

Resolução Atividade Aritmética Binária

① a)
$$\begin{array}{r} 10110 \\ + 00111 \\ \hline 11101 \end{array}$$

b)
$$\begin{array}{r} 011101 \\ + 010010 \\ \hline 101111 \end{array}$$

c)
$$\begin{array}{r} 10001111 \\ + 00000001 \\ \hline 10010000 \end{array}$$

② a)
$$\begin{array}{r} 101101 \\ - 010010 \\ \hline 011011 \end{array}$$

b)
$$\begin{array}{r} 10001011 \\ - 00110101 \\ \hline 01010110 \end{array}$$

c)
$$\begin{array}{r} 10110110 \\ - 01110011 \\ \hline 00111011 \end{array}$$

③ $85 \Rightarrow + 1010101$
 $+ 73 \Rightarrow 1001001$

$$\begin{array}{r} 1010101 \\ + 1001001 \\ \hline 10011110 \end{array}$$

b) $233 \Rightarrow 11101001$
 $+ 120 \Rightarrow 00110001$

$$\begin{array}{r} 11101001 \\ + 00110001 \\ \hline 100011010 \end{array}$$

c) $233 \Rightarrow 11101001$
 $- 120 \Rightarrow 00110001$

$$\begin{array}{r} 11101001 \\ - 00110001 \\ \hline 10111000 \end{array}$$

d) $255 - 125 \Rightarrow 11111111$
 $- 11111111$

$$\begin{array}{r} 11111111 \\ - 11111111 \\ \hline 10000000 \end{array}$$

e) $128 - 15 \Rightarrow 10000000$
 $- 1111$

$$\begin{array}{r} 10000000 \\ - 1111 \\ \hline 01110001 \end{array}$$

④ a)
$$\begin{array}{r} 1001 \\ \times 1011 \\ \hline 1001 \\ + 1001 \\ 0000 \\ 1001 \\ \hline 1100011 \end{array}$$

b)
$$\begin{array}{r} 10110 \\ \times 00111 \\ \hline 10110 \\ + 10110 \\ 10110 \\ 00000 \\ 00000 \\ \hline 010011010 \end{array}$$

c)
$$\begin{array}{r} 011101 \\ \times 010010 \\ \hline 1000000 \\ + 1011101 \\ 1000000 \\ 0000000 \\ 011101 \\ \hline 000000 \\ 01000001010 \end{array}$$

⑤ a) $12 \times 10 = 120$

$R = 0001111$

$$\begin{array}{r} \text{logo} \quad 0011 \\ \times 0101 \\ \hline 0011 \\ 0000 \\ 0011 \\ 0000 \\ \hline 0001111 \end{array}$$

12) a B R

$$\begin{array}{r} 12 \quad 2 \quad 0 \\ 6 \quad 2 \quad 0 \\ 3 \quad 2 \quad 1 \\ 1 \quad 2 \quad 1 \\ 0 \end{array}$$

10) a B R

$$\begin{array}{r} 10 \quad 2 \quad 0 \\ 5 \quad 2 \quad 1 \\ 2 \quad 2 \quad 0 \\ 1 \quad 2 \quad 1 \\ 0 \end{array}$$

b) 170×31

$R = 1010010010110$

$$\begin{array}{r} \text{logo:} \quad 10101010 \\ \times 11111 \\ \hline 10101010 \\ + 10101010 \\ 10101010 \\ 10101010 \\ 10101010 \\ \hline 1010010010110 \end{array}$$

170) a B R

$$\begin{array}{r} 170 \quad 2 \quad 0 \\ 85 \quad 2 \quad 1 \\ 42 \quad 2 \quad 0 \\ 21 \quad 2 \quad 1 \\ 10 \quad 2 \quad 0 \\ 5 \quad 2 \quad 1 \\ 2 \quad 2 \quad 0 \\ 1 \quad 2 \quad 1 \\ 0 \end{array}$$

31) a B R

$$\begin{array}{r} 31 \quad 2 \quad 1 \\ 15 \quad 2 \quad 1 \\ 7 \quad 2 \quad 1 \\ 3 \quad 2 \quad 1 \\ 1 \quad 2 \quad 1 \\ 0 \end{array}$$

c) 170×128

$170 \rightarrow 10101010$ (calculado antes)

$$\begin{array}{r} 10101010 \\ \times 10000000 \\ \hline 00000000 \\ 00000000 \\ 00000000 \\ 00000000 \\ 00000000 \\ 00000000 \\ 00000000 \\ 00000000 \\ 10101010 \\ \hline 1010101000000000 \end{array}$$

128: a B R

$$\begin{array}{r} 128 \quad 2 \quad 0 \\ 64 \quad 2 \quad 0 \\ 32 \quad 2 \quad 0 \\ 16 \quad 2 \quad 0 \\ 8 \quad 2 \quad 0 \\ 4 \quad 2 \quad 0 \\ 2 \quad 2 \quad 0 \\ 1 \quad 2 \quad 1 \\ 0 \end{array}$$

