Università degli Studi di Milano

Laurea in Sicurezza dei sistemi e delle reti informatiche

Esercizi di conversione di base

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Fondamenti di informatica per la sicurezza

Indice

Esercizi

1. Esercizi di conversione in base decimale

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(11210)_5 = (x)_{10}$ [805]
2. $(147)_{12} = (x)_{10}$ [199]
3. $(12B)_{18} = (x)_{10}$ [371]
4. $(1670)_8 = (x)_{10}$ [952]
5. $(212)_{11} = (x)_{10}$ [255]
6. $(638)_{12} = (x)_{10}$ [908]
7. $(120)_4 = (x)_{10}$ [24]
8. $(1110001011)_2 = (x)_{10}$ [907]
9. $(I8)_{19} = (x)_{10}$ [350]
10. $(654)_8 = (x)_{10}$ [428]
11. $(3D4)_{16} = (x)_{10}$ [980]
12. $(351)_7 = (x)_{10}$ [183]
13. $(1DE)_{15} = (x)_{10}$ [434]
14. $(37C)_{16} = (x)_{10}$ [892]
15. $(226)_{12} = (x)_{10}$ [318]
16. $(41C)_{14} = (x)_{10}$ [810]
17. $(1100110011)_2 = (x)_{10}$ [819]
18. $(420)_5 = (x)_{10}$ [110]
19. $(1C9)_{15} = (x)_{10}$ [414]
20. $(2CA)_{16} = (x)_{10}$ [714]
21. $(1100110010)_2 = (x)_{10}$ [818]
22. $(307)_{12} = (x)_{10}$ [439]
23. $(21322)_4 = (x)_{10}$ [634]
24. $(1010000111)_2 = (x)_{10}$ [647]
25. $(3033)_4 = (x)_{10}$ [207]
26. $(201)_9 = (x)_{10}$ [163]
27. $(11120)_4 = (x)_{10}$ [344]
28. $(20A)_{13} = (x)_{10}$ [348]
29. $(1064)_8 = (x)_{10}$ [564]
30. $(2AE)_{15} = (x)_{10}$ [614]

2. Esercizi di conversione da base decimale

Convertire in notazione posizionale nella base indicata i seguenti numeri decimali, calcolando l'opportuno numerale x:

1. $(311)_{10} = (x)_6$ [1235]
2. $(267)_{10} = (x)_6$ [1123]
3. $(223)_{10} = (x)_2$ [11011111]
4. $(404)_{10} = (x)_9$ [488]
5. $(197)_{10} = (x)_{16}$ [C5]
6. $(584)_{10} = (x)_{11}$ [491]
7. $(233)_{10} = (x)_2$ [11101001]
8. $(519)_{10} = (x)_5$ [4034]
9. $(331)_{10} = (x)_5$ [2311]
10. $(434)_{10} = (x)_{17}$ [189]
11. $(994)_{10} = (x)_6$ [4334]
12. $(195)_{10} = (x)_6$ [523]
13. $(105)_{10} = (x)_{12}$ [89]
14. $(812)_{10} = (x)_9$ [1102]
15. $(373)_{10} = (x)_9$ [454]
16. $(185)_{10} = (x)_{14}$ [D3]
17. $(139)_{10} = (x)_6$ [351]
18. $(760)_{10} = (x)_5$ [11020]

19. $(766)_{10} = (x)_{11}$ [637]
20. $(189)_{10} = (x)_{17}$ [B2]
21. $(718)_{10} = (x)_{18}$ [23G]
22. $(914)_{10} = (x)_{19}$ [2A2]
23. $(677)_{10} = (x)_{18}$ [21B]
24. $(255)_{10} = (x)_{7}$ [513]
25. $(497)_{10} = (x)_{15}$ [232]
26. $(588)_{10} = (x)_{19}$ [1BI]
27. $(757)_{10} = (x)_{3}$ [1001001]
28. $(601)_{10} = (x)_{13}$ [373]
29. $(198)_{10} = (x)_{5}$ [1243]
30. $(759)_{10} = (x)_{8}$ [1367]

3. Esercizi di conversione da base binaria a base decimale

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(1101111010)_2 = (x)_{10}$ [890]
2. $(101110)_2 = (x)_{10}$ [46]
3. $(1111011101)_2 = (x)_{10}$ [989]
4. $(101111010)_2 = (x)_{10}$ [378]
5. $(100001000)_2 = (x)_{10}$ [264]
6. $(1000011011)_2 = (x)_{10}$ [539]
7. $(111011010)_2 = (x)_{10}$ [474]
8. $(100001)_2 = (x)_{10}$ [33]
9. $(110100001)_2 = (x)_{10}$ [417]
10. $(1010000000)_2 = (x)_{10}$ [640]
11. $(111100)_2 = (x)_{10}$ [60]
12. $(111111100)_2 = (x)_{10}$ [508]
13. $(1000000001)_2 = (x)_{10}$ [513]
14. $(1000000111)_2 = (x)_{10}$ [519]
15. $(10101111)_2 = (x)_{10}$ [175]
16. $(1111100000)_2 = (x)_{10}$ [992]
17. $(1001101101)_2 = (x)_{10}$ [621]
18. $(100001110)_2 = (x)_{10}$ [270]
19. $(1001100101)_2 = (x)_{10}$ [613]
20. $(1000010100)_2 = (x)_{10}$ [532]
21. $(100100111)_2 = (x)_{10}$ [295]
22. $(111110110)_2 = (x)_{10}$ [502]
23. $(1110)_2 = (x)_{10}$ [14]
24. $(1101000111)_2 = (x)_{10}$ [839]
25. $(111110)_2 = (x)_{10}$ [62]
26. $(10010101)_2 = (x)_{10}$ [149]
27. $(1011010011)_2 = (x)_{10}$ [723]
28. $(110011110)_2 = (x)_{10}$ [414]
29. $(1001111001)_2 = (x)_{10}$ [633]
30. $(1101001010)_2 = (x)_{10}$ [842]

4. Esercizi di conversione da base binaria a base ottale

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(101010011)_2 = (x)_{8}$ [523]
2. $(1101011100)_2 = (x)_{8}$ [1534]
3. $(100011000)_2 = (x)_{8}$ [430]
4. $(1010100100)_2 = (x)_{8}$ [1244]
5. $(110101100)_2 = (x)_{8}$ [654]
6. $(101110)_2 = (x)_{8}$ [56]

7. $(100101110)_2 = (x)_8$ [456]
8. $(1101010110)_2 = (x)_8$ [1526]
9. $(1010010011)_2 = (x)_8$ [1223]
10. $(1011011111)_2 = (x)_8$ [1337]
11. $(1001100)_2 = (x)_8$ [114]
12. $(1011001111)_2 = (x)_8$ [1317]
13. $(110000010)_2 = (x)_8$ [602]
14. $(111110001)_2 = (x)_8$ [761]
15. $(101100010)_2 = (x)_8$ [542]
16. $(110110110)_2 = (x)_8$ [666]
17. $(1101100111)_2 = (x)_8$ [1547]
18. $(1101111111)_2 = (x)_8$ [1577]
19. $(110100000)_2 = (x)_8$ [640]
20. $(1011100010)_2 = (x)_8$ [1342]
21. $(1010110000)_2 = (x)_8$ [1260]
22. $(1110100101)_2 = (x)_8$ [1645]
23. $(1100110111)_2 = (x)_8$ [1467]
24. $(1110110101)_2 = (x)_8$ [1665]
25. $(1010100)_2 = (x)_8$ [124]
26. $(1011111011)_2 = (x)_8$ [1373]
27. $(1101111010)_2 = (x)_8$ [1572]
28. $(1011011101)_2 = (x)_8$ [1335]
29. $(1010100011)_2 = (x)_8$ [1243]
30. $(1001110010)_2 = (x)_8$ [1162]

5. Esercizi di conversione da base binaria a base esadecimale

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(100001111)_2 = (x)_{16}$ [10F]
2. $(1100011110)_2 = (x)_{16}$ [31E]
3. $(1101100011)_2 = (x)_{16}$ [363]
4. $(10000010)_2 = (x)_{16}$ [82]
5. $(10100011)_2 = (x)_{16}$ [A3]
6. $(1110101001)_2 = (x)_{16}$ [3A9]
7. $(10111001)_2 = (x)_{16}$ [B9]
8. $(10010001)_2 = (x)_{16}$ [91]
9. $(110010)_2 = (x)_{16}$ [32]
10. $(101101)_2 = (x)_{16}$ [2D]
11. $(1101011100)_2 = (x)_{16}$ [35C]
12. $(1111000)_2 = (x)_{16}$ [78]
13. $(1001100110)_2 = (x)_{16}$ [266]
14. $(11001001)_2 = (x)_{16}$ [C9]
15. $(100111111)_2 = (x)_{16}$ [13F]
16. $(110100101)_2 = (x)_{16}$ [1A5]
17. $(10011110)_2 = (x)_{16}$ [9E]
18. $(111100111)_2 = (x)_{16}$ [1E7]
19. $(1000110010)_2 = (x)_{16}$ [232]
20. $(101001100)_2 = (x)_{16}$ [14C]
21. $(1101100110)_2 = (x)_{16}$ [366]
22. $(1101110010)_2 = (x)_{16}$ [372]
23. $(1110111)_2 = (x)_{16}$ [77]
24. $(110101100)_2 = (x)_{16}$ [1AC]
25. $(1001000)_2 = (x)_{16}$ [48]
26. $(111000111)_2 = (x)_{16}$ [1C7]
27. $(110110111)_2 = (x)_{16}$ [1B7]
28. $(111111110)_2 = (x)_{16}$ [1FE]
29. $(10111000)_2 = (x)_{16}$ [B8]
30. $(1000110110)_2 = (x)_{16}$ [236]

6. Esercizi di conversione da base decimale a base binaria

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(280)_{10} = (x)_2$ [100011000]
2. $(341)_{10} = (x)_2$ [101010101]
3. $(477)_{10} = (x)_2$ [111011101]
4. $(491)_{10} = (x)_2$ [111101011]
5. $(421)_{10} = (x)_2$ [110100101]
6. $(788)_{10} = (x)_2$ [1100010100]
7. $(249)_{10} = (x)_2$ [11111001]
8. $(487)_{10} = (x)_2$ [111100111]
9. $(438)_{10} = (x)_2$ [110110110]
10. $(19)_{10} = (x)_2$ [10011]
11. $(82)_{10} = (x)_2$ [1010010]
12. $(814)_{10} = (x)_2$ [1100101110]
13. $(365)_{10} = (x)_2$ [101101101]
14. $(298)_{10} = (x)_2$ [100101010]
15. $(713)_{10} = (x)_2$ [1011001001]
16. $(192)_{10} = (x)_2$ [11000000]
17. $(950)_{10} = (x)_2$ [1110110110]
18. $(908)_{10} = (x)_2$ [1110001100]
19. $(98)_{10} = (x)_2$ [1100010]
20. $(153)_{10} = (x)_2$ [10011001]
21. $(983)_{10} = (x)_2$ [1111010111]
22. $(39)_{10} = (x)_2$ [100111]
23. $(802)_{10} = (x)_2$ [1100100010]
24. $(214)_{10} = (x)_2$ [11010110]
25. $(690)_{10} = (x)_2$ [1010110010]
26. $(749)_{10} = (x)_2$ [1011101101]
27. $(844)_{10} = (x)_2$ [1101001100]
28. $(801)_{10} = (x)_2$ [1100100001]
29. $(913)_{10} = (x)_2$ [1110010001]
30. $(677)_{10} = (x)_2$ [1010100101]

