

Aritmetica Binaria - Esercizi

1. Conversione binario \rightarrow decimale

➤ (06)

- $1101_2 \rightarrow ?_{10}$ (13)
- $11100110_2 \rightarrow ?_{10}$ (230)
- $1010100_2 \rightarrow ?_{10}$ (84)
- $111000100_2 \rightarrow ?_{10}$ (452)

➤ (07,08,09)

- $10110110_2 \rightarrow ?_{10}$ (182)
- $1111111_2 \rightarrow ?_{10}$ (127)
- $10000001_2 \rightarrow ?_{10}$ (129)

➤ (10)

- $10011101_2 \rightarrow ?_{10}$ (157)
- $1111011_2 \rightarrow ?_{10}$ (123)
- $11001001_2 \rightarrow ?_{10}$ (201)

➤ (11)

- $10101101_2 \rightarrow ?_{10}$ (173)
- $1101001_2 \rightarrow ?_{10}$ (105)
- $10100101_2 \rightarrow ?_{10}$ (165)

2. Conversione decimale → binario

➤ (06)

- $83_{10} \rightarrow ?_2$ (1010011₂)
- $330_{10} \rightarrow ?_2$ (101001010₂)
- $2291_{10} \rightarrow ?_2$ (100011110011₂)
- $9902_{10} \rightarrow ?_2$ (10011010101110₂)

➤ (07,08)

- $237_{10} \rightarrow ?_2$ (11101101₂)
- $3172_{10} \rightarrow ?_2$ (110001100100₂)
- $8873_{10} \rightarrow ?_2$ (10001010101001₂)

➤ (09)

- $369_{10} \rightarrow ?_2$ (101110001₂)
- $2570_{10} \rightarrow ?_2$ (101000001010₂)
- $8460_{10} \rightarrow ?_2$ (10000100001100₂)

➤ (10)

- $119_{10} \rightarrow ?_2$ (1110111₂)
- $3320_{10} \rightarrow ?_2$ (110011111000₂)
- $5110_{10} \rightarrow ?_2$ (1001111110110₂)

➤ (11)

- $125_{10} \rightarrow ?_2$ (1111101₂)
- $3184_{10} \rightarrow ?_2$ (110001110000₂)
- $7569_{10} \rightarrow ?_2$ (1110110010001₂)

3. Conversione binario → esadecimale

➤ (06)

- $110101_2 \rightarrow ?_{16}$ (35_{16})
- $101011_2 \rightarrow ?_{16}$ ($2B_{16}$)
- $100111100000_2 \rightarrow ?_{16}$ ($9E0_{16}$)
- $11110100010_2 \rightarrow ?_{16}$ ($7A2_{16}$)

➤ (07,08)

- $10011_2 \rightarrow ?_{16}$ (13_{16})
- $110010010000_2 \rightarrow ?_{16}$ ($C90_{16}$)
- $11011011011_2 \rightarrow ?_{16}$ ($6DB_{16}$)

➤ (09)

- $101001_2 \rightarrow ?_{16}$ (29_{16})
- $101011110000_2 \rightarrow ?_{16}$ ($AF0_{16}$)
- $10100011010_2 \rightarrow ?_{16}$ ($51A_{16}$)

➤ (10)

- $110111_2 \rightarrow ?_{16}$ (37_{16})
- $110000011000_2 \rightarrow ?_{16}$ ($C18_{16}$)
- $11100111010_2 \rightarrow ?_{16}$ ($73A_{16}$)

➤ (11)

- $101100_2 \rightarrow ?_{16}$ ($2C_{16}$)
- $111101001010_2 \rightarrow ?_{16}$ ($F4A_{16}$)
- $10110000001_2 \rightarrow ?_{16}$ (581_{16})

4. Conversione esadecimale → binario

➤ (06)

- **0x5C** → ?₂ (1011100₂)
- **0xC17** → ?₂ (110000010111₂)
- **0x141** → ?₂ (101000001₂)
- **0xAB0C** → ?₂ (1010101100001100₂)

➤ (07,08)

- **0xB23** → ?₂ (101100100011₂)
- **0x223** → ?₂ (1000100011₂)
- **0x104D** → ?₂ (1000001001101₂)

➤ (09)

- **0xA71** → ?₂ (101001110001₂)
- **0x193** → ?₂ (110010011₂)
- **0x7004** → ?₂ (11100000000100₂)

➤ (10)

- **0xF15** → ?₂ (111100010101₂)
- **0x23A** → ?₂ (1000111010₂)
- **0x90D1** → ?₂ (1001000011010001₂)

➤ (11)

- **0xBD4** → ?₂ (101111010100₂)
- **0x159** → ?₂ (101011001₂)
- **0xB062** → ?₂ (1011000001100010₂)

5. Somme binaire

➤ (06)

- $100101_2 + 101_2 = ?_2$ (101010₂ 37+5=42)
- $11100011_2 + 1101101_2 = ?_2$ (101010000₂ 227+109=336)
- $101_2 + 101110101_2 = ?_2$ (101111010₂ 5+373=378)
- $100100110_2 + 101110101_2 = ?_2$ (1010011011₂ 294+373=667)

➤ (07,08)

- $1111111_2 + 10101000_2 = ?_2$ (100100111₂ 127+168=295)
- $1010_2 + 101010111_2 = ?_2$ (101100001₂ 10+343=353)
- $110110100_2 + 101010101_2 = ?_2$ (1100001001₂ 436+341=777)