⑥ a) 16/4

16 → 10000

4 → 100

$$\begin{array}{r} 10000 \mid 100 \\ - 100 \quad 100 \\ \hline 000 \end{array} \quad \boxed{R = 100}$$

b) 30/6

30 → 11110

6 → 110

$$\begin{array}{r} 11110 \mid 110 \\ - 110 \quad 101 \\ \hline 00110 \\ - 110 \\ \hline 000 \end{array} \quad \boxed{R = 101}$$

c) 80/10

80 → 1010000

10 → 1010

$$\begin{array}{r} 1010000 \mid 1010 \\ - 1010 \quad 1000 \\ \hline 0000 \end{array} \quad \boxed{R = 1000}$$

d) 100/5

100 → 1100100

5 → 101

$$\begin{array}{r} 1100100 \mid 101 \\ - 101 \quad 10100 \\ \hline 00101 \\ - 101 \\ \hline 00000 \end{array} \quad \boxed{R = 10100}$$

⑦ A) 20:16

20 → 10100

16 → 10000

$$\begin{array}{r} 10100 \mid 10000 \\ 10000 \quad 1.01 \\ \hline 0010000 \\ 10000 \\ \hline 00000 \end{array}$$

$$\boxed{R = 1.01}$$

// = 1,25

→ 0,5

↓ 1

→ 0,2

B) 70/5

5 → 101

70 → 1000110

$$\begin{array}{r} 1000110 \mid 101 \\ - 101 \quad 1110 \\ \hline 00111 \\ 101 \\ \hline 0101 \\ 101 \\ \hline 000 \end{array}$$

$$\boxed{R = 1110}$$

c) $54/9$

$54 \rightarrow 110110$

$9 \rightarrow 1001$

$$\begin{array}{r} 110110 \mid 1001 \\ - 1001 \\ \hline 01001 \\ 1001 \\ \hline 0000 \end{array} \quad \boxed{R = 110}$$

d) $40/16$

$40 \rightarrow 101000$

$16 \rightarrow 10000$

$$\begin{array}{r} 101000 \mid 10000 \\ - 10000 \\ \hline 0010000 \\ 10000 \\ \hline 00000 \end{array} \quad \begin{array}{l} 10,1 \\ \swarrow 0,5 \\ \searrow 2,5 \end{array}$$

$\boxed{R = 10,1}$
 $\rightarrow 2$

e) $60/16 = 3,75$

$60 \rightarrow 111100$

$16 \rightarrow 10000$

$$\begin{array}{r} 111100 \mid 10000 \\ - 10000 \\ \hline 011100 \\ 10000 \\ \hline 011000 \\ 10000 \\ \hline 010000 \\ 10000 \\ \hline 00000 \end{array} \quad \begin{array}{l} 101,101 \\ \swarrow 0,75 \\ \searrow 3 \end{array}$$

$\boxed{R = 101,101}$
 $\rightarrow 3$
 $= 3,75$

f) $10/4 \approx 2,5$

$4 = 100$

$10 = 1010$

$$\begin{array}{r} 1010 \mid 100 \\ - 100 \\ \hline 00100 \\ 100 \\ \hline 000 \end{array} \quad \begin{array}{l} 1,1 \\ \swarrow 0,5 \\ \searrow 2 \end{array}$$

$\boxed{R = 1,1}$
 $\rightarrow 2$
 $= 2,5$

8) a) 55 - 77

Dados: 55 \rightarrow 110111
77 \rightarrow 1001101

$$\begin{array}{r} 110111 \\ - 1001101 \\ \hline 1101010 \Rightarrow -22 \text{ (Negativo)} \end{array}$$

$1101010 \rightarrow$ Complemento de 2

Inversão \rightarrow 0010101

$$\begin{array}{r} 0010101 \\ + 1 \\ \hline 0010110 \end{array}$$

Convertendo Para Decimal:

$$0010110 = 0 \times 10^0 + 1 \times 2^1 + 1 \times 2^2 + 0 \times 10^3 + 1 \times 2^4 = 22$$

B) -43 - 61 (soma) = -104

43 \rightarrow 101011

61 \rightarrow 111101

$$\begin{array}{r} 104 \\ (-) \\ \hline -104_{10} = 11101000 \end{array}$$

Q	B	R
104	2	0
52	2	0
26	2	0
13	2	1
6	2	0
3	2	1
1	2	1
0		

c) -15 - 28 = -43

sign
(-)
1

Q	B	R
43	2	1
21	2	1
10	2	0
5	2	1
2	2	0
1	2	1
0		

$$\text{logo } -43_{10} = (1)101011$$

Magnitude