В заданиях 3-5 проверять правильность вычисления переводом исходных данных и результатов в двоичную систему счисления. В задании 1д получить пять знаков после запятой в двоичном представлении.

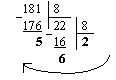
**Таблица 1. Наиболее важные системы счисления.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Двоичная (Основание 2) | Восьмеричная (Основание 8) | | Десятичная (Основание 10) | Шестнадцатиричная (Основание 16) | |
|  | триады |  | тетрады |
| 0 1 | 0 1 2 3 4 5 6 7 | 000 001 010 011 100 101 110 111 | 0 1 2 3 4 5 6 7 8 9 | 0 1 2 3 4 5 6 7 8 9 A B C D E F | 0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011 1100 1101 1110 1111 |

**Перевод целых десятичных чисел в недесятичную систему** счисления осуществляется последовательным делением десятичного числа на основание той системы, в которую оно переводится, до тех пор, пока не получится частное меньшее этого основания. Число в новой системе записывается в виде остатков деления, начиная с последнего.

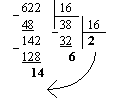
Пример.

а) Перевести 18110"8" с.с.



Результат: 18110 = 2658

б) Перевести 62210"16" с.с.



Результат: 62210 = 26E16

**Для преобразования в десятичную** используют следующую таблицу степеней основания

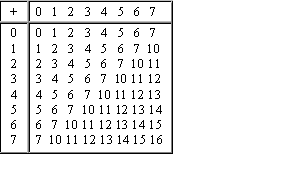
### Преобразование дробных десятичных чисел:

* Вначале переводится целая часть десятичной дроби;
* Затем дробная часть десятичной дроби умножается на основание системы счисления;
* В полученном произведении выделяется целая часть, которая принимается в качестве значения первого после запятой разряда числа в системе счисления;
* Алгоритм завершается, если дробная часть полученного произведения равна нулю или если достигнута требуемая точность вычислений. В противном случае вычисления продолжаются с предыдущего шага.

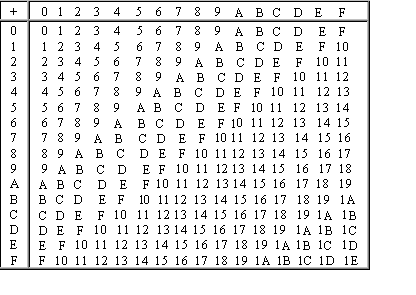
**Правила выполнения арифметических действий над двоичными числами** задаются таблицами двоичных сложения, вычитания и умножения.

|  |  |  |
| --- | --- | --- |
| Таблица двоичного сложения | Таблица двоичного вычитания | Таблица двоичного умножения |
| 0+0=0 0+1=1 1+0=1 1+1=10 | 0-0=0 1-0=1 1-1=0 10-1=1 | 00=0 01=0 10=0 11=1 |

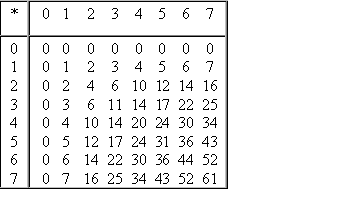
Сложение в восьмеричной системе



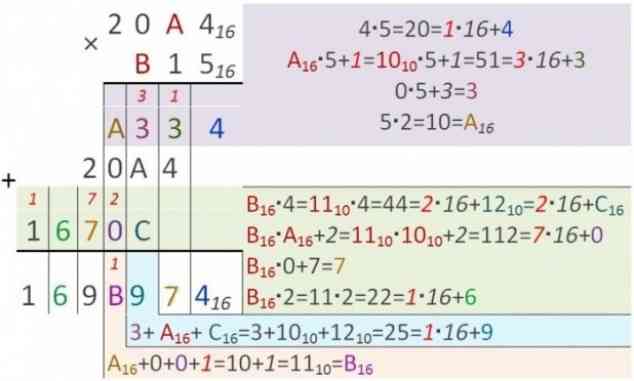
Сложение в шестнадцатиричной системе



Умножение в восьмеричной системе



Умножение в шестнадцатеричной системе



# 1. Перевести данное число из десятичной системы счисления в двоичную, восьмеричную и шестнадцатеричную системы счисления

