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Practice on Number System

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Exercises

1. $1010 + 1101$
2. $1011 + 111$
3. $1111 - 1010$
4. $1110 - 101$
5. 1101×101
6. $1001 \div 101$
7. What is the biggest binary number you can write with 5 bits?
8. What is the biggest binary number you can write with n bits?
9. Roughly, how many bits do you need to write the number n in binary?
10. Write $\frac{3}{4}$ in binary, using a "binary point" 0.??.
11. Write $\frac{2}{3}$ in binary.
12. Which fractions recur infinitely in binary and which terminate?

Exercises

13. Convert the binary number 1101101111110101 to hex.
14. Convert the hex number $ABC7$ to binary.
15. In hex, $2BFC + 54A7$.
16. In hex, $AC74 - B3F$.
17. If a number has k digits in hex, how many digits (bits) does it have in binary?
18. If a number has k digits in decimal, roughly how many digits does it have in binary?
19. If a number has k digits base a, roughly how many digits does it have in base b?
20. Convert the following binary fractions to ordinary fractions.

    0.1000

    1.0001

    0.1111

    1.1111
21. Using 5 bits for the mantissa and 5 bits for the exponent, write the following numbers in twos complement binary.

    $\frac{5}{16}$ $\quad 101\frac{1}{4}$ $\quad \frac{1}{1024}$ $\quad -\frac{3}{512}$