

Università degli Studi di Milano

Laurea in Sicurezza dei sistemi e delle reti informatiche

Soluzioni degli esercizi di conversione di base

STEFANO FERRARI

Fondamenti di informatica per la sicurezza

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Soluzioni

1. Esercizi di conversione in base decimale

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

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

$$x = 805$$

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

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

$$x = 199$$

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

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

$$x = 371$$

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

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

$$x = 952$$

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

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

$$x = 255$$

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

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

$$x = 908$$

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

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

$$x = 24$$

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

$$32 + 0 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 512 + 256 + 128 + 0 + 0 + 0 + 8 + 0 + 2 + 1 = 907$$

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

$$x = 907$$

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

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

$$x = 350$$

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

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

$$x = 428$$

$$11. (3D4)_{16} = 3 \cdot 16^2 + 13 \cdot 16^1 + 4 \cdot 16^0 = 3 \cdot 256 + 13 \cdot 16 + 4 \cdot 1 = 768 + 208 + 4 = 980$$

$$(3D4)_{16} = (980)_{10}$$

$$x = 980$$

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

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

$$x = 183$$

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

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

$$x = 434$$

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

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

$$x = 892$$

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

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

$$x = 318$$

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

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

$$x = 810$$

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

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

$$x = 819$$

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

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

$$x = 110$$

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

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

$$x = 414$$

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

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

$$x = 714$$

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

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

$$x = 818$$

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

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

$$x = 439$$

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

$$x = 634$$

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

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

$$x = 647$$

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

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

$$x = 207$$

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

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

$$x = 163$$

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

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

$$x = 344$$

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

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

$$x = 348$$

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

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

$$x = 564$$

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

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

$$x = 614$$

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

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

$$x = C5$$

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

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

$$x = 2311$$

14.

quoziente	resto
812	
90	2
10	0
1	1
0	1

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

$$x = 1102$$

10.

quoziente	resto
434	
25	9
1	8
0	1

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

$$x = 189$$

15.

quoziente	resto
373	
41	4
4	5
0	4

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

$$x = 454$$

11.

quoziente	resto
994	
165	4
27	3
4	3
0	4

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

$$x = 4334$$

16.

quoziente	resto
185	
13	3
0	13

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

$$x = D3$$

12.

quoziente	resto
195	
32	3
5	2
0	5

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

$$x = 523$$

17.

quoziente	resto
139	
23	1
3	5
0	3

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

$$x = 351$$

13.

quoziente	resto
105	
8	9
0	8

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

$$x = 89$$

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

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

$$x = B2$$

21.

quoziente	resto
718	
39	16
2	3
0	2

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

$$x = 23G$$

22.

quoziente	resto
914	
48	2
2	10
0	2

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

$$x = 2A2$$

23.

quoziente	resto
677	
37	11
2	1
0	2

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

$$x = 21B$$

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

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

$$x = 1BI$$

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

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

$$x = 989$$

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

$$128+0\cdot 64+1\cdot 32+0\cdot 16+0\cdot 8+0\cdot 4+0\cdot 2+1\cdot 1 = 256+128+0+32+0+0+0+0+1 = 417$$

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

$$x = 417$$

$$10. (1010000000)_2 = 1\cdot 2^9+0\cdot 2^8+1\cdot 2^7+0\cdot 2^6+0\cdot 2^5+0\cdot 2^4+0\cdot 2^3+0\cdot 2^2+0\cdot 2^1+0\cdot 2^0 = 1\cdot 512+0\cdot 256+1\cdot 128+0\cdot 64+0\cdot 32+0\cdot 16+0\cdot 8+0\cdot 4+0\cdot 2+0\cdot 1 = 512+0+128+0+0+0+0+0+0+0 = 640$$

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

$$x = 640$$

$$11. (111100)_2 = 1\cdot 2^5+1\cdot 2^4+1\cdot 2^3+1\cdot 2^2+0\cdot 2^1+0\cdot 2^0 = 1\cdot 32+1\cdot 16+1\cdot 8+1\cdot 4+0\cdot 2+0\cdot 1 = 32+16+8+4+0+0 = 60$$