7. Esercizi di conversione da base ottale a base binaria

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(1232)_8 = (x)_2$ [1010011010]
2. $(722)_8 = (x)_2$ [111010010]
3. $(1040)_8 = (x)_2$ [1000100000]
4. $(215)_8 = (x)_2$ [10001101]
5. $(1672)_8 = (x)_2$ [1110111010]
6. $(1405)_8 = (x)_2$ [1100000101]
7. $(250)_8 = (x)_2$ [10101000]
8. $(1611)_8 = (x)_2$ [1110001001]
9. $(325)_8 = (x)_2$ [11010101]
10. $(31)_8 = (x)_2$ [11001]
11. $(466)_8 = (x)_2$ [100110110]
12. $(753)_8 = (x)_2$ [111101011]
13. $(1212)_8 = (x)_2$ [1010001010]
14. $(212)_8 = (x)_2$ [10001010]
15. $(1504)_8 = (x)_2$ [1101000100]
16. $(1013)_8 = (x)_2$ [1000001011]
17. $(1414)_8 = (x)_2$ [1100001100]
18. $(754)_8 = (x)_2$ [111101100]
19. $(1251)_8 = (x)_2$ [1010101001]

20. $(1310)_8 = (x)_2$ [1011001000]
21. $(1360)_8 = (x)_2$ [1011110000]
22. $(337)_8 = (x)_2$ [11011111]
23. $(1353)_8 = (x)_2$ [1011101011]
24. $(1475)_8 = (x)_2$ [1100111101]
25. $(562)_8 = (x)_2$ [101110010]
26. $(761)_8 = (x)_2$ [111110001]
27. $(325)_8 = (x)_2$ [11010101]
28. $(1515)_8 = (x)_2$ [1101001101]
29. $(724)_8 = (x)_2$ [111010100]
30. $(404)_8 = (x)_2$ [100000100]

8. Esercizi di conversione da base esadecimale a base binaria

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(E4)_{16} = (x)_2$ [11100100]
2. $(112)_{16} = (x)_2$ [100010010]
3. $(1E1)_{16} = (x)_2$ [111100001]
4. $(140)_{16} = (x)_2$ [101000000]
5. $(3BD)_{16} = (x)_2$ [1110111101]
6. $(56)_{16} = (x)_2$ [1010110]
7. $(28D)_{16} = (x)_2$ [1010001101]
8. $(217)_{16} = (x)_2$ [1000010111]
9. $(3E2)_{16} = (x)_2$ [1111100010]
10. $(124)_{16} = (x)_2$ [100100100]
11. $(3E0)_{16} = (x)_2$ [1111100000]
12. $(214)_{16} = (x)_2$ [1000010100]
13. $(219)_{16} = (x)_2$ [1000011001]
14. $(209)_{16} = (x)_2$ [1000001001]
15. $(34F)_{16} = (x)_2$ [1101001111]
16. $(397)_{16} = (x)_2$ [1110010111]
17. $(355)_{16} = (x)_2$ [1101010101]
18. $(174)_{16} = (x)_2$ [101110100]
19. $(198)_{16} = (x)_2$ [110011000]
20. $(119)_{16} = (x)_2$ [100011001]
21. $(3CE)_{16} = (x)_2$ [1111001110]
22. $(329)_{16} = (x)_2$ [1100101001]
23. $(49)_{16} = (x)_2$ [1001001]
24. $(1D6)_{16} = (x)_2$ [111010110]
25. $(320)_{16} = (x)_2$ [1100100000]
26. $(195)_{16} = (x)_2$ [110010101]
27. $(13D)_{16} = (x)_2$ [100111101]
28. $(29E)_{16} = (x)_2$ [1010011110]
29. $(30)_{16} = (x)_2$ [110000]
30. $(2C6)_{16} = (x)_2$ [1011000110]

9. Esercizi di conversione da base decimale a base esadecimale

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(477)_{10} = (x)_{16}$ [1DD]
2. $(428)_{10} = (x)_{16}$ [1AC]
3. $(280)_{10} = (x)_{16}$ [118]
4. $(359)_{10} = (x)_{16}$ [167]
5. $(183)_{10} = (x)_{16}$ [B7]
6. $(97)_{10} = (x)_{16}$ [61]

7. $(4)_{10} = (x)_{16}$ [4]
8. $(670)_{10} = (x)_{16}$ [29E]
9. $(393)_{10} = (x)_{16}$ [189]
10. $(957)_{10} = (x)_{16}$ [3BD]
11. $(612)_{10} = (x)_{16}$ [264]
12. $(129)_{10} = (x)_{16}$ [81]
13. $(785)_{10} = (x)_{16}$ [311]
14. $(61)_{10} = (x)_{16}$ [3D]
15. $(106)_{10} = (x)_{16}$ [6A]
16. $(914)_{10} = (x)_{16}$ [392]
17. $(140)_{10} = (x)_{16}$ [8C]
18. $(375)_{10} = (x)_{16}$ [177]
19. $(258)_{10} = (x)_{16}$ [102]
20. $(119)_{10} = (x)_{16}$ [77]
21. $(859)_{10} = (x)_{16}$ [35B]
22. $(340)_{10} = (x)_{16}$ [154]
23. $(863)_{10} = (x)_{16}$ [35F]
24. $(633)_{10} = (x)_{16}$ [279]
25. $(351)_{10} = (x)_{16}$ [15F]
26. $(723)_{10} = (x)_{16}$ [2D3]
27. $(185)_{10} = (x)_{16}$ [B9]
28. $(820)_{10} = (x)_{16}$ [334]
29. $(399)_{10} = (x)_{16}$ [18F]
30. $(597)_{10} = (x)_{16}$ [255]

10. Esercizi di conversione da base decimale a base ottale

Convertire in notazione decimale i seguenti numeri, calcolando l'opportuno numerale x:

1. $(838)_{10} = (x)_8$ [1506]
2. $(45)_{10} = (x)_8$ [55]
3. $(76)_{10} = (x)_8$ [114]
4. $(601)_{10} = (x)_8$ [1131]
5. $(370)_{10} = (x)_8$ [562]
6. $(310)_{10} = (x)_8$ [466]
7. $(480)_{10} = (x)_8$ [740]
8. $(320)_{10} = (x)_8$ [500]
9. $(728)_{10} = (x)_8$ [1330]
10. $(807)_{10} = (x)_8$ [1447]
11. $(224)_{10} = (x)_8$ [340]
12. $(612)_{10} = (x)_8$ [1144]
13. $(451)_{10} = (x)_8$ [703]
14. $(589)_{10} = (x)_8$ [1115]
15. $(33)_{10} = (x)_8$ [41]
16. $(60)_{10} = (x)_8$ [74]
17. $(596)_{10} = (x)_8$ [1124]
18. $(605)_{10} = (x)_8$ [1135]
19. $(791)_{10} = (x)_8$ [1427]
20. $(287)_{10} = (x)_8$ [437]
21. $(524)_{10} = (x)_8$ [1014]
22. $(765)_{10} = (x)_8$ [1375]
23. $(532)_{10} = (x)_8$ [1024]
24. $(175)_{10} = (x)_8$ [257]
25. $(7)_{10} = (x)_8$ [7]
26. $(625)_{10} = (x)_8$ [1161]
27. $(77)_{10} = (x)_8$ [115]
28. $(92)_{10} = (x)_8$ [134]
29. $(474)_{10} = (x)_8$ [732]
30. $(788)_{10} = (x)_8$ [1424]

11. Esercizi di conversione di base

Convertire i seguenti numeri, calcolando l'opportuno numerale x:

1. $(1220)_8 = (x)_{10}$ [656]
2. $(415)_{15} = (x)_8$ [1630]
3. $(53)_{10} = (x)_4$ [311]
4. $(3A8)_{12} = (x)_2$ [1000110000]
5. $(2442)_5 = (x)_{10}$ [372]
6. $(221010)_3 = (x)_{12}$ [486]
7. $(586)_{12} = (x)_7$ [2253]
8. $(666)_{11} = (x)_7$ [2220]
9. $(385)_{15} = (x)_{12}$ [568]
10. $(238)_{13} = (x)_7$ [1060]
11. $(229)_{13} = (x)_3$ [111211]
12. $(A0)_{15} = (x)_2$ [10010110]
13. $(1BB)_{14} = (x)_6$ [1401]
14. $(1520)_6 = (x)_{11}$ [341]
15. $(45A)_{15} = (x)_3$ [1100111]
16. $(2010)_6 = (x)_{16}$ [1B6]
17. $(5)_{14} = (x)_4$ [11]
18. $(1102)_4 = (x)_{13}$ [64]
19. $(10)_{12} = (x)_3$ [110]
20. $(101101101)_2 = (x)_{14}$ [1C1]
21. $(575)_{13} = (x)_4$ [32231]
22. $(488)_{11} = (x)_{15}$ [28A]
23. $(14B)_{16} = (x)_{14}$ [199]
24. $(247)_{11} = (x)_{15}$ [148]
25. $(58A)_{12} = (x)_{13}$ [4B7]
26. $(2602)_7 = (x)_{16}$ [3D6]
27. $(11111101)_2 = (x)_6$ [1101]
28. $(3013)_5 = (x)_{11}$ [319]
29. $(1111000010)_2 = (x)_{13}$ [590]
30. $(602)_{10} = (x)_5$ [4402]

Soluzioni

1. Esercizi di conversione in base decimale

1. $(11210)_5 = 1{\cdot}5^4{+}1{\cdot}5^3{+}2{\cdot}5^2{+}1{\cdot}5^1{+}0{\cdot}5^0 = 1 \cdot 625 + 1 \cdot 125 + 2 \cdot 25 + 1 \cdot 5 + 0 \cdot 1 = 625 + 125 + 50 + 5 + 0 = 805$

   $(11210)_5 = (805)_{10}$

   $x = 805$

2. $(147)_{12} = 1 \cdot 12^2 + 4 \cdot 12^1 + 7 \cdot 12^0 = 1 \cdot 144 + 4 \cdot 12 + 7 \cdot 1 = 144 + 48 + 7 = 199$

   $(147)_{12} = (199)_{10}$

   $x = 199$

3. $(12\mathrm{B})_{18} = 1 \cdot 18^2 + 2 \cdot 18^1 + 11 \cdot 18^0 = 1{\cdot}324{+}2{\cdot}18{+}11{\cdot}1 = 324{+}36{+}11 = 371$

   $(12\mathrm{B})_{18} = (371)_{10}$

   $x = 371$

4. $(1670)_8 = 1{\cdot}8^3{+}6{\cdot}8^2{+}7{\cdot}8^1{+}0{\cdot}8^0 = 1{\cdot}512{+}6{\cdot}64{+}7{\cdot}8{+}0{\cdot}1 = 512{+}384{+}56{+}0 = 952$

   $(1670)_8 = (952)_{10}$

   $x = 952$

5. $(212)_{11} = 2 \cdot 11^2 + 1 \cdot 11^1 + 2 \cdot 11^0 = 2 \cdot 121 + 1 \cdot 11 + 2 \cdot 1 = 242 + 11 + 2 = 255$