**а)945(10)=1110110001(2)=1661(8)=3B1(16)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 945 | | 2 | |  | |  | |  | |  |  |  | |  | |  | |  | |
| 944 | | 472 | | 2 | |  | |  | |  |  |  | |  | |  | |  | |
| 1 | | 472 | | 236 | | 2 | |  | |  |  |  | |  | |  | |  | |
|  | | 0 | | 236 | | 118 | | 2 | |  |  |  | |  | |  | |  | |
|  | |  | | 0 | | 118 | | 59 | | 2 |  |  | |  | |  | |  | |
|  | |  | |  | | 0 | | 58 | | 29 | 2 |  | |  | |  | |  | |
| |  | | --- | |  | | |  | |  | |  | | 1 | | 28 | 14 | 2 | |  | |  | |  | |
|  | |  | |  | |  | |  | | 1 | 14 | 7 | | 2 | |  | |  | |
|  | |  | |  | |  | |  | |  | 0 | 6 | | 3 | | 2 | |  | |
|  | |  | |  | |  | |  | |  |  | 1 | | 2 | | 1 | | 2 | |
|  | |  | |  | |  | |  | |  |  |  | | 1 | | 0 | | 0 | |
|  | |  | |  | |  | |  | |  |  |  | |  | | 1 | | 0 | |
| 512 | 256 | | 128 | | 64 | | 32 | | 16 | | 8 | | 4 | | 2 | | 1 | |  | |
| 1 | 1 | | 1 | | 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | 1 | |  | |
| 512 | 256 | | 128 | |  | | 32 | | 16 | |  | |  | |  | | 1 | | 945 | |

|  |  |  |  |
| --- | --- | --- | --- |
| 945,000 | 8,000 |  |  |
| 944,000 | 118,000 | 8,000 |  |
| 1,000 | 112,000 | 14,000 | 8,000 |
|  | 6,000 | 8,000 | 1,000 |
|  |  | 6,000 | 1,000 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4096 | 512 | 64 | 8 | 1 |
|  | 1,000 | 6,000 | 6,000 | 1,000 |
| 945 | 512 | 384 | 48 | 1 |

|  |  |  |
| --- | --- | --- |
| 945,000 | 16,000 |  |
| 944,000 | 59,000 | 16,000 |
| 1,000 | 48,000 | 3,000 |
|  | 11,000 |  |
|  |  |  |
|  | **B** |  |
| 3,000 | **11,000** | 1,000 |

|  |  |  |  |
| --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 |
|  | 3 | 11 | 1 |
| 945 | 768 | 176 | 1 |

**б)85 (10)=1010101(2)=125(8)= 55(16)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 85 | 2 |  |  |  |  |  |  |
| 84 | 42 | 2 |  |  |  |  |  |
| 1 | 42 | 21 | 2 |  |  |  |  |
|  | 0 | 20 | 10 | 2 |  |  |  |
|  |  | 1 | 10 | 5 | 2 |  |  |
|  |  |  | 0 | 4 | 2 | 2 |  |
|  |  |  |  | 1 | 2 | 1 | 2 |
|  |  |  |  |  | 0 | 0 | 0 |
|  |  |  |  |  |  | 1 | 0 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  |  | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  |
|  |  |  | 64 |  | 16 |  | 4 |  | 1 | 85 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 85,000 | | 8,000 | |  | |
| 80,000 | | 10,000 | | 8,000 | |
| 5,000 | | 8,000 | | 1,000 | |
|  | | 2,000 | |  | |
| 4096 | 512 | | 64 | | 8 | | 1 |
|  |  | | 1,000 | | 2,000 | | 5,000 |
| 85 | 0 | | 64 | | 16 | | 5 |

|  |  |
| --- | --- |
| 85,000 | 16,000 |
| 80,000 | 5,000 |
| 5,000 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 |
|  |  | 5 | 5 |
| 85 | 0 | 80 | 5 |

**в)444,125 (10)= 110111100,001(2)=674.1(8)=1BC.2(16)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 444 | 2 |  |  |  |  |  |  |  |  |
| 444 | 222 | 2 |  |  |  |  |  |  |  |
| 0 | 222 | 111 | 2 |  |  |  |  |  |  |
|  | 0 | 110 | 55 | 2 |  |  |  |  |  |
|  |  | 1 | 54 | 27 | 2 |  |  |  |  |
|  |  |  | 1 | 26 | 13 | 2 |  |  |  |
|  |  |  |  | 1 | 12 | 6 | 2 |  |  |
|  |  |  |  |  | 1 | 6 | 3 | 2 |  |
|  |  |  |  |  |  | 0 | 2 | 1 | 2 |
|  |  |  |  |  |  |  | 1 | 0 | 0 |
|  |  |  |  |  |  |  |  | 1 | 0 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |  |
|  | 256 | 128 |  | 32 | 16 | 8 | 4 |  |  | 444 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 0,125 | \* | 2 | = | 0,250 | 0 |
| 0,250 | \* | 2 | = | 0,500 | 0 |
| 0,500 | \* | 2 | = | 1,000 | 1 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 444,000 | | 8,000 | |  | |
| 440,000 | | 55,000 | | 8,000 | |
| 4,000 | | 48,000 | | 6,000 | |
|  | | 7,000 | |  | |
| 4096 | 512 | | 64 | | 8 | | 1 | , | 0,125 | 0,01563 | 0,00195 |
|  |  | | 6,000 | | 7,000 | | 4,000 |  | 1 |  |  |
| 444 | 0 | | 384 | | 56 | | 4 |  | 0,125 |  | 0,125 |