➤ (09)

- $1111011_2 + 10101000_2 = ?_2$ (100100011₂ 123+168=291)
- $110_2 + 101011111_2 = ?_2$ (101100101₂ 6+351=357)
- $110111100_2 + 101100001_2 = ?_2$ (1100011101₂ 444+353=797)

➤ (10)

- $1000101_2 + 11101110_2 = ?_2$ (100110011₂ 69+238=307)
- $1101_2 + 110011001_2 = ?_2$ (110100110₂ 13+409=422)
- $100110110_2 + 100100001_2 = ?_2$ (1001010111₂ 310+289=599)

➤ (11)

- $1011101_2 + 11001100_2 = ?_2$ (100101001₂ 93+204=297)
- $10011_2 + 110111001_2 = ?_2$ (111001010₂ 19+441=460)
- $111100110_2 + 110101001_2 = ?_2$ (1110001111₂ 486+425=911)

6. Sottrazioni binarie (in complemento a due)

➤ (06)

- $1001_2 - 110_2 = ?_2$ ($+11_2$ 9-6 = 3)
- $101_2 - 1011_2 = ?_2$ ($-110_2 = 11010_{CA2}$ 5-11 = -6)
- $10011_2 - 1111_2 = ?_2$ ($+100_2$ 19-15 = 4)
- $1001_2 - 10111_2 = ?_2$ (*Eseguire i calcoli a 8 bit, segno compreso*)
($-1110_2 = 11110010_{CA2}$ 9-23 = -14)

➤ (07,08)

- $11_2 - 1100_2 = ?_2$ ($-1001_2 = 10111_{CA2}$ 3-12 = -9)
- $11001_2 - 1001_2 = ?_2$ ($+10000_2$ 25-9 = 16)
- $101_2 - 101111_2 = ?_2$ (*Eseguire i calcoli a 8 bit*)
($-101010_2 = 11010110_{CA2}$ 5-47 = -42)

➤ (09)

- $111_2 - 1010_2 = ?_2$ ($-11_2 = 11101_{CA2}$ 7-10 = -3)
- $11101_2 - 1001_2 = ?_2$ ($+10100_2$ 29-9 = 20)
- $101_2 - 101001_2 = ?_2$ (*Eseguire i calcoli a 8 bit*)
($-100100_2 = 11011100_{CA2}$ 5-41 = -36)

➤ (10)

- $10_2 - 1001_2 = ?_2$ ($-111_2 = 11001_{CA2}$ 2-9 = -7)
- $11011_2 - 101_2 = ?_2$ ($+10110_2$ 27-5 = 22)
- $-101_2 - 110100_2 = ?_2$ (*Eseguire i calcoli a 8 bit*)
($-111001_2 = 11000111_{CA2}$ -5-52 = -57)

➤ (11)

- $101_2 - 1011_2 = ?_2$ ($-110_2 = 11010_{CA2}$ 5-11 = -6)
- $10001_2 - 1111_2 = ?_2$ ($+10_2$ 17-15 = 2)
- $-111_2 - 101010_2 = ?_2$ (*Eseguire i calcoli a 8 bit*)
($-110001_2 = 11001111_{CA2}$ -7-42 = -49)

7. Conversione in floating point secondo lo standard IEEE 754

➤ (06)

- $-20,75_{10} = \langle s, e, m \rangle?$ ($\langle 1, 10000011, 010011000000000000000000 \rangle$)
- $-0,25_{10} = \langle s, e, m \rangle?$ ($\langle 1, 01111101, 000000000000000000000000 \rangle$)
- $+10_{10} = \langle s, e, m \rangle?$ ($\langle 0, 10000010, 010000000000000000000000 \rangle$)
- $-1,7_{10} = \langle s, e, m \rangle?$ ($\langle 1, 01111111, 10110011001100110011010 \rangle$)

➤ (07,08)

- $+0,125_{10} = \langle s, e, m \rangle?$ ($\langle 0, 01111100, 000000000000000000000000 \rangle$)
- $-5_{10} = \langle s, e, m \rangle?$ ($\langle 1, 10000001, 010000000000000000000000 \rangle$)

➤ (09)

- $+0,375_{10} = \langle s, e, m \rangle?$ ($\langle 0, 01111101, 100000000000000000000000 \rangle$)
- $-3_{10} = \langle s, e, m \rangle?$ ($\langle 1, 10000000, 100000000000000000000000 \rangle$)

➤ (10)

- $+19,5625_{10} = \langle s, e, m \rangle?$ ($\langle 0, 10000011, 001110010000000000000000 \rangle$)
- $-7,5_{10} = \langle s, e, m \rangle?$ ($\langle 1, 10000001, 111000000000000000000000 \rangle$)
- $-0,3_{10} = \langle s, e, m \rangle?$ ($\langle 1, 01111101, 00110011001100110011011 \rangle$)

➤ (11)

- $+9,3125_{10} = \langle s, e, m \rangle?$ ($\langle 0, 10000010, 001010100000000000000000 \rangle$)
- $-0,125_{10} = \langle s, e, m \rangle?$ ($\langle 1, 01111100, 000000000000000000000000 \rangle$)
- $0,1_{10} = \langle s, e, m \rangle?$ ($\langle 0, 01111011, 10011001100110011001100 \rangle$)