   $(212)_{11} = (255)_{10}$

   $x = 255$

6. $(638)_{12} = 6 \cdot 12^2 + 3 \cdot 12^1 + 8 \cdot 12^0 = 6 \cdot 144 + 3 \cdot 12 + 8 \cdot 1 = 864 + 36 + 8 = 908$

   $(638)_{12} = (908)_{10}$

   $x = 908$

7. $(120)_4 = 1 \cdot 4^2 + 2 \cdot 4^1 + 0 \cdot 4^0 = 1 \cdot 16 + 2 \cdot 4 + 0 \cdot 1 = 16 + 8 + 0 = 24$

   $(120)_4 = (24)_{10}$

   $x = 24$

8. $(1110001011)_2 = 1{\cdot}2^9{+}1{\cdot}2^8{+}1{\cdot}2^7{+}0{\cdot}2^6{+}0{\cdot}2^5{+}0{\cdot}2^4{+}1{\cdot}2^3{+}0{\cdot}2^2{+}1{\cdot}2^1{+}1{\cdot}2^0 = 1 \cdot 512 + 1 \cdot 256 + 1 \cdot 128 + 0 \cdot 64 + 0 \cdot 32 + 0 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 512{+}256{+}128{+}0{+}0{+}0{+}8{+}0{+}2{+}1 = 907$

   $(1110001011)_2 = (907)_{10}$

   $x = 907$

9. $(\mathrm{I8})_{19} = 18 \cdot 19^1 + 8 \cdot 19^0 = 18 \cdot 19 + 8 \cdot 1 = 342 + 8 = 350$

   $(\mathrm{I8})_{19} = (350)_{10}$

   $x = 350$

10. $(654)_8 = 6 \cdot 8^2 + 5 \cdot 8^1 + 4 \cdot 8^0 = 6 \cdot 64 + 5 \cdot 8 + 4 \cdot 1 = 384 + 40 + 4 = 428$

    $(654)_8 = (428)_{10}$

    $x = 428$

11. $(3\mathrm{D}4)_{16} = 3 \cdot 16^2 + 13 \cdot 16^1 + 4 \cdot 16^0 = 3{\cdot}256{+}13{\cdot}16{+}4{\cdot}1 = 768{+}208{+}4 = 980$

    $(3\mathrm{D}4)_{16} = (980)_{10}$

    $x = 980$

12. $(351)_7 = 3 \cdot 7^2 + 5 \cdot 7^1 + 1 \cdot 7^0 = 3 \cdot 49 + 5 \cdot 7 + 1 \cdot 1 = 147 + 35 + 1 = 183$

    $(351)_7 = (183)_{10}$

    $x = 183$

13. $(1\mathrm{DE})_{15} = 1 \cdot 15^2 + 13 \cdot 15^1 + 14 \cdot 15^0 = 1{\cdot}225{+}13{\cdot}15{+}14{\cdot}1 = 225{+}195{+}14 = 434$

    $(1\mathrm{DE})_{15} = (434)_{10}$

    $x = 434$

14. $(37\mathrm{C})_{16} = 3 \cdot 16^2 + 7 \cdot 16^1 + 12 \cdot 16^0 = 3{\cdot}256{+}7{\cdot}16{+}12{\cdot}1 = 768{+}112{+}12 = 892$

    $(37\mathrm{C})_{16} = (892)_{10}$

    $x = 892$

15. $(226)_{12} = 2 \cdot 12^2 + 2 \cdot 12^1 + 6 \cdot 12^0 = 2 \cdot 144 + 2 \cdot 12 + 6 \cdot 1 = 288 + 24 + 6 = 318$

    $(226)_{12} = (318)_{10}$

    $x = 318$

16. $(41C)_{14} = 4 \cdot 14^2 + 1 \cdot 14^1 + 12 \cdot 14^0 = 4 \cdot 196 + 1 \cdot 14 + 12 \cdot 1 = 784 + 14 + 12 = 810$

    $(41C)_{14} = (810)_{10}$

    $x = 810$

17. $(1100110011)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 0 \cdot 2^7 + 0 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 0 \cdot 128 + 0 \cdot 64 + 1 \cdot 32 + 1 \cdot 16 + 0 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 512 + 256 + 0 + 0 + 32 + 16 + 0 + 0 + 2 + 1 = 819$

    $(1100110011)_2 = (819)_{10}$

    $x = 819$

18. $(420)_5 = 4 \cdot 5^2 + 2 \cdot 5^1 + 0 \cdot 5^0 = 4 \cdot 25 + 2 \cdot 5 + 0 \cdot 1 = 100 + 10 + 0 = 110$

    $(420)_5 = (110)_{10}$

    $x = 110$

19. $(1C9)_{15} = 1 \cdot 15^2 + 12 \cdot 15^1 + 9 \cdot 15^0 = 1 \cdot 225 + 12 \cdot 15 + 9 \cdot 1 = 225 + 180 + 9 = 414$

    $(1C9)_{15} = (414)_{10}$

    $x = 414$

20. $(2CA)_{16} = 2 \cdot 16^2 + 12 \cdot 16^1 + 10 \cdot 16^0 = 2 \cdot 256 + 12 \cdot 16 + 10 \cdot 1 = 512 + 192 + 10 = 714$

    $(2CA)_{16} = (714)_{10}$

    $x = 714$

21. $(1100110010)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 0 \cdot 2^7 + 0 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 0 \cdot 128 + 0 \cdot 64 + 1 \cdot 32 + 1 \cdot 16 + 0 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 512 + 256 + 0 + 0 + 32 + 16 + 0 + 0 + 2 + 0 = 818$

    $(1100110010)_2 = (818)_{10}$

    $x = 818$

22. $(307)_{12} = 3 \cdot 12^2 + 0 \cdot 12^1 + 7 \cdot 12^0 = 3 \cdot 144 + 0 \cdot 12 + 7 \cdot 1 = 432 + 0 + 7 = 439$

    $(307)_{12} = (439)_{10}$

    $x = 439$

23. $(21322)_4 = 2 \cdot 4^4 + 1 \cdot 4^3 + 3 \cdot 4^2 + 2 \cdot 4^1 + 2 \cdot 4^0 = 2 \cdot 256 + 1 \cdot 64 + 3 \cdot 16 + 2 \cdot 4 + 2 \cdot 1 = 512 + 64 + 48 + 8 + 2 = 634$

    $(21322)_4 = (634)_{10}$

    $x = 634$

24. $(1010000111)_2 = 1 \cdot 2^9 + 0 \cdot 2^8 + 1 \cdot 2^7 + 0 \cdot 2^6 + 0 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 512 + 0 \cdot 256 + 1 \cdot 128 + 0 \cdot 64 + 0 \cdot 32 + 0 \cdot 16 + 0 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 512 + 0 + 128 + 0 + 0 + 0 + 0 + 4 + 2 + 1 = 647$

    $(1010000111)_2 = (647)_{10}$

    $x = 647$

25. $(3033)_4 = 3 \cdot 4^3 + 0 \cdot 4^2 + 3 \cdot 4^1 + 3 \cdot 4^0 = 3 \cdot 64 + 0 \cdot 16 + 3 \cdot 4 + 3 \cdot 1 = 192 + 0 + 12 + 3 = 207$

    $(3033)_4 = (207)_{10}$

    $x = 207$

26. $(201)_9 = 2 \cdot 9^2 + 0 \cdot 9^1 + 1 \cdot 9^0 = 2 \cdot 81 + 0 \cdot 9 + 1 \cdot 1 = 162 + 0 + 1 = 163$

    $(201)_9 = (163)_{10}$

    $x = 163$

27. $(11120)_4 = 1 \cdot 4^4 + 1 \cdot 4^3 + 1 \cdot 4^2 + 2 \cdot 4^1 + 0 \cdot 4^0 = 1 \cdot 256 + 1 \cdot 64 + 1 \cdot 16 + 2 \cdot 4 + 0 \cdot 1 = 256 + 64 + 16 + 8 + 0 = 344$

    $(11120)_4 = (344)_{10}$

    $x = 344$

28. $(20A)_{13} = 2 \cdot 13^2 + 0 \cdot 13^1 + 10 \cdot 13^0 = 2 \cdot 169 + 0 \cdot 13 + 10 \cdot 1 = 338 + 0 + 10 = 348$

    $(20A)_{13} = (348)_{10}$

    $x = 348$

29. $(1064)_8 = 1 \cdot 8^3 + 0 \cdot 8^2 + 6 \cdot 8^1 + 4 \cdot 8^0 = 1 \cdot 512 + 0 \cdot 64 + 6 \cdot 8 + 4 \cdot 1 = 512 + 0 + 48 + 4 = 564$

    $(1064)_8 = (564)_{10}$

    $x = 564$

30. $(2AE)_{15} = 2 \cdot 15^2 + 10 \cdot 15^1 + 14 \cdot 15^0 = 2 \cdot 225 + 10 \cdot 15 + 14 \cdot 1 = 450 + 150 + 14 = 614$

    $(2AE)_{15} = (614)_{10}$

    $x = 614$

2. Esercizi di conversione da base decimale

1.

quoziente	resto
311	
51	5
8	3
1	2
0	1

$(311)_{10} = (1235)_6$

$x = 1235$

2.

quoziente	resto
267	
44	3
7	2
1	1
0	1

$(267)_{10} = (1123)_6$

$x = 1123$

3.

quoziente	resto
223	
111	1
55	1
27	1
13	1
6	1
3	0
1	1
0	1

$(223)_{10} = (11011111)_2$

$x = 11011111$

4.

quoziente	resto
404	
44	8
4	8
0	4

$(404)_{10} = (488)_9$

$x = 488$

5.

quoziente	resto
197	
12	5
0	12

$(197)_{10} = (\mathrm{C5})_{16}$

$x = C5$

6.

quoziente	resto
584	
53	1
4	9
0	4

$(584)_{10} = (491)_{11}$

$x = 491$

7.

quoziente	resto
233	
116	1
58	0
29	0
14	1
7	0
3	1
1	1
0	1

$(233)_{10} = (11101001)_2$

$x = 11101001$

8.

quoziente	resto
519	
103	4
20	3
4	0
0	4

$(519)_{10} = (4034)_5$

$x = 4034$

9.

quoziente	resto
331	
66	1
13	1
2	3
0	2

$(331)_{10} = (2311)_5$

$x = 2311$

10.

quoziente	resto
434	
25	9
1	8
0	1

$(434)_{10} = (189)_{17}$

$x = 189$

11.

quoziente	resto
994	
165	4
27	3
4	3
0	4

$(994)_{10} = (4334)_6$

$x = 4334$

12.

quoziente	resto
195	
32	3
5	2
0	5

$(195)_{10} = (523)_6$

$x = 523$

13.

quoziente	resto
105	
8	9
0	8

$(105)_{10} = (89)_{12}$

$x = 89$

14.

quoziente	resto
812	
90	2
10	0
1	1
0	1

$(812)_{10} = (1102)_9$

$x = 1102$

15.

quoziente	resto
373	
41	4
4	5
0	4

$(373)_{10} = (454)_9$

$x = 454$

16.

quoziente	resto
185	
13	3
0	13

$(185)_{10} = (\mathrm{D3})_{14}$

$x = D3$

17.

quoziente	resto
139	
23	1
3	5
0	3

$(139)_{10} = (351)_6$

$x = 351$

18.