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

$$x = 60$$

$$12. (111111100)_2 = 1\cdot 2^8+1\cdot 2^7+1\cdot 2^6+1\cdot 2^5+1\cdot 2^4+1\cdot 2^3+1\cdot 2^2+0\cdot 2^1+0\cdot 2^0 = 1\cdot 256+1\cdot 128+1\cdot 64+1\cdot 32+1\cdot 16+1\cdot 8+1\cdot 4+0\cdot 2+0\cdot 1 = 256+128+64+32+16+8+4+0+0 = 508$$

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

$$x = 508$$

$$13. (1000000001)_2 = 1\cdot 2^9+0\cdot 2^8+0\cdot 2^7+0\cdot 2^6+0\cdot 2^5+0\cdot 2^4+0\cdot 2^3+0\cdot 2^2+0\cdot 2^1+1\cdot 2^0 = 1\cdot 512+0\cdot 256+0\cdot 128+0\cdot 64+0\cdot 32+0\cdot 16+0\cdot 8+0\cdot 4+0\cdot 2+1\cdot 1 = 512+0+0+0+0+0+0+0+0+1 = 513$$

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

$$x = 513$$

$$14. (1000000111)_2 = 1\cdot 2^9+0\cdot 2^8+0\cdot 2^7+0\cdot 2^6+0\cdot 2^5+0\cdot 2^4+0\cdot 2^3+1\cdot 2^2+1\cdot 2^1+1\cdot 2^0 = 1\cdot 512+0\cdot 256+0\cdot 128+0\cdot 64+0\cdot 32+0\cdot 16+0\cdot 8+1\cdot 4+1\cdot 2+1\cdot 1 = 512+0+0+0+0+0+0+4+2+1 = 519$$

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

$$x = 519$$

$$15. (10101111)_2 = 1\cdot 2^7+0\cdot 2^6+1\cdot 2^5+0\cdot 2^4+1\cdot 2^3+1\cdot 2^2+1\cdot 2^1+1\cdot 2^0 = 1\cdot 128+0\cdot 64+1\cdot 32+0\cdot 16+1\cdot 8+1\cdot 4+1\cdot 2+1\cdot 1 = 128+0+32+0+8+4+2+1 = 175$$

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

$$x = 175$$

$$16. (1111100000)_2 = 1\cdot 2^9+1\cdot 2^8+1\cdot 2^7+1\cdot 2^6+1\cdot 2^5+0\cdot 2^4+0\cdot 2^3+0\cdot 2^2+0\cdot 2^1+0\cdot 2^0 = 1\cdot 512+1\cdot 256+1\cdot 128+1\cdot 64+1\cdot 32+0\cdot 16+0\cdot 8+0\cdot 4+0\cdot 2+0\cdot 1 = 512+256+128+64+32+0+0+0+0+0 = 992$$

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

$$x = 992$$

$$17. (1001101101)_2 = 1\cdot 2^9+0\cdot 2^8+0\cdot 2^7+1\cdot 2^6+1\cdot 2^5+0\cdot 2^4+1\cdot 2^3+1\cdot 2^2+0\cdot 2^1+1\cdot 2^0 = 1\cdot 512+0\cdot 256+0\cdot 128+1\cdot 64+1\cdot 32+0\cdot 16+1\cdot 8+1\cdot 4+0\cdot 2+1\cdot 1 = 512+0+0+64+32+0+8+4+0+1 = 621$$

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

$$x = 621$$

$$18. (100001110)_2 = 1\cdot 2^8+0\cdot 2^7+0\cdot 2^6+0\cdot 2^5+0\cdot 2^4+1\cdot 2^3+1\cdot 2^2+1\cdot 2^1+0\cdot 2^0 = 1\cdot 256+0\cdot 128+0\cdot 64+0\cdot 32+0\cdot 16+1\cdot 8+1\cdot 4+1\cdot 2+0\cdot 1 = 256+0+0+0+0+8+4+2+0 = 270$$

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

$$x = 270$$

$$19. (1001100101)_2 = 1\cdot 2^9+0\cdot 2^8+0\cdot 2^7+1\cdot 2^6+1\cdot 2^5+0\cdot 2^4+0\cdot 2^3+1\cdot 2^2+0\cdot 2^1+1\cdot 2^0 = 1\cdot 512+0\cdot 256+0\cdot 128+1\cdot 64+1\cdot 32+0\cdot 16+0\cdot 8+1\cdot 4+0\cdot 2+1\cdot 1 = 512+0+0+64+32+0+0+4+0+1 = 613$$

