* Grouping:
* Since 16 = 2 ^ 4, you group in pairs of 4
* Since 8 = 2 ^ 3, you group in pairs of 3
* Since 4 = 2 ^ 2, you group in pairs of 2
* This technique works with other numbers. For example, since 3 ^ 2 = 9, you can group in pairs of 2 to convert from Base to 3 to Base 9.
* To calculate decimals when converting bases, you multiply by the base instead of dividing and keep going until you get to 1. Ex: 0.125

0.125 \* 2 = 0.25

0.25 \* 2 = 0.5

0.5 \* 2 = 1

So the binary representation of 0.125 = 0.001 base 2

* Notice that when you convert to binary, the first bit changes every 1 time, the next bit changes every 2 times, the next bit changes every 4 times, and so on to 8, 16, 32, etc.
* Easy decimal shortcut: pretend the decimal isn’t there and figure out how many bits the binary number is.
* 0.011 = 2^3 bits = 8 bits.
* Write X / 8.
* Now add up the values of the 1’s in the number (1 \* 1) + (1\*2) = 3
* 3/8 is your answer

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* One’s compliment and two’s complement are simply a system to represent negative binary numbers
* N’ (one’s complement) = 2^n – 1 – P
* N is the number of bits, P is the positive number you wish to represent
* To make a positive binary # into a negative binary # just flip the bits for one’s complement.
* Addition of one’s complement numbers. If there is a carry-on at the end, add it to the sum.
* Overflow means the result cannot fit on four bits.
* Two’s complement
* Negative of N\* = 2^n – N
* Invert bits and add one.
* So one’s and two’s complement is the exact same thing except two’s complement adds one.
* If we know there is no overflow, you can ignore the carry on.
* One’s complement we add the carry on, two’s complement we ignore it.
* Binary coded decimals are signed with four bits. (Displaying digit display)
* 6-3-1-1 Code basically means the first bit is 1, second is 1, third is 3, fourth is six
* You can have any type of weighted code.
* Express 3 means calculate binary value for a number + 3
* 2 out of 5 means each digit means there are 2 1’s in every five bits.
* Look up grey code