quoziente	resto
760	
152	0
30	2
6	0
1	1
0	1

$(760)_{10} = (11020)_5$

$x = 11020$

19.

quoziente	resto
766	
69	7
6	3
0	6

$(766)_{10} = (637)_{11}$

$x = 637$

20.

quoziente	resto
189	
11	2
0	11

$(189)_{10} = (\mathrm{B2})_{17}$

$x = B2$

21.

quoziente	resto
718	
39	16
2	3
0	2

$(718)_{10} = (\mathrm{23G})_{18}$

$x = 23G$

22.

quoziente	resto
914	
48	2
2	10
0	2

$(914)_{10} = (\mathrm{2A2})_{19}$

$x = 2A2$

23.

quoziente	resto
677	
37	11
2	1
0	2

$(677)_{10} = (\mathrm{21B})_{18}$

$x = 21B$

24.

quoziente	resto
255	
36	3
5	1
0	5

$(255)_{10} = (513)_7$

$x = 513$

25.

quoziente	resto
497	
33	2
2	3
0	2

$(497)_{10} = (232)_{15}$

$x = 232$

26.

quoziente	resto
588	
30	18
1	11
0	1

$(588)_{10} = (\mathrm{1BI})_{19}$

$x = 1BI$

27.

quoziente	resto
757	
252	1
84	0
28	0
9	1
3	0
1	0
0	1

$(757)_{10} = (1001001)_3$

$x = 1001001$

28.

quoziente	resto
601	
46	3
3	7
0	3

$(601)_{10} = (373)_{13}$

$x = 373$

29.

quoziente	resto
198	
39	3
7	4
1	2
0	1

$(198)_{10} = (1243)_5$

$x = 1243$

30.

quoziente	resto
759	
94	7
11	6
1	3
0	1

$(759)_{10} = (1367)_8$

$x = 1367$

3. Esercizi di conversione da base binaria a base decimale

1. $(1101111010)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 0 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 0 \cdot 128 + 1 \cdot 64 + 1 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 512 + 256 + 0 + 64 + 32 + 16 + 8 + 0 + 2 + 0 = 890$

   $(1101111010)_2 = (890)_{10}$

   $x = 890$

2. $(101110)_2 = 1 \cdot 2^5 + 0 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 32 + 0 \cdot 16 + 1 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 32 + 0 + 8 + 4 + 2 + 0 = 46$

   $(101110)_2 = (46)_{10}$

   $x = 46$

3. $(1111011101)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 1 \cdot 128 + 1 \cdot 64 + 0 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 1 \cdot 4 + 0 \cdot 2 + 1 \cdot 1 = 512 + 256 + 128 + 64 + 0 + 16 + 8 + 4 + 0 + 1 = 989$

   $(1111011101)_2 = (989)_{10}$

   $x = 989$

4. $(101111010)_2 = 1 \cdot 2^8 + 0 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 256 + 0 \cdot 128 + 1 \cdot 64 + 1 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 256 + 0 + 64 + 32 + 16 + 8 + 0 + 2 + 0 = 378$

   $(101111010)_2 = (378)_{10}$

   $x = 378$

5. $(100001000)_2 = 1 \cdot 2^8 + 0 \cdot 2^7 + 0 \cdot 2^6 + 0 \cdot 2^5 + 0 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 0 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 256 + 0 \cdot 128 + 0 \cdot 64 + 0 \cdot 32 + 0 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 0 \cdot 2 + 0 \cdot 1 = 256 + 0 + 0 + 0 + 0 + 8 + 0 + 0 + 0 = 264$

   $(100001000)_2 = (264)_{10}$

   $x = 264$

6. $(1000011011)_2 = 1 \cdot 2^9 + 0 \cdot 2^8 + 0 \cdot 2^7 + 0 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 512 + 0 \cdot 256 + 0 \cdot 128 + 0 \cdot 64 + 0 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 512 + 0 + 0 + 0 + 0 + 16 + 8 + 0 + 2 + 1 = 539$

   $(1000011011)_2 = (539)_{10}$

   $x = 539$

7. $(111011010)_2 = 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 256 + 1 \cdot 128 + 1 \cdot 64 + 0 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 256 + 128 + 64 + 0 + 16 + 8 + 0 + 2 + 0 = 474$

   $(111011010)_2 = (474)_{10}$

   $x = 474$

8. $(100001)_2 = 1 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 32 + 0 \cdot 16 + 0 \cdot 8 + 0 \cdot 4 + 0 \cdot 2 + 1 \cdot 1 = 32 + 0 + 0 + 0 + 0 + 1 = 33$

   $(100001)_2 = (33)_{10}$

   $x = 33$

9. $(110100001)_2 = 1 \cdot 2^8 + 1 \cdot 2^7 + 0 \cdot 2^6 + 1 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 256 + 1 \cdot$

$128+0\cdot64+1\cdot32+0\cdot16+0\cdot8+0\cdot4+0\cdot2+1\cdot1 = 256+128+0+32+0+0+0+0+1 = 417$

$(110100001)_2 = (417)_{10}$

$x = 417$

10. $(1010000000)_2 = 1\cdot2^9+0\cdot2^8+1\cdot2^7+0\cdot2^6+0\cdot2^5+0\cdot2^4+0\cdot2^3+0\cdot2^2+0\cdot2^1+0\cdot2^0 = 1\cdot512+0\cdot256+1\cdot128+0\cdot64+0\cdot32+0\cdot16+0\cdot8+0\cdot4+0\cdot2+0\cdot1 = 512+0+128+0+0+0+0+0+0+0 = 640$

    $(1010000000)_2 = (640)_{10}$

    $x = 640$

11. $(111100)_2 = 1\cdot2^5+1\cdot2^4+1\cdot2^3+1\cdot2^2+0\cdot2^1+0\cdot2^0 = 1\cdot32+1\cdot16+1\cdot8+1\cdot4+0\cdot2+0\cdot1 = 32+16+8+4+0+0 = 60$

    $(111100)_2 = (60)_{10}$

    $x = 60$

12. $(111111100)_2 = 1\cdot2^8+1\cdot2^7+1\cdot2^6+1\cdot2^5+1\cdot2^4+1\cdot2^3+1\cdot2^2+0\cdot2^1+0\cdot2^0 = 1\cdot256+1\cdot128+1\cdot64+1\cdot32+1\cdot16+1\cdot8+1\cdot4+0\cdot2+0\cdot1 = 256+128+64+32+16+8+4+0+0 = 508$

    $(111111100)_2 = (508)_{10}$

    $x = 508$

13. $(1000000001)_2 = 1\cdot2^9+0\cdot2^8+0\cdot2^7+0\cdot2^6+0\cdot2^5+0\cdot2^4+0\cdot2^3+0\cdot2^2+0\cdot2^1+1\cdot2^0 = 1\cdot512+0\cdot256+0\cdot128+0\cdot64+0\cdot32+0\cdot16+0\cdot8+0\cdot4+0\cdot2+1\cdot1 = 512+0+0+0+0+0+0+0+0+1 = 513$

    $(1000000001)_2 = (513)_{10}$

    $x = 513$

14. $(1000000111)_2 = 1\cdot2^9+0\cdot2^8+0\cdot2^7+0\cdot2^6+0\cdot2^5+0\cdot2^4+0\cdot2^3+1\cdot2^2+1\cdot2^1+1\cdot2^0 = 1\cdot512+0\cdot256+0\cdot128+0\cdot64+0\cdot32+0\cdot16+0\cdot8+1\cdot4+1\cdot2+1\cdot1 = 512+0+0+0+0+0+0+4+2+1 = 519$

    $(1000000111)_2 = (519)_{10}$

    $x = 519$

15. $(10101111)_2 = 1\cdot2^7+0\cdot2^6+1\cdot2^5+0\cdot2^4+1\cdot2^3+1\cdot2^2+1\cdot2^1+1\cdot2^0 = 1\cdot128+0\cdot64+1\cdot32+0\cdot16+1\cdot8+1\cdot4+1\cdot2+1\cdot1 = 128+0+32+0+8+4+2+1 = 175$

    $(10101111)_2 = (175)_{10}$

    $x = 175$

16. $(1111100000)_2 = 1\cdot2^9+1\cdot2^8+1\cdot2^7+1\cdot2^6+1\cdot2^5+0\cdot2^4+0\cdot2^3+0\cdot2^2+0\cdot2^1+0\cdot2^0 = 1\cdot512+1\cdot256+1\cdot128+1\cdot64+1\cdot32+0\cdot16+0\cdot8+0\cdot4+0\cdot2+0\cdot1 = 512+256+128+64+32+0+0+0+0+0 = 992$

    $(1111100000)_2 = (992)_{10}$

    $x = 992$

17. $(1001101101)_2 = 1\cdot2^9+0\cdot2^8+0\cdot2^7+1\cdot2^6+1\cdot2^5+0\cdot2^4+1\cdot2^3+1\cdot2^2+0\cdot2^1+1\cdot2^0 = 1\cdot512+0\cdot256+0\cdot128+1\cdot64+1\cdot32+0\cdot16+1\cdot8+1\cdot4+0\cdot2+1\cdot1 = 512+0+0+64+32+0+8+4+0+1 = 621$

    $(1001101101)_2 = (621)_{10}$

    $x = 621$

18. $(100001110)_2 = 1\cdot2^8+0\cdot2^7+0\cdot2^6+0\cdot2^5+0\cdot2^4+1\cdot2^3+1\cdot2^2+1\cdot2^1+0\cdot2^0 = 1\cdot256+0\cdot128+0\cdot64+0\cdot32+0\cdot16+1\cdot8+1\cdot4+1\cdot2+0\cdot1 = 256+0+0+0+0+8+4+2+0 = 270$

    $(100001110)_2 = (270)_{10}$

    $x = 270$

19. $(1001100101)_2 = 1\cdot2^9+0\cdot2^8+0\cdot2^7+1\cdot2^6+1\cdot2^5+0\cdot2^4+0\cdot2^3+1\cdot2^2+0\cdot2^1+1\cdot2^0 = 1\cdot512+0\cdot256+0\cdot128+1\cdot64+1\cdot32+0\cdot16+0\cdot8+1\cdot4+0\cdot2+1\cdot1 = 512+0+0+64+32+0+0+4+0+1 = 613$

    $(1001100101)_2 = (613)_{10}$

    $x = 613$

20. $(1000010100)_2 = 1\cdot2^9+0\cdot2^8+0\cdot2^7+0\cdot2^6+0\cdot2^5+1\cdot2^4+0\cdot2^3+1\cdot2^2+0\cdot2^1+0\cdot2^0 = 1\cdot512+0\cdot256+0\cdot128+0\cdot64+0\cdot32+1\cdot16+0\cdot8+1\cdot4+0\cdot2+0\cdot1 = 512+0+0+0+0+16+0+4+0+0 = 532$

    $(1000010100)_2 = (532)_{10}$

$x = 532$

21. $(100100111)_2 = 1\cdot2^8+0\cdot2^7+0\cdot2^6+1\cdot2^5+0\cdot2^4+0\cdot2^3+1\cdot2^2+1\cdot2^1+1\cdot2^0 = 1\cdot256+0\cdot128+0\cdot64+1\cdot32+0\cdot16+0\cdot8+1\cdot4+1\cdot2+1\cdot1 = 256+0+0+32+0+0+4+2+1 = 295$