|  |  |  |
| --- | --- | --- |
| 444,000 | 16,000 |  |
| 432,000 | 27,000 | 16,000 |
| 12,000 | 16,000 | 1,000 |
|  | 11,000 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0,125 | \* | 16 | = | 2,000 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 |
|  | 1 | 11 | 12 |  | 2 |
| 444 | 256 | 176 | 12 |  | 0,125 |

**г)989,375 (10)= 111 10111 01 ,011(2)=1735.3(8)=3DD.6(16)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 989 | 2 |  |  |  |  |  |  |  |  |  |
| 988 | 494 | 2 |  |  |  |  |  |  |  |  |
| 1 | 494 | 247 | 2 |  |  |  |  |  |  |  |
|  | 0 | 246 | 123 | 2 |  |  |  |  |  |  |
|  |  | 1 | 122 | 61 | 2 |  |  |  |  |  |
|  |  |  | 1 | 60 | 30 | 2 |  |  |  |  |
| |  | | --- | |  | |  |  |  | 1 | 30 | 15 | 2 |  |  |  |
|  |  |  |  |  | 0 | 14 | 7 | 2 |  |  |
|  |  |  |  |  |  | 1 | 6 | 3 | 2 |  |
|  |  |  |  |  |  |  | 1 | 2 | 1 | 2 |
|  |  |  |  |  |  |  |  | 1 | 0 | 0 |
|  |  |  |  |  |  |  |  |  | 1 |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | | | | 128 | | | 64 | | | | 32 | | 16 | | | | 8 | | | 4 | 2 | | 1 | |  | |
| 1 | 1 | | | | 1 | | | 1 | | | | 0 | | 1 | | | | 1 | | | 1 | 0 | | 1 | |  | |
| 512 | 256 | | | | 128 | | | 64 | | | |  | | 16 | | | | 8 | | | 4 |  | | 1 | | 989 | |
| 0,375 | | \* | | | | 2 | | | | |  | | --- | | = | | | | | | | 0,750 | | | |
| 0,750 | | \* | | | | 2 | | | | = | | | | | | 1,500 | | | |
| 0,500 | | \* | | | | 2 | | | | = | | | | | | 1,000 | | | |
|  | |  | | | |  | | | |  | | | | | |  | | | |
| 989,000 | | | | 8,000 | | | | |  | | | |  | | | |
| 984,000 | | | | 123,000 | | | | | 8,000 | | | |  | | | |
| 5,000 | | | | 120,000 | | | | | 15,000 | | | | 8,000 | | | |
|  | | | | 3,000 | | | | | 8,000 | | | | 1,000 | | | |
|  | | | |  | | | | | 7,000 | | | | 1,000 | | | |
| 4096 | | | 512 | | | | 64 | | | | 8 | | | | 1 | | | | , | | | | 0,125 | | 0,01563 | | 0,00195 | |
|  | | | 1,000 | | | | 7,000 | | | | 3,000 | | | | 5,000 | | | |  | | | | 3 | |  | |  | |
| 989 | | | 512 | | | | 448 | | | | 24 | | | | 5 | | | |  | | | | 0,375 | |  | | 0,375 | |
|  | | |  | | | |  | | | |  | | | |  | | | | 989,3750 | | | |  | |  | |  | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 989,000 | | 16,000 | |  | |
| 976,000 | | 61,000 | | 16,000 | |
| 13,000 | | 48,000 | | 3,000 | |
|  | | 13,000 | |  | |
| 3 | | D | | D | |
| 0,375 | \* | | 16 | | = | | 6,000 | 6,000 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 | 0,0039063 | 0,0002441 |
|  | 3 | 13 | 13 |  | 6 |  |  |
| 989 | 768 | 208 | 13 |  | 0,375 | 0 | 0,375 |
|  |  |  |  | 989,375 |  |  |  |

