = 13. |
| | Subtract 9 times the last digit from the rest. The result must be divisible by 13. | 637→ 63 - 7 × 9 = 0. |
| **14** | It is divisible by 2 and by 7. | 224→ it is divisible by 2 and by 7. |
| | Add the last two digits to twice the rest. The result must be divisible by 14. | 364→ 3 × 2 + 64 = 70 = 5 × 14<br>1,764→ 17 × 2 + 64 = 98 =7 × 14. |
| **15** | It is divisible by 3 and by 5. | 390→ it is divisible by 3 and by 5. |
| **16** | If the thousands digit is even, the number formed by the last three digits must be | 254176 → 176. |

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| | divisible by 16. | |
| | If the thousands digit is odd, the number formed by the last three digits must be 8 times an odd number. | 3408 → 408 = 8 x 51. |
| | Add the last two digits to four times the rest. The result must be divisible by 16. | 176 → (1 × 4) + 76 = 80.<br>1168 → (11 × 4) + 68 = 112. |
| | The last four digits must be divisible by 16. | 157648 → 7648 = 478 × 16. |
| | The sum of the ones digit, double the tens digit, four times the hundreds digit, and eight times the thousands digit is divisible by 16. | 157648 → (7 × 8) + (6 × 4) + (4 × 2) + 8 = 96 |
| **17** | Subtract 5 times the last digit from the rest. | 221 → 22 – (1 × 5) = 17. |
| | Add 12 times the last digit to the rest. | 221 → 22 + (1 x 12) = 22 + 12 = 34 = 17 x 2 |
| | Subtract the last two digits from two times the rest. | 4675 → (46 × 2) − 75 = 17. |
| | Add 2 times the last digit to 3 times the rest. Drop trailing zeroes. | 4675 → (467 × 3) + (5 × 2) = 1411 → 238 → (23 × 3) + (8 × 2) = 85. |
| **18** | It is divisible by 2 and by 9. | 342 → it is divisible by 2 and by 9. |
| **19** | Add twice the last digit to the rest. | 437 → 43 + (7 × 2) = 57. |
| | Add 4 times the last two digits to the rest. | 6935 → 69 + (35 × 4) = 209. |
| **20** | It is divisible by 10, and the tens digit is even. | 360 → is divisible by 10, and 6 is even. |
| | The last two digits are 00, 20, 40, 60 or 80. | 480 → 80 |
| | It is divisible by 4 and 5. | 480 → it is divisible by 4 and 5. |
| **21** | Subtracting twice the last digit from the rest gives a multiple of 21. | 168 → 16 – (8 × 2) = 0. |
| | Suming 19 times the last digit to the rest gives a multiple of 21. | 168 → 16 + (8 x 19) = 16 + 152 = 168 = 21 x 8 |
| | It is divisible by 3 and by 7. | 231 → it is divisible by 3 and by 7. |
| **22** | It is divisible by 2 and by 11. | 352 → it is divisible by 2 and by 11. |

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| **23** | Add 7 times the last digit to the rest. | 3128 → 312 + (8 × 7) = 368 → 36 + 8 × 7 = 92. |
| | Add 3 times the last two digits to the rest. | 1725 → 17 + (25 × 3) = 92. |
| | Subtract 16 times the last digit from the rest. | 1012 → 101 – (2 x 16) = (101 – 32) = 69 = 23 x 3 |
| | Subtract twice the last three digits from the rest. | 2068965 → 2068 – (965 × 2) = 138. |
| **24** | It is divisible by 3 and by 8. | 552 → it is divisible by 3 and by 8. |
| **25** | The last two digits are 00, 25, 50 or 75. | 134250 → 50 is divisible by 25. |
| **26** | It is divisible by 2 and by 13. | 156 → it is divisible by 2 and by 13. |
| | Subtracting 5 times the last digit from 2 times the rest of the number gives a multiple of 26. | 1248 → (124 × 2) - (8 × 5) = 208 = 26 × 8 |
| **27** | Sum the digits in blocks of three from right to left. | 2644272 → 2 + 644 + 272 = 918 = 34 × 27. |
| | Subtract 8 times the last digit from the rest. | 621 → 62 – (1 × 8) = 54 = 2 × 27. |
| | Add 19 times the last digit from the rest. | 1026 → 102 + (6 x 19) = 102 + 114 = 216 = 27 x 8 |
| | Subtract the last two digits from 8 times the rest. | 6507 → (65 × 8) − 7 = 520 − 7 = 513 = 27 × 19. |
| **28** | It is divisible by 4 and by 7. | 140 → it is divisible by 4 and by 7. |
| **29** | Add three times the last digit to the rest. | 1827→ 182 + 7 × 3 = 203 → 20 + 3 × 3 = 29. |
| | Add 9 times the last two digits to the rest. (Works because 899 is divisible by 29.) | 5510 → 55 + 10 × 9 = 145 = 5 × 29. |
| | Subtract twice the last three digits from the rest. (Works because 2,001 is divisible by 29.) | 2086956 → 2086 – (956 × 2) = 174 = 29 × 6. |
| **30** | It is divisible by 3 and by 10. | 270→ it is divisible by 3 and by 10. |

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