    $(100100111)_2 = (295)_{10}$

    $x = 295$

22. $(111110110)_2 = 1\cdot2^8+1\cdot2^7+1\cdot2^6+1\cdot2^5+1\cdot2^4+0\cdot2^3+1\cdot2^2+1\cdot2^1+0\cdot2^0 = 1\cdot256+1\cdot128+1\cdot64+1\cdot32+1\cdot16+0\cdot8+1\cdot4+1\cdot2+0\cdot1 = 256+128+64+32+16+0+4+2+0 = 502$

    $(111110110)_2 = (502)_{10}$

    $x = 502$

23. $(1110)_2 = 1\cdot2^3+1\cdot2^2+1\cdot2^1+0\cdot2^0 = 1\cdot8+1\cdot4+1\cdot2+0\cdot1 = 8+4+2+0 = 14$

    $(1110)_2 = (14)_{10}$

    $x = 14$

24. $(1101000111)_2 = 1\cdot2^9+1\cdot2^8+0\cdot2^7+1\cdot2^6+0\cdot2^5+0\cdot2^4+0\cdot2^3+1\cdot2^2+1\cdot2^1+1\cdot2^0 = 1\cdot512+1\cdot256+0\cdot128+1\cdot64+0\cdot32+0\cdot16+0\cdot8+1\cdot4+1\cdot2+1\cdot1 = 512+256+0+64+0+0+0+4+2+1 = 839$

    $(1101000111)_2 = (839)_{10}$

    $x = 839$

25. $(111110)_2 = 1\cdot2^5+1\cdot2^4+1\cdot2^3+1\cdot2^2+1\cdot2^1+0\cdot2^0 = 1\cdot32+1\cdot16+1\cdot8+1\cdot4+1\cdot2+0\cdot1 = 32+16+8+4+2+0 = 62$

    $(111110)_2 = (62)_{10}$

    $x = 62$

26. $(10010101)_2 = 1\cdot2^7+0\cdot2^6+0\cdot2^5+1\cdot2^4+0\cdot2^3+1\cdot2^2+0\cdot2^1+1\cdot2^0 = 1\cdot128+0\cdot64+0\cdot32+1\cdot16+0\cdot8+1\cdot4+0\cdot2+1\cdot1 = 128+0+0+16+0+4+0+1 = 149$

    $(10010101)_2 = (149)_{10}$

    $x = 149$

27. $(1011010011)_2 = 1\cdot2^9+0\cdot2^8+1\cdot2^7+1\cdot2^6+0\cdot2^5+1\cdot2^4+0\cdot2^3+0\cdot2^2+1\cdot2^1+1\cdot2^0 = 1\cdot512+0\cdot256+1\cdot128+1\cdot64+0\cdot32+1\cdot16+0\cdot8+0\cdot4+1\cdot2+1\cdot1 = 512+0+128+64+0+16+0+0+2+1 = 723$

    $(1011010011)_2 = (723)_{10}$

    $x = 723$

28. $(110011110)_2 = 1\cdot2^8+1\cdot2^7+0\cdot2^6+0\cdot2^5+1\cdot2^4+1\cdot2^3+1\cdot2^2+1\cdot2^1+0\cdot2^0 = 1\cdot256+1\cdot128+0\cdot64+0\cdot32+1\cdot16+1\cdot8+1\cdot4+1\cdot2+0\cdot1 = 256+128+0+0+16+8+4+2+0 = 414$

    $(110011110)_2 = (414)_{10}$

    $x = 414$

29. $(1001111001)_2 = 1\cdot2^9+0\cdot2^8+0\cdot2^7+1\cdot2^6+1\cdot2^5+1\cdot2^4+1\cdot2^3+0\cdot2^2+0\cdot2^1+1\cdot2^0 = 1\cdot512+0\cdot256+0\cdot128+1\cdot64+1\cdot32+1\cdot16+1\cdot8+0\cdot4+0\cdot2+1\cdot1 = 512+0+0+64+32+16+8+0+0+1 = 633$

    $(1001111001)_2 = (633)_{10}$

    $x = 633$

30. $(1101001010)_2 = 1\cdot2^9+1\cdot2^8+0\cdot2^7+1\cdot2^6+0\cdot2^5+0\cdot2^4+1\cdot2^3+0\cdot2^2+1\cdot2^1+0\cdot2^0 = 1\cdot512+1\cdot256+0\cdot128+1\cdot64+0\cdot32+0\cdot16+1\cdot8+0\cdot4+1\cdot2+0\cdot1 = 512+256+0+64+0+0+8+0+2+0 = 842$

    $(1101001010)_2 = (842)_{10}$

    $x = 842$

4. Esercizi di conversione da base binaria a base ottale

1.

base 2	101	010	011
base 8	5	2	3

$(101010011)_2 = (523)_8$

$x = 523$

2.

base 2	001	101	011	100
base 8	1	5	3	4

$(1101011100)_2 = (1534)_8$

$x = 1534$

3.

base 2	100	011	000
base 8	4	3	0

$(100011000)_2 = (430)_8$

$x = 430$

4.

base 2	001	010	100	100
base 8	1	2	4	4

$(1010100100)_2 = (1244)_8$

$x = 1244$

5.

base 2	110	101	100
base 8	6	5	4

$(110101100)_2 = (654)_8$

$x = 654$

6.

base 2	101	110
base 8	5	6

$(101110)_2 = (56)_8$

$x = 56$

7.

base 2	100	101	110
base 8	4	5	6

$(100101110)_2 = (456)_8$

$x = 456$

8.

base 2	001	101	010	110
base 8	1	5	2	6

$(1101010110)_2 = (1526)_8$

$x = 1526$

9.

base 2	001	010	010	011
base 8	1	2	2	3

$(1010010011)_2 = (1223)_8$

$x = 1223$

10.

base 2	001	011	011	111
base 8	1	3	3	7

$(1011011111)_2 = (1337)_8$

$x = 1337$

11.

base 2	001	001	100
base 8	1	1	4

$(1001100)_2 = (114)_8$

$x = 114$

12.

base 2	001	011	001	111
base 8	1	3	1	7

$(1011001111)_2 = (1317)_8$

$x = 1317$

13.

base 2	110	000	010
base 8	6	0	2

$(110000010)_2 = (602)_8$

$x = 602$

14.

base 2	111	110	001
base 8	7	6	1

$(111110001)_2 = (761)_8$

$x = 761$

15.

base 2	101	100	010
base 8	5	4	2

$(101100010)_2 = (542)_8$

$x = 542$

16.

base 2	110	110	110
base 8	6	6	6

$(110110110)_2 = (666)_8$

$x = 666$

17.

base 2	001	101	100	111
base 8	1	5	4	7

$(1101100111)_2 = (1547)_8$

$x = 1547$

18.

base 2	001	101	111	111
base 8	1	5	7	7

$(1101111111)_2 = (1577)_8$

$x = 1577$

19.

base 2	110	100	000
base 8	6	4	0

$(110100000)_2 = (640)_8$

$x = 640$

20.

base 2	001	011	100	010
base 8	1	3	4	2

$(1011100010)_2 = (1342)_8$

$x = 1342$

21.

base 2	001	010	110	000
base 8	1	2	6	0

$(1010110000)_2 = (1260)_8$

$x = 1260$

22.

base 2	001	110	100	101
base 8	1	6	4	5

$(1110100101)_2 = (1645)_8$

$x = 1645$

23.

base 2	001	100	110	111
base 8	1	4	6	7

$(1100110111)_2 = (1467)_8$

$x = 1467$

24.

base 2	001	110	110	101
base 8	1	6	6	5

$(1110110101)_2 = (1665)_8$

$x = 1665$

25.

base 2	001	010	100
base 8	1	2	4

$(1010100)_2 = (124)_8$

$x = 124$

26.

base 2	001	011	111	011
base 8	1	3	7	3

$(1011111011)_2 = (1373)_8$

$x = 1373$

27.

base 2	001	101	111	010
base 8	1	5	7	2

$(1101111010)_2 = (1572)_8$

$x = 1572$

28.

base 2	001	011	011	101
base 8	1	3	3	5

$(1011011101)_2 = (1335)_8$

$x = 1335$

29.

base 2	001	010	100	011
base 8	1	2	4	3

$(1010100011)_2 = (1243)_8$

$x = 1243$

30.

base 2	001	001	110	010
base 8	1	1	6	2

$(1001110010)_2 = (1162)_8$

$x = 1162$

5. Esercizi di conversione da base binaria a base esadecimale

1.

base 2	0001	0000	1111
base 16	1	0	F

$(100001111)_2 = (10\text{F})_{16}$

$x = 10F$

2.

base 2	0011	0001	1110
base 16	3	1	E

$(1100011110)_2 = (31\text{E})_{16}$

$x = 31E$

3.

base 2	0011	0110	0011
base 16	3	6	3

$(1101100011)_2 = (363)_{16}$

$x = 363$

4.

base 2	1000	0010
base 16	8	2

$(10000010)_2 = (82)_{16}$

$x = 82$

5.

base 2	1010	0011
base 16	A	3

$(10100011)_2 = (\text{A3})_{16}$

$x = A3$

6.

base 2	0011	1010	1001
base 16	3	A	9

$(1110101001)_2 = (3\text{A9})_{16}$

$x = 3A9$

7.

base 2	1011	1001
base 16	B	9

$(10111001)_2 = (\text{B9})_{16}$

$x = B9$

8.

base 2	1001	0001
base 16	9	1

$(10010001)_2 = (91)_{16}$

$x = 91$

9.

base 2	0011	0010
base 16	3	2

$(110010)_2 = (32)_{16}$

$x = 32$

10.

base 2	0010	1101
base 16	2	D

$(101101)_2 = (2\text{D})_{16}$

$x = 2D$

11.

base 2	0011	0101	1100
base 16	3	5	C

$(1101011100)_2 = (35\text{C})_{16}$

$x = 35C$

12.

base 2	0111	1000
base 16	7	8

$(1111000)_2 = (78)_{16}$

$x = 78$

13.

base 2	0010	0110	0110
base 16	2	6	6

$(1001100110)_2 = (266)_{16}$

$x = 266$

14.

base 2	1100	1001
base 16	C	9

$(11001001)_2 = (\mathrm{C9})_{16}$

$x = C9$

15.

base 2	0001	0011	1111
base 16	1	3	F

$(100111111)_2 = (\mathrm{13F})_{16}$

$x = 13F$

16.

base 2	0001	1010	0101
base 16	1	A	5

$(110100101)_2 = (\mathrm{1A5})_{16}$

$x = 1A5$

17.

base 2	1001	1110
base 16	9	E

$(10011110)_2 = (\mathrm{9E})_{16}$

$x = 9E$

18.

base 2	0001	1110	0111
base 16	1	E	7

$(111100111)_2 = (\mathrm{1E7})_{16}$

$x = 1E7$

19.

base 2	0010	0011	0010
base 16	2	3	2

$(1000110010)_2 = (232)_{16}$

$x = 232$

20.

base 2	0001	0100	1100
base 16	1	4	C

$(101001100)_2 = (\mathrm{14C})_{16}$

$x = 14C$

21.

base 2	0011	0110	0110
base 16	3	6	6

$(1101100110)_2 = (366)_{16}$

$x = 366$

22.

base 2	0011	0111	0010
base 16	3	7	2

$(1101110010)_2 = (372)_{16}$

$x = 372$

23.