**д)237,73 (10)= 11101101,10111(2)=355.5656(8)=ED.BAE(16)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 237,0 | 2,0 |  |  |  |  |  |  |  |
| 236,0 | 118,0 | 2,0 |  |  |  |  |  |  |
| 1,0 | 118,0 | 59,0 | 2,0 |  |  |  |  |  |
|  | 0,0 | 58,0 | 29,0 | 2,0 |  |  |  |  |
|  |  | 1,0 | 28,0 | 14,0 | 2,0 |  |  |  |
|  |  |  | 1,0 | 14,0 | 7,0 | 2,0 |  |  |
| |  | | --- | |  | |  |  |  | 0,0 | 6,0 | 3,0 | 2,0 |  |
|  |  |  |  |  | 1,0 | 2,0 | 1,0 | 2,0 |
|  |  |  |  |  |  | 1,0 | 0,0 | 0,0 |
|  |  |  |  |  |  |  | 1,0 |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | | | | 128 | | | | 64 | | | 32 | | 16 | | | 8 | | | 4 | 2 | | 1 | |  | |
|  |  | | | | 1 | | | | 1 | | | 1 | | 0 | | | 1 | | | 1 | 0 | | 1 | |  | |
|  |  | | | | 128 | | | | 64 | | | 32 | |  | | | 8 | | | 4 |  | | 1 | | 237 | |
| 0,730 | | \* | | | | 2 | | | | |  | | --- | | = | | | | | | | 1,460 | |
| 0,460 | | \* | | | | 2 | | | | = | | | | | | 0,920 | |
| 0,920 | | \* | | | | 2 | | | | = | | | | | | 1,840 | |
| 0,840 | | \* | | | | 2 | | | | = | | | | | | 1,680 | |
| 0,680 | | \* | | | | 2 | | | | = | | | | | | 1,360 | |
| 237,000 | | | | 8,000 | | | |  | | | | |
| 232,000 | | | | 29,000 | | | | 8,000 | | | | |
| 5,000 | | | | 24,000 | | | | 3,000 | | | | |
|  | | | | 5,000 | | | | 3,000 | | | | |
| 4096 | | | 512 | | | | 64 | | | | 8 | | | | 1 | | | | , | | | 0,125 | | 0,01563 | | 0,00195 | | 0,00024 | 3,1E-05 |
|  | | |  | | | | 3,000 | | | | 5,000 | | | | 5,000 | | | |  | | | 5 | | 6 | | 5 | | 6 |  |
| 237 | | | 0 | | | | 192 | | | | 40 | | | | 5 | | | |  | | | 0,625 | | 0,09375 | | 0,00977 | | 0,00146 | 0,72998 |
|  | | |  | | | |  | | | |  | | | |  | | | | 237,7300 | | |  | |  | |  | |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 237,000 | | | 16,000 | | |
| 224,000 | | | 14,000 | | |
| 13,000 | | |  | | |
| 4096 | 256 | | | 16 | | | 1 | | , | | | 0,0625 | 0,0039063 | | 0,0002441 |
|  |  | | | 14 | | | 13 | |  | | | 11 | 10 | | 14 |
| 237 | 0 | | | 224 | | | 13 | |  | | | 0,6875 | 0,0390625 | | 0,7265625 |
|  |  | | |  | | |  | | 237,727 | | |  |  | |  |
| 0,730 | | \* | | | 16 | | | = | | 11,680 | B | | |
| 0,680 | | \* | | | 16 | | | = | | 10,880 | A | | |
| 0,880 | | \* | | | 16 | | | = | | 14,080 | E | | |

# 2. Перевести данное число в десятичную систему счисления

**а)110001111(2)=399(10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |  |
|  | 256 | 128 |  |  |  | 8 | 4 | 2 | 1 | 399 |

**б)111010001(2)=465(10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  |
|  | 256 | 128 | 64 |  | 16 |  |  |  | 1 | 465 |

**в)100110101,1001(2)=309,5625(10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |  |
|  | 256 |  |  | 32 | 16 |  | 4 |  | 1 | 309 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 0 | 0 | 1 |  |  |  |  |  |  |
|  | 0,5 | 0,25 | 0,125 | 0,063 | 0,031 | 0,02 | 0,01 | 0,0039 | 0,002 | 0,001 |
|  |  |  |  |  |  |  |  |  |  |  |
| 0,5625 | 0,5 | 0 | 0 | 0,063 |  |  |  |  |  |  |

**г)1000010,01011(2)=66,34375(10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  |  | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  |
|  |  |  | 64 |  |  |  |  | 2 |  | 66 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 0 | 1 | 1 |  |  |  |  |  |
|  | 0,5 | 0,25 | 0,125 | 0,063 | 0,031 | 0,02 | 0,01 | 0,0039 | 0,002 | 0,001 |
|  |  |  |  |  |  |  |  |  |  |  |
| 0,34375 | 0 | 0,25 | 0 | 0,063 | 0,031 |  |  |  |  |  |

**д)176,5(8)=126.625(10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 512 | 64 | 8 | 1 | , | 0,125 | 0,01563 | 0,00195 | 0,00024 | 3,1E-05 |
|  |  | 1,000 | 7,000 | 6,000 |  | 5 |  |  |  |  |
| 126 | 0 | 64 | 56 | 6 |  | 0,625 | 0 | 0 | 0 | 0,625 |
|  |  |  |  |  | 126,6250 |  |  |  |  |  |

