WILLIAM D. LAW, JR. LEARNING COMMONS

Rules of Divisibility

Divisible by:	Test	Example
2	Last digit is even (=0, 2, 4, 6, or 8)	3,489,076: Last digit $= 6$ **(even)** $6 = 3 \times \mathbf{2}$
3	1. The sum of the digits of the number is divisible by 3 2. Can repeat until sum is 2-digit number that is/not recognizably divisible by 3	16,499,205,854,376: $1+6+4+9+9+2+0+5$ $+8+5+4+3+7+6 = 69$ $6+9 = 15$ $15 = 5 \times \mathbf{3}$
4	1. Last 2 digits are divisible by 4 2. Tens digit is even and the ones digit $= 0, 4,$ or 8 3. Tens digit is odd and the ones digit $= 2$ or 6	358,912: 1. Last 2 digits $= 12$ $12 = 3 \times \mathbf{4}$ 2. Tens digit $= 1$, **odd** & ones digit $= \mathbf{2}$
5	Last digit is 5 or 0	3,783,953,495: Last digit $= \mathbf{5}$
6	Divisible by 2 (even) **and** 3	57,342 Last digit $= \mathbf{2}$ (even) **and** $5+7+3+4+2 = 21$, divisible by $\mathbf{3}$
7	Double the last digit, then subtract the result from the rest of the digits. Repeat for larger numbers until result is a 2-digit number; 2-digit number is divisible by 7	357: $2 \times \mathbf{7} = 14$ (double the last digit) $35 - 14 = 21$ (subtract) $21 = 3 \times \mathbf{7}$
8	1. Hundreds digit even: last 2 digits divisible by 8 2. Hundreds digit odd: add 4 to the last 2 digits and sum is divisible by 8 3. Last 3 digits divisible by 8	986,104: 1. Hundreds digit $= 1$, **odd** $04 + 4 = \mathbf{8}$ 2. Last 3 digits $= 104$ $104 = 13 \times \mathbf{8}$
9	The sum of the digits of the number is divisible by 9	24,343,785: $2+4+3+4+3+7+8+5 = 36$ $36 = 4 \times \mathbf{9}$
10	Last digit is 0	34,789,013,467,593,487,540: Last digit $= \mathbf{0}$
11	1. Alternately subtract, then add the digits from L to R; the sum is divisible by 11 2. Subtract the last digit from the rest	918,082: 1. $9-1+8-0+8-2 = 22$ $22 = 2 \times \mathbf{11}$ 627: 2. $62 - 7 = 55$ $55 = 5 \times \mathbf{11}$

This instructional aid was prepared by the Tallahassee Community College Learning Commons.

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12	Divisible by 3 **and** 4	324: $3 + 2 + 4 = 9$, divisible by **3 and** Last 2 digits $= 24$, divisible by **4**
13	Add 4 times the last digit to the rest of the digits. Repeat until sum is/not recognizably divisible by 13	637: $63 + (7 \times 4) = 91$ $9 + (1 \times 4) = \mathbf{13}$
14	Divisible by 2 **and** 7	182: Last digit $= 2$ (even), divisible by **2 and** $2 \times 2 = 4$ (double the last digit) $18 - 4 = 14$, divisible by **7**
15	Divisible by 3 **and** 5	345: $3 + 4 + 5 = 12$, divisible by **3 and** Last digit $= 5$, divisible by **5**
16	1. Thousands place even: take the last 3 digits 2. Thousands place odd: add 8 to the last 3 digits 3. With the 3-digit number: multiply hundreds digit by 4, then add the last 2 digits	254,176: Thousands digit $= 4$, so 176 $(1 \times 4) + 76 = 80$ $80 = 5 \times \mathbf{16}$ 693,408: Thousands digit $= 3$, so $408 + 8 = 416$ $(4 \times 4) + 16 = 32$ $32 = 2 \times \mathbf{16}$
17	Subtract 5 times the last digit from the rest	221: $22 - (1 \times 5) = \mathbf{17}$
18	Divisible by 2 **and** 9	35,406: Last digit $= 2$ (even), divisible by **2 and** $3 + 5 + 4 + 0 + 6 = 18$, divisible by **9**
19	Add twice the last digit to the rest	437: $43 + (7 \times 2) = 57$ $5 + (7 \times 2) = \mathbf{19}$
20	Divisible by 10 and the tens digit is even	360: Last digit $=$ **0 and** tens digit $= 6$ is **even**
25	Last 2 digits are 25, 50, or 75	895,438,675: Last 2 digits $=$ **75** 7,325: Last 2 digits $=$ **25**
50	Last 2 digits are 50 or 00	686,352,400: Last 2 digits $=$ **00** 327,950: Last 2 digits $=$ **50**