base 2	0111	0111
base 16	7	7

$(1110111)_2 = (77)_{16}$

$x = 77$

24.

base 2	0001	1010	1100
base 16	1	A	C

$(110101100)_2 = (\mathrm{1AC})_{16}$

$x = 1AC$

25.

base 2	0100	1000
base 16	4	8

$(1001000)_2 = (48)_{16}$

$x = 48$

26.

base 2	0001	1100	0111
base 16	1	C	7

$(111000111)_2 = (1\text{C}7)_{16}$

$x = 1C7$

27.

base 2	0001	1011	0111
base 16	1	B	7

$(110110111)_2 = (1\text{B}7)_{16}$

$x = 1B7$

28.

base 2	0001	1111	1110
base 16	1	F	E

$(111111110)_2 = (1\text{FE})_{16}$

$x = 1FE$

29.

base 2	1011	1000
base 16	B	8

$(10111000)_2 = (\text{B}8)_{16}$

$x = B8$

30.

base 2	0010	0011	0110
base 16	2	3	6

$(1000110110)_2 = (236)_{16}$

$x = 236$

6. Esercizi di conversione da base decimale a base binaria

1.

quoziente	resto
280	
140	0
70	0
35	0
17	1
8	1
4	0
2	0
1	0
0	1

$(280)_{10} = (100011000)_2$

$x = 100011000$

2.

quoziente	resto
341	
170	1
85	0
42	1
21	0
10	1
5	0
2	1
1	0
0	1

$(341)_{10} = (101010101)_2$

$x = 101010101$

3.

quoziente	resto
477	
238	1
119	0
59	1
29	1
14	1
7	0
3	1
1	1
0	1

$(477)_{10} = (111011101)_2$

$x = 111011101$

4.

quoziente	resto
491	
245	1
122	1
61	0
30	1
15	0
7	1
3	1
1	1
0	1

$(491)_{10} = (111101011)_2$

$x = 111101011$

5.

quoziente	resto
421	
210	1
105	0
52	1
26	0
13	0
6	1
3	0
1	1
0	1

$(421)_{10} = (110100101)_2$

$x = 110100101$

6.

quoziente	resto
788	
394	0
197	0
98	1
49	0
24	1
12	0
6	0
3	0
1	1
0	1

$(788)_{10} = (1100010100)_2$

$x = 1100010100$

7.

quoziente	resto
249	
124	1
62	0
31	0
15	1
7	1
3	1
1	1
0	1

$(249)_{10} = (11111001)_2$

$x = 11111001$

8.

quoziente	resto
487	
243	1
121	1
60	1
30	0
15	0
7	1
3	1
1	1
0	1

$(487)_{10} = (111100111)_2$

$x = 111100111$

9.

quoziente	resto
438	
219	0
109	1
54	1
27	0
13	1
6	1
3	0
1	1
0	1

$(438)_{10} = (110110110)_2$

$x = 110110110$

10.

quoziente	resto
19	
9	1
4	1
2	0
1	0
0	1

$(19)_{10} = (10011)_2$

$x = 10011$

11.

quoziente	resto
82	
41	0
20	1
10	0
5	0
2	1
1	0
0	1

$(82)_{10} = (1010010)_2$

$x = 1010010$

12.

quoziente	resto
814	
407	0
203	1
101	1
50	1
25	0
12	1
6	0
3	0
1	1
0	1

$(814)_{10} = (1100101110)_2$

$x = 1100101110$

13.

quoziente	resto
365	
182	1
91	0
45	1
22	1
11	0
5	1
2	1
1	0
0	1

$(365)_{10} = (101101101)_2$

$x = 101101101$

14.

quoziente	resto
298	
149	0
74	1
37	0
18	1
9	0
4	1
2	0
1	0
0	1

$(298)_{10} = (100101010)_2$

$x = 100101010$

15.

quoziente	resto
713	
356	1
178	0
89	0
44	1
22	0
11	0
5	1
2	1
1	0
0	1

$(713)_{10} = (1011001001)_2$

$x = 1011001001$

16.

quoziente	resto
192	
96	0
48	0
24	0
12	0
6	0
3	0
1	1
0	1

$(192)_{10} = (11000000)_2$

$x = 11000000$

17.

quoziente	resto
950	
475	0
237	1
118	1
59	0
29	1
14	1
7	0
3	1
1	1
0	1

$(950)_{10} = (1110110110)_2$

$x = 1110110110$

18.

quoziente	resto
908	
454	0
227	0
113	1
56	1
28	0
14	0
7	0
3	1
1	1
0	1

$(908)_{10} = (1110001100)_2$

$x = 1110001100$

19.

quoziente	resto
98	
49	0
24	1
12	0
6	0
3	0
1	1
0	1

$(98)_{10} = (1100010)_2$

$x = 1100010$

20.

quoziente	resto
153	
76	1
38	0
19	0
9	1
4	1
2	0
1	0
0	1

$(153)_{10} = (10011001)_2$

$x = 10011001$

21.

quoziente	resto
983	
491	1
245	1
122	1
61	0
30	1
15	0
7	1
3	1
1	1
0	1

$(983)_{10} = (1111010111)_2$

$x = 1111010111$

22.

quoziente	resto
39	
19	1
9	1
4	1
2	0
1	0
0	1

$(39)_{10} = (100111)_2$

$x = 100111$

23.

quoziente	resto
802	
401	0
200	1
100	0
50	0
25	0
12	1
6	0
3	0
1	1
0	1

$(802)_{10} = (1100100010)_2$

$x = 1100100010$

24.

quoziente	resto
214	
107	0
53	1
26	1
13	0
6	1
3	0
1	1
0	1

$(214)_{10} = (11010110)_2$

$x = 11010110$

25.

quoziente	resto
690	
345	0
172	1
86	0
43	0
21	1
10	1
5	0
2	1
1	0
0	1

$(690)_{10} = (1010110010)_2$

$x = 1010110010$

26.

quoziente	resto
749	
374	1
187	0
93	1
46	1
23	0
11	1
5	1
2	1
1	0
0	1

$(749)_{10} = (1011101101)_2$

$x = 1011101101$

27.

quoziente	resto
844	
422	0
211	0
105	1
52	1
26	0
13	0
6	1
3	0
1	1
0	1

$(844)_{10} = (1101001100)_2$

$x = 1101001100$

28.

quoziente	resto
801	
400	1
200	0
100	0
50	0
25	0
12	1
6	0
3	0
1	1
0	1

$(801)_{10} = (1100100001)_2$

$x = 1100100001$

29.

quoziente	resto
913	
456	1
228	0
114	0
57	0
28	1
14	0
7	0
3	1
1	1
0	1

$(913)_{10} = (1110010001)_2$

$x = 1110010001$

30.

quoziente	resto
677	
338	1
169	0
84	1
42	0
21	0
10	1
5	0
2	1
1	0
0	1

$(677)_{10} = (1010100101)_2$

$x = 1010100101$

7. Esercizi di conversione da base ottale a base binaria

1.

base 8	1	2	3	2
base 2	001	010	011	010

$(1232)_8 = (1010011010)_2$

$x = 1010011010$

2.

base 8	7	2	2
base 2	111	010	010

$(722)_8 = (111010010)_2$

$x = 111010010$

3.

base 8	1	0	4	0
base 2	001	000	100	000

$(1040)_8 = (1000100000)_2$

$x = 1000100000$

4.

base 8	2	1	5
base 2	010	001	101

$(215)_8 = (10001101)_2$

$x = 10001101$

5.

base 8	1	6	7	2
base 2	001	110	111	010

$(1672)_8 = (1110111010)_2$

$x = 1110111010$

6.

base 8	1	4	0	5
base 2	001	100	000	101

$(1405)_8 = (1100000101)_2$

$x = 1100000101$

7.

base 8	2	5	0
base 2	010	101	000

$(250)_8 = (10101000)_2$

$x = 10101000$

8.

base 8	1	6	1	1
base 2	001	110	001	001

$(1611)_8 = (1110001001)_2$

$x = 1110001001$

9.

base 8	3	2	5
base 2	011	010	101

$(325)_8 = (11010101)_2$

$x = 11010101$

10.

base 8	3	1
base 2	011	001

$(31)_8 = (11001)_2$

$x = 11001$

11.

base 8	4	6	6
base 2	100	110	110

$(466)_8 = (100110110)_2$

$x = 100110110$

12.

base 8	7	5	3
base 2	111	101	011

$(753)_8 = (111101011)_2$

$x = 111101011$

13.

base 8	1	2	1	2
base 2	001	010	001	010

$(1212)_8 = (1010001010)_2$

$x = 1010001010$

14.

base 8	2	1	2
base 2	010	001	010

$(212)_8 = (10001010)_2$

$x = 10001010$

15.

base 8	1	5	0	4
base 2	001	101	000	100

$(1504)_8 = (1101000100)_2$

$x = 1101000100$

16.

base 8	1	0	1	3
base 2	001	000	001	011

$(1013)_8 = (1000001011)_2$

$x = 1000001011$

17.

base 8	1	4	1	4
base 2	001	100	001	100

$(1414)_8 = (1100001100)_2$

$x = 1100001100$

18.

base 8	7	5	4
base 2	111	101	100

$(754)_8 = (111101100)_2$

$x = 111101100$

19.

base 8	1	2	5	1
base 2	001	010	101	001

$(1251)_8 = (1010101001)_2$

$x = 1010101001$

20.

base 8	1	3	1	0
base 2	001	011	001	000

$(1310)_8 = (1011001000)_2$

$x = 1011001000$

21.

base 8	1	3	6	0
base 2	001	011	110	000

$(1360)_8 = (1011110000)_2$

$x = 1011110000$

22.

base 8	3	3	7
base 2	011	011	111

$(337)_8 = (11011111)_2$

$x = 11011111$

23.

base 8	1	3	5	3
base 2	001	011	101	011

$(1353)_8 = (1011101011)_2$

$x = 1011101011$

24.

base 8	1	4	7	5
base 2	001	100	111	101

$(1475)_8 = (1100111101)_2$

$x = 1100111101$

25.

base 8	5	6	2
base 2	101	110	010

$(562)_8 = (101110010)_2$

$x = 101110010$

26.

base 8	7	6	1
base 2	111	110	001

$(761)_8 = (111110001)_2$

$x = 111110001$

27.

base 8	3	2	5
base 2	011	010	101

$(325)_8 = (11010101)_2$

$x = 11010101$

28.

base 8	1	5	1	5
base 2	001	101	001	101

$(1515)_8 = (1101001101)_2$

$x = 1101001101$

29.

base 8	7	2	4
base 2	111	010	100

$(724)_8 = (111010100)_2$

$x = 111010100$

30.

base 8	4	0	4
base 2	100	000	100

$(404)_8 = (100000100)_2$

$x = 100000100$

8. Esercizi di conversione da base esadecimale a base binaria

1.

base 16	E	4
base 2	1110	0100

$(E4)_{16} = (11100100)_2$

$x = 11100100$

2.

base 16	1	1	2
base 2	0001	0001	0010

$(112)_{16} = (100010010)_2$

$x = 100010010$

3.

base 16	1	E	1
base 2	0001	1110	0001

$(1E1)_{16} = (111100001)_2$

$x = 111100001$

4.

base 16	1	4	0
base 2	0001	0100	0000

$(140)_{16} = (101000000)_2$

$x = 101000000$

5.