**е)3D2,04(16)=978.016(10)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | | | 16 | | | 1 | | | , | | | 0,0625 | 0,0039063 | | 0,0002441 |
|  | 3 | | | 13 | | | 2 | | |  | | | 0 | 4 | |  |
| 978 | 768 | | | 208 | | | 2 | | |  | | | 0 | 0,015625 | | 0,015625 |
|  |  | | |  | | |  | | | 978,016 | | |  |  | |  |
| 978,000 | | | 16,000 | | |  | | |
| 976,000 | | | 61,000 | | | 16,000 | | |
| 2,000 | | | 48,000 | | | 3,000 | | |
|  | | | 13,000 | | |  | | |
| 0,016 | | \* | | | 16 | | | = | | | 0,256 | 0,000 | | |
| 0,256 | | \* | | | 16 | | | = | | | 4,096 | 4 | | |

# 3. Сложить все числа

**а)1000011101(2)+101000010(2)=541(10)+322(10)=1101011111 (2) =863(10)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |  |
|  | 512 | 0 | 0 | 0 | 0 | 16 | 8 | 4 | 0 | 1 | 541 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  |
|  | 0 | 256 | 0 | 64 | 0 | 0 | 0 | 0 | 2 | 0 | 322 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | 863 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **+** | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |  |
|  |  | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |  |
|  | 512 | 256 | 0 | 64 | 0 | 16 | 8 | 4 | 2 | 1 | 863 |

**б)100000001(2)+1000101001(2)=257(10)+553(10)= 1100101010 (2) =810(10)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  |
|  | 0 | 256 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 257 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |  |
|  | 512 | 0 | 0 | 0 | 32 | 0 | 8 | 0 | 0 | 1 | 553 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | 810 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **+** |  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  |
|  | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |  |
|  | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |  |
|  | 512 | 256 | 0 | 0 | 32 | 0 | 8 | 0 | 2 | 0 | 810 |

**в)101111011,01(2)+1000100,101(2)=379,25(10)+68,625(10)= (2) =447,875(10)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0,5 | 0,25 | 0,125 | 0,063 | 0,031 | 0,02 | 0,01 | 0,0039 | 0,002 | 0,001 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0,25 | 0 | 0,25 |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |  |  |  |
|  |  | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |  |  |  |  |
|  | 0 | 256 | 0 | 64 | 32 | 16 | 8 | 0 | 2 | 1 | 379 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 379,25 | | | | | | | | | |  |  |  |  |
|  | 1 | 0 | 1 |  |  |  |  |  |  |  |  |  |  |  |
|  | 0,5 | 0,25 | 0,125 | 0,063 | 0,031 | 0,02 | 0,01 | 0,0039 | 0,002 | 0,001 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0,625 | 0,5 | 0 | 0,125 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |  |  |  |
|  |  |  |  | 1 | 0 | 0 | 0 | 1 | 0 | 0 |  |  |  |  |
|  | 0 | 0 | 0 | 64 | 0 | 0 | 0 | 4 | 0 | 0 | 68 |  |  |  |
|  | 68,625 | | | | | | | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 447,875 | | | | | | | | | | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| + |  | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | , | 0 | 1 |  |
|  |  |  |  | 1 | 0 | 0 | 0 | 1 | 0 | 0 | , | 1 | 0 | 1 |
|  |  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | , | 1 | 1 | 1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |  |  |  |
|  |  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |  |  |  |  |
|  | 0 | 256 | 128 | 0 | 32 | 16 | 8 | 4 | 2 | 1 | 447 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |
|  | 0,5 | 0,25 | 0,125 | 0,063 | 0,031 | 0,02 | 0,01 | 0,0039 | 0,002 | 0,001 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0,875 | 0,5 | 0,25 | 0,125 |  |  |  |  |  |  |  |  |  |  |  |

