Random Interesting Math Tricks (more importantly, how do they work)

HWW Math Club 11/28/2011

Does a number divide 2, 5, 10?

Devise a method to determine if some number, for instance 185924, is divisible by 2, 5, and 10 respectively.

Just look at the last digit!

Does a number divide 3, 9?

Devise a method to determine if some number, for instance 185924, is divisible by 3 and 9 respectively.

Add up the digits. It's divisible if the sum of digits is divisible.

Does a number divide 6, 15, 18, 45?

Devise a method to determine if some number, for instance 185924, is divisible by these numbers.

Combine the divisibility tests. If it's divisible by 2 and by 3, it's divisible by 6.

Does a number divide 11?

Devise a method to determine if some number, for instance 1362075, is divisible by 11.

Sum up alternating digits: 5-7+0-2+6-3+1 = 0.

Does a number divide 7 or 13?

Devise a method to determine if some number, for instance 10663786, is divisible by 7 or 13.

Sum up alternating triple digits: 786 – 663 + 10 = 133 which is divisible by 7 but not 13.

Last one is slightly different

If I have some money in the bank with compound interest of $n\%$ a year (compounded frequently), how long does it take for my money to double?

Divide it from 72. If it's 3%, it takes about 72/3 = 24 years to double.