base 16	3	B	D
base 2	0011	1011	1101

$(3BD)_{16} = (1110111101)_2$

$x = 1110111101$

6.

base 16	5	6
base 2	0101	0110

$(56)_{16} = (1010110)_2$

$x = 1010110$

7.

base 16	2	8	D
base 2	0010	1000	1101

$(28D)_{16} = (1010001101)_2$

$x = 1010001101$

8.

base 16	2	1	7
base 2	0010	0001	0111

$(217)_{16} = (1000010111)_2$

$x = 1000010111$

9.

base 16	3	E	2
base 2	0011	1110	0010

$(3E2)_{16} = (1111100010)_2$

$x = 1111100010$

10.

base 16	1	2	4
base 2	0001	0010	0100

$(124)_{16} = (100100100)_2$

$x = 100100100$

11.

base 16	3	E	0
base 2	0011	1110	0000

$(3E0)_{16} = (1111100000)_2$

$x = 1111100000$

12.

base 16	2	1	4
base 2	0010	0001	0100

$(214)_{16} = (1000010100)_2$

$x = 1000010100$

13.

base 16	2	1	9
base 2	0010	0001	1001

$(219)_{16} = (1000011001)_2$

$x = 1000011001$

14.

base 16	2	0	9
base 2	0010	0000	1001

$(209)_{16} = (1000001001)_2$

$x = 1000001001$

15.

base 16	3	4	F
base 2	0011	0100	1111

$(34F)_{16} = (1101001111)_2$

$x = 1101001111$

16.

base 16	3	9	7
base 2	0011	1001	0111

$(397)_{16} = (1110010111)_2$

$x = 1110010111$

17.

base 16	3	5	5
base 2	0011	0101	0101

$(355)_{16} = (1101010101)_2$

$x = 1101010101$

18.

base 16	1	7	4
base 2	0001	0111	0100

$(174)_{16} = (101110100)_2$

$x = 101110100$

19.

base 16	1	9	8
base 2	0001	1001	1000

$(198)_{16} = (110011000)_2$

$x = 110011000$

20.

base 16	1	1	9
base 2	0001	0001	1001

$(119)_{16} = (100011001)_2$

$x = 100011001$

21.

base 16	3	C	E
base 2	0011	1100	1110

$(3CE)_{16} = (1111001110)_2$

$x = 1111001110$

22.

base 16	3	2	9
base 2	0011	0010	1001

$(329)_{16} = (1100101001)_2$

$x = 1100101001$

23.

base 16	4	9
base 2	0100	1001

$(49)_{16} = (1001001)_2$

$x = 1001001$

24.

base 16	1	D	6
base 2	0001	1101	0110

$(1D6)_{16} = (111010110)_2$

$x = 111010110$

25.

base 16	3	2	0
base 2	0011	0010	0000

$(320)_{16} = (1100100000)_2$

$x = 1100100000$

26.

base 16	1	9	5
base 2	0001	1001	0101

$(195)_{16} = (110010101)_2$

$x = 110010101$

27.

base 16	1	3	D
base 2	0001	0011	1101

$(13D)_{16} = (100111101)_2$

$x = 100111101$

28.

base 16	2	9	E
base 2	0010	1001	1110

$(29E)_{16} = (1010011110)_2$

$x = 1010011110$

29.

base 16	3	0
base 2	0011	0000

$(30)_{16} = (110000)_2$

$x = 110000$

30.

base 16	2	C	6
base 2	0010	1100	0110

$(2C6)_{16} = (1011000110)_2$

$x = 1011000110$

9. Esercizi di conversione da base decimale a base esadecimale

1.

quoziente	resto
477	
29	13
1	13
0	1

$(477)_{10} = (1\text{DD})_{16}$

$x = 1DD$

2.

quoziente	resto
428	
26	12
1	10
0	1

$(428)_{10} = (1\text{AC})_{16}$

$x = 1AC$

3.

quoziente	resto
280	
17	8
1	1
0	1

$(280)_{10} = (118)_{16}$

$x = 118$

4.

quoziente	resto
359	
22	7
1	6
0	1

$(359)_{10} = (167)_{16}$

$x = 167$

5.

quoziente	resto
183	
11	7
0	11

$(183)_{10} = (\text{B7})_{16}$

$x = B7$

6.

quoziente	resto
97	
6	1
0	6

$(97)_{10} = (61)_{16}$

$x = 61$

7.

quoziente	resto
4	
0	4

$(4)_{10} = (4)_{16}$

$x = 4$

8.

quoziente	resto
670	
41	14
2	9
0	2

$(670)_{10} = (29\text{E})_{16}$

$x = 29E$

9.

quoziente	resto
393	
24	9
1	8
0	1

$(393)_{10} = (189)_{16}$

$x = 189$

10.

quoziente	resto
957	
59	13
3	11
0	3

$(957)_{10} = (3\text{BD})_{16}$

$x = 3BD$

11.

quoziente	resto
612	
38	4
2	6
0	2

$(612)_{10} = (264)_{16}$

$x = 264$

12.

quoziente	resto
129	
8	1
0	8

$(129)_{10} = (81)_{16}$

$x = 81$

13.

quoziente	resto
785	
49	1
3	1
0	3

$(785)_{10} = (311)_{16}$

$x = 311$

14.

quoziente	resto
61	
3	13
0	3

$(61)_{10} = (3\mathrm{D})_{16}$

$x = 3D$

15.

quoziente	resto
106	
6	10
0	6

$(106)_{10} = (6\mathrm{A})_{16}$

$x = 6A$

16.

quoziente	resto
914	
57	2
3	9
0	3

$(914)_{10} = (392)_{16}$

$x = 392$

17.

quoziente	resto
140	
8	12
0	8

$(140)_{10} = (8\mathrm{C})_{16}$

$x = 8C$

18.

quoziente	resto
375	
23	7
1	7
0	1

$(375)_{10} = (177)_{16}$

$x = 177$

19.

quoziente	resto
258	
16	2
1	0
0	1

$(258)_{10} = (102)_{16}$

$x = 102$

20.

quoziente	resto
119	
7	7
0	7

$(119)_{10} = (77)_{16}$

$x = 77$

21.

quoziente	resto
859	
53	11
3	5
0	3

$(859)_{10} = (35\mathrm{B})_{16}$

$x = 35B$

22.

quoziente	resto
340	
21	4
1	5
0	1

$(340)_{10} = (154)_{16}$

$x = 154$

23.

quoziente	resto
863	
53	15
3	5
0	3

$(863)_{10} = (35\text{F})_{16}$

$x = 35F$

24.

quoziente	resto
633	
39	9
2	7
0	2

$(633)_{10} = (279)_{16}$

$x = 279$

25.

quoziente	resto
351	
21	15
1	5
0	1

$(351)_{10} = (15\text{F})_{16}$

$x = 15F$

26.

quoziente	resto
723	
45	3
2	13
0	2

$(723)_{10} = (2\text{D}3)_{16}$

$x = 2D3$

27.

quoziente	resto
185	
11	9
0	11

$(185)_{10} = (\text{B}9)_{16}$

$x = B9$

28.

quoziente	resto
820	
51	4
3	3
0	3

$(820)_{10} = (334)_{16}$

$x = 334$

29.

quoziente	resto
399	
24	15
1	8
0	1

$(399)_{10} = (18\text{F})_{16}$

$x = 18F$

30.

quoziente	resto
597	
37	5
2	5
0	2

$(597)_{10} = (255)_{16}$

$x = 255$

10. Esercizi di conversione da base decimale a base ottale

1.

quoziente	resto
838	
104	6
13	0
1	5
0	1

$(838)_{10} = (1506)_8$

$x = 1506$

2.

quoziente	resto
45	
5	5
0	5

$(45)_{10} = (55)_8$

$x = 55$

3.

quoziente	resto
76	
9	4
1	1
0	1

$(76)_{10} = (114)_8$

$x = 114$

4.

quoziente	resto
601	
75	1
9	3
1	1
0	1

$(601)_{10} = (1131)_8$

$x = 1131$

5.

quoziente	resto
370	
46	2
5	6
0	5

$(370)_{10} = (562)_8$

$x = 562$

6.

quoziente	resto
310	
38	6
4	6
0	4

$(310)_{10} = (466)_8$

$x = 466$

7.

quoziente	resto
480	
60	0
7	4
0	7

$(480)_{10} = (740)_8$

$x = 740$

8.

quoziente	resto
320	
40	0
5	0
0	5

$(320)_{10} = (500)_8$

$x = 500$

9.

quoziente	resto
728	
91	0
11	3
1	3
0	1

$(728)_{10} = (1330)_8$

$x = 1330$

10.

quoziente	resto
807	
100	7
12	4
1	4
0	1

$(807)_{10} = (1447)_8$

$x = 1447$

11.

quoziente	resto
224	
28	0
3	4
0	3

$(224)_{10} = (340)_8$

$x = 340$

12.

quoziente	resto
612	
76	4
9	4
1	1
0	1

$(612)_{10} = (1144)_8$

$x = 1144$

13.

quoziente	resto
451	
56	3
7	0
0	7

$(451)_{10} = (703)_8$

$x = 703$

14.

quoziente	resto
589	
73	5
9	1
1	1
0	1

$(589)_{10} = (1115)_8$

$x = 1115$

15.

quoziente	resto
33	
4	1
0	4

$(33)_{10} = (41)_8$

$x = 41$

16.

quoziente	resto
60	
7	4
0	7

$(60)_{10} = (74)_8$

$x = 74$

17.

quoziente	resto
596	
74	4
9	2
1	1
0	1

$(596)_{10} = (1124)_8$

$x = 1124$

18.

quoziente	resto
605	
75	5
9	3
1	1
0	1

$(605)_{10} = (1135)_8$

$x = 1135$

19.

quoziente	resto
791	
98	7
12	2
1	4
0	1

$(791)_{10} = (1427)_8$

$x = 1427$

20.

quoziente	resto
287	
35	7
4	3
0	4

$(287)_{10} = (437)_8$

$x = 437$

21.

quoziente	resto
524	
65	4
8	1
1	0
0	1

$(524)_{10} = (1014)_8$

$x = 1014$

22.

quoziente	resto
765	
95	5
11	7
1	3
0	1

$(765)_{10} = (1375)_8$

$x = 1375$

23.

quoziente	resto
532	
66	4
8	2
1	0
0	1

$(532)_{10} = (1024)_8$

$x = 1024$

24.

quoziente	resto
175	
21	7
2	5
0	2

$(175)_{10} = (257)_8$

$x = 257$

25.

quoziente	resto
7	
0	7

$(7)_{10} = (7)_8$

$x = 7$

26.

quoziente	resto
625	
78	1
9	6
1	1
0	1

$(625)_{10} = (1161)_8$

$x = 1161$

27.

quoziente	resto
77	
9	5
1	1
0	1

$(77)_{10} = (115)_8$

$x = 115$

28.

quoziente	resto
92	
11	4
1	3
0	1

$(92)_{10} = (134)_8$

$x = 134$

29.

quoziente	resto
474	
59	2
7	3
0	7

$(474)_{10} = (732)_8$

$x = 732$

30.

quoziente	resto
788	
98	4
12	2
1	4
0	1

$(788)_{10} = (1424)_8$

$x = 1424$

11. Esercizi di conversione di base

1. $(1220)_8 = 1{\cdot}8^3{+}2{\cdot}8^2{+}2{\cdot}8^1{+}0{\cdot}8^0 = 1{\cdot}512{+}2{\cdot}64{+}2{\cdot}8{+}0{\cdot}1 = 512{+}128{+}16{+}0 = 656$

