01-

a- 100101 : $1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$

$32 + 0 + 0 + 4 + 0 + 1$

37 ~~/~~

b- 11010010 : $1 \times 2^7 + 1 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$

$128 + 64 + 0 + 16 + 0 + 0 + 2 + 0$

210 ~~/~~

c- 100111100 : $1 \times 2^8 + 0 \times 2^7 + 0 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0$

$256 + 0 + 0 + 32 + 16 + 8 + 4 + 0 + 0$

316 ~~/~~

d- 011010101101 : $0 \times 2^9 + 1 \times 2^8 + 1 \times 2^7 + 0 \times 2^6 + 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$

$0 + 256 + 128 + 0 + 32 + 0 + 8 + 4 + 0 + 1$

429 ~~/~~

02-

a- 64_{10} : $64|2$

    0   $32|2$

      0   $16 |2$

        0   $8|2$

          0   $4|2$

            0   $2 |2$

              0   1

1000000

b- 78_{10} : $78|2$

    0   $39|2$

      1   $19|2$

        1   $9|2$

          1   $4|2$

            0   $2|2$

              0   1

1001110

c - 55₁₀ : 55 | 2
    1 27 | 2
       1 13 | 2
          1 6 | 2
            0 3 | 2
               1 1

110111

d - 112₁₀ : 112 | 2
    0 56 | 2
       0 28 | 2
          0 14 | 2
            0 7 | 2
               1 3 | 2
                  1 1

1110000

03-

2 - 521₁₀ : 521 | 2
    1 260 | 2
       0 130 | 2
          0 65 | 2
            1 32 | 2
              0 16 | 2
                 0 8 | 2
                    0 4 | 2
                      0 2 | 2
                        0 1

São necessários 10 bits para representar 521.

b - 68₁₀ : 68 | 2
    0 34 | 2
       0 17 | 2
          1 8 | 2
            0 4 | 2
              0 2 | 2
                 0 1

São necessário 7 bits para representar 68

C- 35₁₀. 35|2

    1 17|2

       1 8|2

         0 4|2

           0 2|2

             0 1

São mecessario **6** bits para representar 35

1- 453₁₀. 453|2

    1 226|2

       0 113|2

         1 56|2

           0 28|2

             0 14|2

               0 7|2

                 1 3|2

                   1 1

São mecessários **9** bits para representar 453

04.

$a - 101,011: 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 + 0 \times 2^{-1} + 1 \times 2^{-2} + 1 \times 2^{-3}$

$\quad 4 + 0 + 1 + 0 + \frac{1}{2^2} + \frac{1}{2^3}$

$\quad 4 + 1 + 0,25 + 0,125$

$\quad 5,375$

$b - 111,1001: 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 + 1 \times 2^{-1} + 0 \times 2^{-2} + 0 \times 2^{-3} + 1 \times 2^{-4}$

$\quad 4 + 2 + 1 + \frac{1}{2} + 0 + 0 + \frac{1}{2^4}$

$\quad 4 + 2 + 1 + 0,5 + 0,0625$

$\quad 7,5625$

c- 010,01010: $0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 + 0 \times 2^{-1} + 1 \times 2^{-2} + 0 \times 2^{-3} + 1 \times 2^{-4} + 0 \times 2^{-5}$

$0 + 2 + 0 + \frac{1}{2} + 0 + \frac{1}{16} + 0$

2,5625

d- 001,101100: $0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 + 1 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3} + 1 \times 2^{-4} + 0 \times 2^{-5} + 0 \times 2^{-6}$

$0 + 0 + 1 + \frac{1}{2} + 0 + \frac{1}{8} + \frac{1}{16} + 0 + 0$

$1 + 0,5 + 0,125 + 0,0625$

1,6875

5-

a-0,152)₁₀ : 0,00100

0,152
× 2
⓪,304
× 2
⓪,608
× 2
①,216
× 2
0,432
× 2
0,864

b-1,254)₁₀: 001,0100ō   254
× 2
⓪,508
× 2
①,016
× 2
0,032
× 2
0,064
× 2
0,128

c- 25,24)₁₀: 25|2   0,24   0,84
1 12|2   × 2   × 2
   0 6|2   0,48   1,68
      0 3|2   × 2   × 2
         1 1   0,96   1,36
1001,00111 ō   × 2   × 2
               1,92   0,72
               × 2
               1,84

d-32,0174)₁₀: 32|2   0,0174
100000,000001   0 16|2   × 2
                   0 8|2   0,0348
                   0 4|2   × 2
                   0 2|2   0,0696
                      1 0   × 2
                              0,1392
                      1   × 2
100000,000001   0,5568
                              × 2
                              1,1136

06

a-15₈: 001101100 ✗   b-247₈: 010100111_{10} ✗   c-153₈: 001101011 ✗   d-1534₈: 110010100

07 Porque o número 18423 possui o algarismo 8, que, não pertence aos algarismos octais (que vão de 0 a 7).

08-

a-182: 182|8
    6   22|8
      6   2|8
    266 ✗

b-197: 197|8
    5   24|8
      0   3
    305 ✗

c-2445|8
    5   305|8
    1   38|8
      6   4|8
      4615 ✗

d-2864: 2864|8
    0   358|8
      6   44|8
       4   5|8
      5460

09-

a-473₈: 100111011_{10} ✗   b-526₈: 101010110_{10} ✗   c-375₁: 011111101001 ✗   d-1573: 110111010 ✗

