Divisibility Rules

Easily test if one number can be evenly divided by another

Divisible By

"Divisible By" means "when you divide one number by another the result is a **whole number**"

Examples:

14 is divisible by 7, because 14÷7 = 2 **exactly**

But 15 is **not** divisible by 7, because 15÷7 = **2 $^1/_7$** (i.e., the result is **not** a whole number)

"Divisible by" and "can be evenly divided by" mean the same thing

The Divisibility Rules

These rules let you test if one number is divisible by another, without having to do too much calculation!

Divisible by:	If:	Examples:
2	The last digit is even (0,2,4,6,8)	12**8** is 12**9** is not
3	The sum of the digits is divisible by 3	381 (3+8+1=12, and 12÷3 = 4) **Yes** 217 (2+1+7=10, and 10÷3 = 3 $^1/_3$) **No**
4	The last 2 digits are divisible by 4	13**12** is (12÷4=3) 70**19** is not
5	The last digit is 0 or 5	17**5** is 80**9** is not

The Divisibility Rules (continued)

6	The number is divisible by both 2 *and* 3	114 (it is even, and 1+1+4=6 and 6÷3 = 2) **Yes** 308 (it is even, but 3+0+8=11 and 11÷3 = 3 $^2/_3$) **No**
7	If you double the last digit and subtract it from the rest of the number and the answer is: • **0**, or • **divisible by 7** (Note: you can apply this rule to that answer again if you want)	672 (Double 2 is 4, 67-4=63, and 63÷7=9) **Yes** 905 (Double 5 is 10, 90-10=80, and 80÷7=11 $^3/_7$) **No**
8	The last three digits are divisible by 8	109**816** (816÷8=102) **Yes** 216**302** (302÷8=37 $^3/_4$) **No**
9	The sum of the digits is divisible by 9 (Note: you can apply this rule to that answer again if you want)	1629 (1+6+2+9=18, and again, 1+8=9) **Yes** 2013 (2+0+1+3=6) **No**
10	The number ends in 0	22**0** is 22**1** is not
11	If you sum every second digit and then subtract all other digits and the answer is: • **0**, or • **divisible by 11**	1**3**6**4** ((3+4) - (1+6) = **0**) **Yes** 3**7**2**9** ((7+9) - (3+2) = **11**) **Yes** 2**5**1**76** ((5+7) - (2+1+6) = **3**) **No**
12	The number is divisible by both 3 *and* 4	648 (*By 3?* 6+4+8=18 and 18÷3=6 Yes. *By 4?* 48÷4=12 Yes) **Yes** 524 (*By 3?* 5+2+4=11, 11÷3= 3 $^2/_3$ No. Don't need to check by 4.) **No**