**г)1532,14(8)+730,16(8)=858.1875(10)+472.2188(10)=1330.41 (10)=2462.32172(8)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32768 | 4096 | 512 | 64 | 8 | 1 | , | 0,125 | 0,01563 | 0,00195 |  |  |
|  |  | 1,000 | 5,000 | 3,000 | 2,000 |  | 1 | 4 |  |  |  |
| 858 | 0 | 512 | 320 | 24 | 2 |  | 0,125 | 0,0625 | 0 |  | 0,1875 |
|  |  |  |  |  |  | 858,1875 |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32768 | | 4096 | | | 512 | | | 64 | | | 8 | | | 1 | | | , | | | 0,125 | | 0,01563 | | 0,00195 | |  |  |
|  | |  | | |  | | | 7,000 | | | 3,000 | | | 0,000 | | |  | | | 1 | | 6 | |  | |  |  |
| 472 | | 0 | | | 0 | | | 448 | | | 24 | | | 0 | | |  | | | 0,125 | | 0,09375 | | 0 | |  | 0,21875 |
|  | |  | | |  | | |  | | |  | | |  | | | 472,2188 | | |  | |  | |  | |  |  |
|  | | |  | |  | | |  | | |  | | | |  | | |  |  | | |
| **+** | | | 1 | | 5 | | | 3 | | | 2 | | | | , | | | 1 | 4 | | |
|  | | |  | | 7 | | | 3 | | | 0 | | | | , | | | 1 | 6 | | |
|  | | | 2 | | 4 | | | 6 | | | 2 | | | | , | | | 3 | 2 | | |
|  | | |  | | 4+6=12  5+7=14 | | |  | | |  | | | |  | | |  |  | | |
| 32768 | | 4096 | | | | 512 | | | 64 | | | 8 | | 1 | | | , | | | 0,125 | | 0,01563 | 0,00195 | 0,00024 | | 3,1E-05 |
|  | |  | | | | 2,000 | | | 4,000 | | | 6,000 | | 2,000 | | |  | | | 3 | | 2 | 1 | 7 | | 2 |
| 1330 | | 0 | | | | 1024 | | | 256 | | | 48 | | 2 | | |  | | | 0,375 | | 0,03125 | 0,00195 | 0,00171 | | 6,1E-05 |
|  | |  | | | |  | | |  | | |  | |  | | | 1330,4100 | | |  | |  |  |  | |  |

**д) BB,4(16)+2F0,6(16)= 187,25(10)+752.375(10)=939.625(10)=**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 | 0,0039063 | 0,0002441 |
|  |  | 11 | 11 |  | 4 |  |  |
| 187 | 0 | 176 | 11 |  | 0,25 | 0 | 0,25 |
|  |  |  |  | 187,250 |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | | 16 | | 1 | | , | | 0,0625 | | 0,0039063 | | 0,0002441 |
|  | 2 | | 15 | | 0 | |  | | 6 | |  | |  |
| 752 | 512 | | 240 | | 0 | |  | | 0,375 | | 0 | | 0,375 |
|  |  | |  | |  | | 752,375 | |  | |  | |  |
| **+** | | 2 | | F | | 0 | | , | | 6 | |
|  | |  | | B | | B | | , | | 4 | |
|  | | 3 | | A | | B | | , | | A | |
|  | |  | | 10 | | 11 | |  | | 10 | |

F+B=1A

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 | 0,0039063 | 0,0002441 |
|  | 3 | 10 | 11 |  | 10 |  |  |
| 939 | 768 | 160 | 11 |  | 0,625 | 0 | 0,625 |
|  |  |  |  | 939,625 |  |  |  |

# 4. Выполнить вычитание

а)1000101110(2)-1111111(2)= **558(10)-127(10)=**110101111 **(2) =431(10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  |
| 512 | 0 | 0 | 0 | 32 | 0 | 8 | 4 | 2 | 0 | 558 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
| 0 | 0 | 0 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | 127 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| - | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  |
|  |  |  |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  |  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |  |
|  | 0 | 256 | 128 | 0 | 32 | 0 | 8 | 4 | 2 | 1 | 431 |

б)1011101000(2)-1001000000(2)=**744(10)-576(10)=** 10101000 **(2) =168(10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
| 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |  |
| 512 | 0 | 128 | 64 | 32 | 0 | 8 | 0 | 0 | 0 | 744 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 512 | 0 | 0 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 576 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| - | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |  |
|  | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  |
|  |  |  | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  |  | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |  |
|  |  |  | 128 | 0 | 32 | 0 | 8 | 0 | 0 | 0 | 168 |

**в)1000101001,1(2)-1111101,1(2)=553.5(10)-125.5(10)= 110101100,0 (2) =428.0(10)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 |  |  |  |  |  |  |  |  |  |  |  |
|  | 0,5 | 0,25 | 0,125 | 0,063 | 0,031 | 0,02 | 0,01 | 0,0039 | 0,002 | 0,001 |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0,5 | 0,5 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |  |
|  | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |  |  |
|  | 512 | 0 | 0 | 0 | 32 | 0 | 8 | 0 | 0 | 1 | 553 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 553,50 | | | | | | | | | |  |  |
|  | 1 |  |  |  |  |  |  |  |  |  |  |  |
|  | 0,5 | 0,25 | 0,125 | 0,063 | 0,031 | 0,02 | 0,01 | 0,0039 | 0,002 | 0,001 |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0,5 | 0,5 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |  |
|  |  |  |  | 1 | 1 | 1 | 1 | 1 | 0 | 1 |  |  |
|  | 0 | 0 | 0 | 64 | 32 | 16 | 8 | 4 | 0 | 1 | 125 |  |
|  | 125,500 | | | | | | | | | |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **428,000** | | | | | | | | | | |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| **-** | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | , | 1 |
|  |  |  |  | 1 | 1 | 1 | 1 | 1 | 0 | 1 | , | 1 |
|  |  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | , | 0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |  |
|  |  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |  |  |
|  |  | 256 | 128 | 0 | 32 | 0 | 8 | 4 | 0 | 0 | 428 |  |

