

Divisability Rules

b/c = because

Dividing by 2

1. All even numbers are divisible by 2. E.g., all numbers ending in 0, 2, 4, 6 or 8.

Dividing by 3

1. Add up all the digits in the number. *111, 111, 111 works b/c digits add up to 9, a multiple of 3*
2. Find out what the sum is. If the sum is divisible by 3, so is the number.
3. For example: 12123 ($1+2+1+2+3=9$) 9 is divisible by 3, therefore 12123 is too!

Dividing by 4

1. Are the last two digits in your number divisible by 4? *47388 works b/c 88 is a multiple of 4*
2. If so, the number is too!
3. For example: 358912 ends in 12 which is divisible by 4, thus so is 358912.

Dividing by 5

1. Numbers ending in a 5 or a 0 are always divisible by 5. *35 and 80 work b/c they end in 5 or 0*

Dividing by 6

1. If the Number is divisible by 2 and 3 it is divisible by 6 also. *72 works b/c it is divisible by both 2 and 3*

Dividing by 7 (2 Tests)

- Take the last digit in a number. *(see next page)*
- Double and subtract the last digit in your number from the rest of the digits.
- Repeat the process for larger numbers.
- Example: 357 (Double the 7 to get 14. Subtract 14 from 35 to get 21 which is divisible by 7 and we can now say that 357 is divisible by 7.)

NEXT TEST

- Take the number and multiply each digit beginning on the right hand side (ones) by 2, 6, 4, 5. Repeat this sequence as necessary.
- Add the products.
- If the sum is divisible by 7 - so is your number.
- Example: Is 2016 divisible by 7?
- $6(1) + 1(3) + 0(2) + 2(6) = 21$
- 21 is divisible by 7 and we can now say that 2016 is also divisible by 7.

Dividing by 8

1. This one's not as easy, if the last 3 digits are divisible by 8, so is the entire number. *39248 works b/c $248 \div 8 = 31$*
2. Example: 6008 - The last 3 digits are divisible by one, therefore, so is 6008.

Dividing by 9

1. Almost the same rule and dividing by 3. Add up all the digits in the number. *7137 works b/c $7+1+3+7=18$, a multiple of 9*
2. Find out what the sum is. If the sum is divisible by 9, so is the number.
3. For example: 43785 ($4+3+7+8+5=27$) 27 is divisible by 9, therefore 43785 is too

Dividing by 10

1. If the number ends in a 0, it is divisible by 10. *37890 works b/c it ends in 0*

* see rules for 7, 11, & 12 on following pages

Rule of 7

$$\begin{array}{r} 266 \\ - 12 \\ \hline \end{array}$$

14 is divisible by 7
so 266 is divisible by 7

5929 ?

yes, it is
a multiple of
7

$$\begin{array}{r} 8. \\ 5929 \\ - 18 \\ \hline \end{array}$$

$$\begin{array}{r} 574 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ \hline \end{array}$$

still too
big to
tell

works

Rule for 11 with 3 digits

* middle digit is the
sum of the outer digits

Examples of multiples of 11:

198	187	176	165
297	286	275	264
396	385	374	363
495	484		

Rule for 12

(similar to rule of 6)

* if the number is divisible by both 4 and 3

Example: 168 \leftarrow it works

- divisible by 3 b/c

$$1 + 6 + 8 = 15, \text{ and}$$

- divisible by 4 b/c

$$\underline{168} \quad 68 \text{ is divisible by } 4 \\ (4 \times 17 = 68)$$