   $(1220)_8 = (656)_{10}$

   $x = 656$

2. $(415)_{15} = 4 \cdot 15^2 + 1 \cdot 15^1 + 5 \cdot 15^0 = 4 \cdot 225 + 1 \cdot 15 + 5 \cdot 1 = 900 + 15 + 5 = 920$

quoziente	resto
920	
115	0
14	3
1	6
0	1

   $(415)_{15} = (1630)_8$

   $x = 1630$

3.

quoziente	resto
53	
13	1
3	1
0	3

   $(53)_{10} = (311)_4$

   $x = 311$

4. $(3A8)_{12} = 3 \cdot 12^2 + 10 \cdot 12^1 + 8 \cdot 12^0 = 3{\cdot}144{+}10{\cdot}12{+}8{\cdot}1 = 432{+}120{+}8 = 560$

quoziente	resto
560	
280	0
140	0
70	0
35	0
17	1
8	1
4	0
2	0
1	0
0	1

   $(3A8)_{12} = (1000110000)_2$

   $x = 1000110000$

5. $(2442)_5 = 2{\cdot}5^3{+}4{\cdot}5^2{+}4{\cdot}5^1{+}2{\cdot}5^0 = 2{\cdot}125{+}4{\cdot}25{+}4{\cdot}5{+}2{\cdot}1 = 250{+}100{+}20{+}2 = 372$

   $(2442)_5 = (372)_{10}$

   $x = 372$

6. $(221010)_3 = 2{\cdot}3^5{+}2{\cdot}3^4{+}1{\cdot}3^3{+}0{\cdot}3^2{+}1{\cdot}3^1{+}0{\cdot}3^0 = 2{\cdot}243{+}2{\cdot}81{+}1{\cdot}27{+}0{\cdot}9{+}1{\cdot}3{+}0{\cdot}1 = 486 + 162 + 27 + 0 + 3 + 0 = 678$

quoziente	resto
678	
56	6
4	8
0	4

   $(221010)_3 = (486)_{12}$

   $x = 486$

7. $(586)_{12} = 5 \cdot 12^2 + 8 \cdot 12^1 + 6 \cdot 12^0 = 5 \cdot 144 + 8 \cdot 12 + 6 \cdot 1 = 720 + 96 + 6 = 822$

quoziente	resto
822	
117	3
16	5
2	2
0	2

   $(586)_{12} = (2253)_7$

   $x = 2253$

8. $(666)_{11} = 6 \cdot 11^2 + 6 \cdot 11^1 + 6 \cdot 11^0 = 6 \cdot 121 + 6 \cdot 11 + 6 \cdot 1 = 726 + 66 + 6 = 798$

quoziente	resto
798	
114	0
16	2
2	2
0	2

   $(666)_{11} = (2220)_7$

   $x = 2220$

9. $(385)_{15} = 3 \cdot 15^2 + 8 \cdot 15^1 + 5 \cdot 15^0 = 3 \cdot 225 + 8 \cdot 15 + 5 \cdot 1 = 675 + 120 + 5 = 800$

quoziente	resto
800	
66	8
5	6
0	5

$(385)_{15} = (568)_{12}$

$x = 568$

10. $(238)_{13} = 2 \cdot 13^2 + 3 \cdot 13^1 + 8 \cdot 13^0 = 2 \cdot 169 + 3 \cdot 13 + 8 \cdot 1 = 338 + 39 + 8 = 385$

quoziente	resto
385	
55	0
7	6
1	0
0	1

$(238)_{13} = (1060)_7$

$x = 1060$

11. $(229)_{13} = 2 \cdot 13^2 + 2 \cdot 13^1 + 9 \cdot 13^0 = 2 \cdot 169 + 2 \cdot 13 + 9 \cdot 1 = 338 + 26 + 9 = 373$

quoziente	resto
373	
124	1
41	1
13	2
4	1
1	1
0	1

$(229)_{13} = (111211)_3$

$x = 111211$

12. $(\mathrm{A0})_{15} = 10 \cdot 15^1 + 0 \cdot 15^0 = 10 \cdot 15 + 0 \cdot 1 = 150 + 0 = 150$

quoziente	resto
150	
75	0
37	1
18	1
9	0
4	1
2	0
1	0
0	1

$(\mathrm{A0})_{15} = (10010110)_2$

$x = 10010110$

13. $(1\mathrm{BB})_{14} = 1 \cdot 14^2 + 11 \cdot 14^1 + 11 \cdot 14^0 = 1 \cdot 196 + 11 \cdot 14 + 11 \cdot 1 = 196 + 154 + 11 = 361$

quoziente	resto
361	
60	1
10	0
1	4
0	1

$(1\mathrm{BB})_{14} = (1401)_6$

$x = 1401$

14. $(1520)_6 = 1 \cdot 6^3 + 5 \cdot 6^2 + 2 \cdot 6^1 + 0 \cdot 6^0 = 1 \cdot 216 + 5 \cdot 36 + 2 \cdot 6 + 0 \cdot 1 = 216 + 180 + 12 + 0 = 408$

quoziente	resto
408	
37	1
3	4
0	3

$(1520)_6 = (341)_{11}$

$x = 341$

15. $(45\mathrm{A})_{15} = 4 \cdot 15^2 + 5 \cdot 15^1 + 10 \cdot 15^0 =$

$4 \cdot 225 + 5 \cdot 15 + 10 \cdot 1 = 900 + 75 + 10 = 985$

quoziente	resto
985	
328	1
109	1
36	1
12	0
4	0
1	1
0	1

$(45\text{A})_{15} = (1100111)_3$

$x = 1100111$

16. $(2010)_6 = 2 \cdot 6^3 + 0 \cdot 6^2 + 1 \cdot 6^1 + 0 \cdot 6^0 = 2 \cdot 216 + 0 \cdot 36 + 1 \cdot 6 + 0 \cdot 1 = 432 + 0 + 6 + 0 = 438$

quoziente	resto
438	
27	6
1	11
0	1

$(2010)_6 = (1\text{B}6)_{16}$

$x = 1B6$

17. $(5)_{14} = 5 \cdot 14^0 = 5 \cdot 1 = 5 = 5$

quoziente	resto
5	
1	1
0	1

$(5)_{14} = (11)_4$

$x = 11$

18. $(1102)_4 = 1 \cdot 4^3 + 1 \cdot 4^2 + 0 \cdot 4^1 + 2 \cdot 4^0 = 1 \cdot 64 + 1 \cdot 16 + 0 \cdot 4 + 2 \cdot 1 = 64 + 16 + 0 + 2 = 82$

quoziente	resto
82	
6	4
0	6

$(1102)_4 = (64)_{13}$

$x = 64$

19. $(10)_{12} = 1 \cdot 12^1 + 0 \cdot 12^0 = 1 \cdot 12 + 0 \cdot 1 = 12 + 0 = 12$

quoziente	resto
12	
4	0
1	1
0	1

$(10)_{12} = (110)_3$

$x = 110$

20. $(101101101)_2 = 1 \cdot 2^8 + 0 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 0 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 256 + 0 \cdot 128 + 1 \cdot 64 + 1 \cdot 32 + 0 \cdot 16 + 1 \cdot 8 + 1 \cdot 4 + 0 \cdot 2 + 1 \cdot 1 = 256 + 0 + 64 + 32 + 0 + 8 + 4 + 0 + 1 = 365$

quoziente	resto
365	
26	1
1	12
0	1

$(101101101)_2 = (1\text{C}1)_{14}$

$x = 1C1$

21. $(575)_{13} = 5 \cdot 13^2 + 7 \cdot 13^1 + 5 \cdot 13^0 = 5 \cdot 169 + 7 \cdot 13 + 5 \cdot 1 = 845 + 91 + 5 = 941$

quoziente	resto
941	
235	1
58	3
14	2
3	2
0	3

$(575)_{13} = (32231)_4$

$x = 32231$

22. $(488)_{11} = 4 \cdot 11^2 + 8 \cdot 11^1 + 8 \cdot 11^0 =$

$4 \cdot 121 + 8 \cdot 11 + 8 \cdot 1 = 484 + 88 + 8 = 580$

quoziente	resto
580	
38	10
2	8
0	2

$(488)_{11} = (28\text{A})_{15}$

$x = 28A$

23. $(14\text{B})_{16} = 1 \cdot 16^2 + 4 \cdot 16^1 + 11 \cdot 16^0 = 1 \cdot 256 + 4 \cdot 16 + 11 \cdot 1 = 256 + 64 + 11 = 331$

quoziente	resto
331	
23	9
1	9
0	1

$(14\text{B})_{16} = (199)_{14}$

$x = 199$

24. $(247)_{11} = 2 \cdot 11^2 + 4 \cdot 11^1 + 7 \cdot 11^0 = 2 \cdot 121 + 4 \cdot 11 + 7 \cdot 1 = 242 + 44 + 7 = 293$

quoziente	resto
293	
19	8
1	4
0	1

$(247)_{11} = (148)_{15}$

$x = 148$

25. $(58\text{A})_{12} = 5 \cdot 12^2 + 8 \cdot 12^1 + 10 \cdot 12^0 = 5 \cdot 144 + 8 \cdot 12 + 10 \cdot 1 = 720 + 96 + 10 = 826$

quoziente	resto
826	
63	7
4	11
0	4

$(58\text{A})_{12} = (4\text{B}7)_{13}$

$x = 4B7$

26. $(2602)_7 = 2 \cdot 7^3 + 6 \cdot 7^2 + 0 \cdot 7^1 + 2 \cdot 7^0 = 2 \cdot 343 + 6 \cdot 49 + 0 \cdot 7 + 2 \cdot 1 = 686 + 294 + 0 + 2 = 982$

quoziente	resto
982	
61	6
3	13
0	3

$(2602)_7 = (3\text{D}6)_{16}$

$x = 3D6$

27. $(11111101)_2 = 1 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 128 + 1 \cdot 64 + 1 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 1 \cdot 4 + 0 \cdot 2 + 1 \cdot 1 = 128 + 64 + 32 + 16 + 8 + 4 + 0 + 1 = 253$

quoziente	resto
253	
42	1
7	0
1	1
0	1

$(11111101)_2 = (1101)_6$

$x = 1101$

28. $(3013)_5 = 3 \cdot 5^3 + 0 \cdot 5^2 + 1 \cdot 5^1 + 3 \cdot 5^0 = 3 \cdot 125 + 0 \cdot 25 + 1 \cdot 5 + 3 \cdot 1 = 375 + 0 + 5 + 3 = 383$

quoziente	resto
383	
34	9
3	1
0	3

$(3013)_5 = (319)_{11}$

$x = 319$

29. $(1111000010)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 1 \cdot 128 + 1 \cdot 64 + 0 \cdot 32 + 0 \cdot$

$16 + 0 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 512 + 256 + 128 + 64 + 0 + 0 + 0 + 0 + 2 + 0 = 962$

quoziente	resto
962	
74	0
5	9
0	5

$(1111000010)_2 = (590)_{13}$

$x = 590$

30.

quoziente	resto
602	
120	2
24	0
4	4
0	4

$(602)_{10} = (4402)_5$

$x = 4402$