10-

a-1010110: 23₈ ✗   b-10111₁₀: 26₈ ✗   c-110110101: 668₈ ✗   d-011001: 31₈ ✗

11-

a-249₁₆: $2 \times 16^2 + 4 \times 16^1 + 9 \times 16^0$ b-A6F3₁₆: $A \times 16^3 + 6 \times 16^2 + F \times 16^1 + 3 \times 16^0$
    512 + 64 + 9   40960 + 1536 + 240 + 3
    585   42739 ✗

C - $A113_{16}$: $A \times 16^3 + 1 \times 16^2 + 1 \times 16^1 + 3 \times 16^0$ d - $F2DB_{16}$: $F \times 16^3 + 2 \times 16^2 + D \times 16^1 + B \times 16^0$

40960 + 256 + 16 + 3   61440 + 512 + 208 + 11

41235   62171

12-

a - 498_{10}: 498 | 16

  2   31 | 16

        15   1

      1F2 ↓

b - 2453_{16} : 2453 | 16

        5   153 | 16

              9   9

            995 ↓

c - 521_{10} : 521 | 16

      9   32 | 16

          0   2

        209 ↓

d - 3782_{10}: 3782 | 16

      6   236 | 16

          12   14

        EC6

13-

a - 54_{16}: 1011000 |₂

b - $A35C_{16}$: 1010 0011 0101 1100 |₂

C - $B51F_{16}$: 1011 0101 0001 1111 |₂

d - $F7BD_{16}$: 1111 0111 1011 1101 |₂

14.

a - $5DF_{16}$: 10111011111 |₂ $6F3_{16}$: 11011110011 |₂

15.

a - 101101: $2D_{16}$ b - 1001110: $4E_{16}$ c - 10110101: $B5_{16}$ d - 10111011: 176_{16}

16-

7512₈: 111101001010010 = $F4A_{16}$ 25428: 010101100010 = 562_{16}

17.

a. 1011 + 1011 = 1011
```
   1011
  10110
```

b. 10111 + 1010 = 10111
```
 + 1010
 100001
```

c. 00110+10111+1011 = 00110   00110
```
  10111
   1011
 101000
```

d. 01011 + 01100 + 01110 = 01011
```
   01100
   01110
  100101
```

18.

a. 10110 - 00111 = 10110
```
   00111
   1111
```

b. 11001 - 10011 = 11001
```
   10011
   00110
```

c. 1101101 - 101101 = 1101101
```
   101101
  1000000
```

d. 10101100 - 101011 = 10101100
```
    101011
  10000001
```

19.

a. 101101 x 101 = 101101
```
      101
   101101
   000000
   101101
  11100001
```

b. 100011 x 110 = 100011
```
      110
   000000
   100011
   100011
  11010010
```

c. 1001011 x 010 = 1001011
```
       010
   0000000
   1001011
   0000000
  10010110
```

d. 1011010 x 011 = 1011010   → 10000110
```
      011
   1011010
   1011010
   0000000
```

20. 25: $\underline{25\,|2}$

      1 $\underline{12\,|2}$

         0 $\underline{6\,|2}$

           0 $\underline{3\,|2}$

              $\underline{1\,\,\,1}$

     11001 → SM: 111001

135. $\underline{135\,|2}$

      1 $\underline{67\,|2}$

        1 $\underline{33\,|2}$

          1 $\underline{16\,|2}$

            0 $\underline{8\,|2}$

               0 $\underline{4\,|2}$

                 0 $\underline{2\,|2}$

                    0 1

      10000111 → SM: 110000111

21- $10111001 10_{..}$ = -230

22-

a- $1011011_{..}$: 0100100 ✗   b- $11001011_{.6}$: 00110100 ✗

23-

a- $-1011_{..}$: $\overset{111}{1011}$ → 10101   b- -11011: $\overset{111}{11011}$ → 11001001 c- -1001011: 1001011

     0100 $\overset{0\,0}{00100}$ $\overset{0;8}{0110100}$

      $\underline{1}$ $\underline{.\,1}$ $\overset{+}{\underline{\quad\quad 1}}$

   10101   1001001   0110101

d- $10010 1110_{in}$: 0110101110

       011 0100001   100001110

         $\boxed{1}$ $\underline{\quad\quad 1}$

    $\overline{\boxed{1\;|\;01101000\mathbf{0}}}$ 100001110

24- $10110 1011_{..}$: 101101011 = -149 ✗

      01001010 0

        $\underline{1}$

      01001 0101 ✗ +149

25.

a - 101101 - 101111:

101101   101111

010010   010000   010011

010011   010001   010001

                    000001 ✗

b - 100110 - 1011001:

100110   1011001

011001   010010   011010

011010   100111   100111

                    01101 ✗ 01101

c - 1001010 - 1011001:

1001010   1011001   011011o

011010l   010010   010011

                    001111 ✗

011011o   010011

d - 1001101 - 110101:

1001101   110101

011001o   001010   0110011

                    0001011

011000ll   001011   101000000 ✗

26.

a - 25 - 338:

010101   011011

101010   100100   101011

                    100101

101011   100101   001110

b - 48 - 14,16:

0100100o   0001010o

101101l   111010ll   101l000

                    1110100

1011000   1110100   110011 00 ✗

c - 21 - A8,16:

0010000l   1010100o

110l11o   010101ll   110l111

                    0101000

110l101   0101000   10000111 ✗

d - 57 - 34,8:

101111   011100

010000   10001l   010001

                    111100

010001   111100   1010101 ✗