**г)1265,2(8)-610,2(8)=693.25(10)-392.25(10)=301.00(10)=455.0(8)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32768 | 4096 | 512 | 64 | 8 | 1 | , | 0,125 | 0,01563 | 0,00195 | 0,00024 |
|  |  | 1,000 | 2,000 | 6,000 | 5,000 |  | 2 |  |  |  |
| 693 | 0 | 512 | 128 | 48 | 5 |  | 0,25 | 0 | 0 | 0,25 |
|  |  |  |  |  |  | 693,2500 |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32768 | 4096 | | | 512 | | 64 | | 8 | 1 | , | | | | 0,125 | | 0,01563 | | 0,00195 | | 0,00024 | |
|  |  | | |  | | 6,000 | | 1,000 | 0,000 |  | | | | 2 | |  | |  | |  | |
| 392 | 0 | | | 0 | | 384 | | 8 | 0 |  | | | | 0,25 | | 0 | | 0 | | 0,25 | |
|  |  | | |  | |  | |  |  | 392,2500 | | | |  | |  | |  | |  | |
|  | |  |  | |  | |  | |  | |  |
| **-** | | 1 | 2 | | 6 | | 5 | | , | | 2 |
|  | |  | 6 | | 1 | | 0 | | , | | 2 |
|  | |  | 4 | | 5 | | 5 | | , | | 0 |
|  | |  | 8+2-6=4 | | | |  | |  | |  |
| 32768 | 4096 | | | 512 | | 64 | | 8 | 1 | , | | | 0,125 | | 0,01563 | | 0,00195 | | 0,00024 | |
|  |  | | |  | | 4,000 | | 5,000 | 5,000 |  | | | 2 | |  | |  | |  | |
| 301 | 0 | | | 0 | | 256 | | 40 | 5 |  | | | 0,25 | | 0 | | 0 | | 0,25 | |
|  |  | | |  | |  | |  |  | 301,2500 | | |  | |  | |  | |  | |

**д) 409,D(16)-270,4(16)=1033.813(10)-624.25(10)= 409.563(10)=199.9(16)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 | 0,0039063 | 0,0002441 |
|  | 4 | 0 | 9 |  | 13 |  |  |
| 1033 | 1024 | 0 | 9 |  | 0,8125 | 0 | 0,8125 |
|  |  |  |  | 1033,813 |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 | 0,003906 | 0,000244 | 1,53E-05 |
|  | 2 | 7 | 0 |  | 4 |  |  |  |
| 0 | 512 | 112 | 0 |  | 0,25 | 0 | 0 | 0 |
| 624 |  |  |  | 624,2500 |  |  | 0,25 |  |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| - | | 4 | | 0 | | 9 | | , | | D | |
|  | | 2 | | 7 | | 0 | | , | | 4 | |
|  | | 1 | | 9 | | 9 | | , | | 9 | |
| 13-4=9  7+9=10→10-7=9  3-2=1 | | | |  | |  | |  | |  | |
| 4096 | 256 | | 16 | | 1 | | , | | 0,0625 | | 0,0039063 | | 0,0002441 |
|  | 1 | | 9 | | 9 | |  | | 9 | |  | |  |
| 409 | 256 | | 144 | | 9 | |  | | 0,5625 | | 0 | | 0,5625 |
|  |  | |  | |  | | 409,563 | |  | |  | |  |

# 5. Выполнить умножение

а)111010**(2)=**\*1100000**(2)=58(10)\*96(10)=** 1010111000000**(2) =5568 (10)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  |  |  | 1 | 1 | 1 | 0 | 1 | 0 |  |
|  |  |  |  | 32 | 16 | 8 | 0 | 2 | 0 | 58 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
|  |  |  | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  |
|  |  |  | 64 | 32 | 0 | 0 | 0 | 0 | 0 | 96 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **\*** | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  | 1 | 1 | 1 | 0 | 1 | 0 |
|  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  |
|  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |
|  |  |  | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  |  |  |
|  |  | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |
|  | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 2048 | 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |  |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 4096 | 0 | 1024 | 0 | 256 | 128 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 5568 |

**б)1005.5(8)\*63.3(8)= 517,6250(10)\*51,3750(10)=26592.98(10)= 63740.7656(8)**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32768 | 4096 | 512 | 64 | 8 | 1 | , | 0,125 | 0,01563 | 0,00195 | 0,00024 |
|  |  | 1,000 | 0,000 | 0,000 | 5,000 |  | 5 |  |  |  |
| 517 | 0 | 512 | 0 | 0 | 5 |  | 0,625 | 0 | 0 | 0,625 |
|  |  |  |  |  |  | 517,6250 |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32768 | 4096 | 512 | 64 | 8 | 1 | , | 0,125 | 0,01563 | 0,00195 | 0,00024 |
|  |  |  |  | 6,000 | 3,000 |  | 3 |  |  |  |
| 51 | 0 | 0 | 0 | 48 | 3 |  | 0,375 | 0 | 0 | 0,375 |
|  |  |  |  |  |  | 51,3750 |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32768 | | 4096 | | | 512 | 64 | | 8 | | 1 | , | | | 0,125 | | 0,015625 | 0,0019531 | 0,0002441 |
|  | | 6,000 | | | 3,000 | 7,000 | | 4,000 | | 0,000 |  | | | 7 | | 6 | 5 | 6 |
| 26592 | | 24576 | | | 1536 | 448 | | 32 | | 0 |  | | | 0,875 | | 0,09375 | 0,0097656 | 0,9785156 |
|  | |  | | |  |  | |  | |  | 26592,9785 | | |  | |  |  |  |
|  | |  |  | | |  | |  | | |  |  | |
|  | | **\*** | 1 | | | 0 | | 0, | | | 5 | 5 | |
|  | |  |  | | |  | | 6, | | | 3 | 3 | |
|  | |  | 3 | | | 0 | | 2 | | | 0 | 7 | |
|  | | 3 | 0 | | | 2 | | 0 | | | 7 |  | |
| 6 | | 0 | 4 | | | 2 | | 6 | | |  |  | |
| 6 | | 3 | 7 | | | 4 | | 0, | | | 7 | 7 | |

3\*5=17

3\*5+1=17+1=18→(2)0

3\*0+2=2

3\*0=0

3\*1=3

2+6=0

6\*5=36

6\*5+6=(4)2

6\*0+4=4

6\*0=0

6\*1=6

**в)4A,3(16)\*F,6(16)= 74.188(10)\*15.375(10)=1140.64(10)=474.A2(16)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 | 0,0039063 | 0,0002441 |
|  |  | 4 | 10 |  | 3 |  |  |
| 74 | 0 | 64 | 10 |  | 0,1875 | 0 | 0,1875 |
|  |  |  |  | 74,188 |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | | 16 | | 1 | | , | | 0,0625 | | 0,0039063 | 0,0002441 |
|  |  | |  | | 15 | |  | | 6 | |  |  |
| 15 | 0 | | 0 | | 15 | |  | | 0,375 | | 0 | 0,375 |
|  |  | |  | |  | | 15,375 | |  | |  |  |
|  | | **\*** | | 4 | | A, | | 3 | |
|  | |  | |  | | F, | | 6 | |
|  | | 1 | | B | | D | | 2 | |
| 4 | | 5 | | 8 | | D | |  | |
| 4 | | 7 | | 4, | | A | | 2 | |

6\*3=18=1\*16+**2**

6\*A=60+1=61=3\*16+13→**D**

6\*4=24+3=27=**1**\*16+11→**B**

F\*3=15\*3=45=2\*16+13→**D**

F\*A=15\*10=150+2=9\*16+**8**

F\*4=15\*4=60+9=69=**4**\*16+**5**

2+0=**2**

13+13=26=1\*16+10→**A**

11+8=19+1=20=1\*16+**4**

1+5+1=**7**

**4**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4096 | 256 | 16 | 1 | , | 0,0625 | 0,0039063 | 0,0002441 |
|  | 4 | 7 | 4 |  | 10 | 2 |  |
| 1140 | 1024 | 112 | 4 |  | 0,625 | 0,0078125 | 0,6328125 |
|  |  |  |  | 1140,633 |  |  |  |

# Список литературы

1. Пономарёв В.С., Красников В.В. Методические указания по теме: "Арифметические основы ЭВМ":<http://static.dstu.edu.ru/informatics/mtdss/part1.html>
2. Википедия: <http://ru.wikipedia.org/wiki/Двоичная_система_счисления>
3. Шауцукова Л.З. Информатика 10 - 11. — М.: Просвещение, 2000 г.: <http://www.rus-edu.bg/edu/online/inf/bookinf/theory/chapter4/1_4_10.html>
4. Системы счисления Анжелиной Латышевой : http://logika.weebly.com/10571083108610781077108510801077-1074-107410861089110010841077108810801095108510861081-1089108010891090107710841077.html