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

$$x = 613$$

$$20. (1000010100)_2 = 1\cdot 2^9+0\cdot 2^8+0\cdot 2^7+0\cdot 2^6+0\cdot 2^5+1\cdot 2^4+0\cdot 2^3+1\cdot 2^2+0\cdot 2^1+0\cdot 2^0 = 1\cdot 512+0\cdot 256+0\cdot 128+0\cdot 64+0\cdot 32+1\cdot 16+0\cdot 8+1\cdot 4+0\cdot 2+0\cdot 1 = 512+0+0+0+0+16+0+4+0+0 = 532$$

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

$$x = 532$$

$$21. (100100111)_2 = 1 \cdot 2^8 + 0 \cdot 2^7 + 0 \cdot 2^6 + 1 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 256 + 0 \cdot 128 + 0 \cdot 64 + 1 \cdot 32 + 0 \cdot 16 + 0 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 256 + 0 + 0 + 32 + 0 + 0 + 4 + 2 + 1 = 295$$

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

$$x = 295$$

$$22. (111110110)_2 = 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 256 + 1 \cdot 128 + 1 \cdot 64 + 1 \cdot 32 + 1 \cdot 16 + 0 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 256 + 128 + 64 + 32 + 16 + 0 + 4 + 2 + 0 = 502$$

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

$$x = 502$$

$$23. (1110)_2 = 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 8 + 4 + 2 + 0 = 14$$

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

$$x = 14$$

$$24. (1101000111)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 0 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 0 \cdot 128 + 1 \cdot 64 + 0 \cdot 32 + 0 \cdot 16 + 0 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 512 + 256 + 0 + 64 + 0 + 0 + 0 + 4 + 2 + 1 = 839$$

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

$$x = 839$$

$$25. (111110)_2 = 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 32 + 16 + 8 + 4 + 2 + 0 = 62$$

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

$$x = 62$$

$$26. (10010101)_2 = 1 \cdot 2^7 + 0 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 0 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 128 + 0 \cdot 64 + 0 \cdot 32 + 1 \cdot 16 + 0 \cdot 8 + 1 \cdot 4 + 0 \cdot 2 + 1 \cdot 1 = 128 + 0 + 0 + 16 + 0 + 4 + 0 + 1 = 149$$

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

$$x = 149$$

$$27. (1011010011)_2 = 1 \cdot 2^9 + 0 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 512 + 0 \cdot 256 + 1 \cdot 128 + 1 \cdot 64 + 0 \cdot 32 + 1 \cdot 16 + 0 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 1 \cdot 1 = 512 + 0 + 128 + 64 + 0 + 16 + 0 + 0 + 2 + 1 = 723$$

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

$$x = 723$$

$$28. (110011110)_2 = 1 \cdot 2^8 + 1 \cdot 2^7 + 0 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 256 + 1 \cdot 128 + 0 \cdot 64 + 0 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 1 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 256 + 128 + 0 + 0 + 16 + 8 + 4 + 2 + 0 = 414$$

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

$$x = 414$$

$$29. (1001111001)_2 = 1 \cdot 2^9 + 0 \cdot 2^8 + 0 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 1 \cdot 512 + 0 \cdot 256 + 0 \cdot 128 + 1 \cdot 64 + 1 \cdot 32 + 1 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 0 \cdot 2 + 1 \cdot 1 = 512 + 0 + 0 + 64 + 32 + 16 + 8 + 0 + 0 + 1 = 633$$

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

$$x = 633$$

$$30. (1101001010)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 0 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 0 \cdot 2^4 + 1 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 0 \cdot 128 + 1 \cdot 64 + 0 \cdot 32 + 0 \cdot 16 + 1 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 512 + 256 + 0 + 64 + 0 + 0 + 8 + 0 + 2 + 0 = 842$$

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

$$x = 842$$

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

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

$$x = 10F$$

2.

base 2	0011	0001	1110
base 16	3	1	E

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

$$x = 31E$$

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

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

$$x = A3$$

6.

base 2	0011	1010	1001
base 16	3	A	9

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

$$x = 3A9$$

7.

base 2	1011	1001
base 16	B	9

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

$$x = B9$$

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

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

$$x = 2D$$

11.

base 2	0011	0101	1100
base 16	3	5	C

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

$$x = 35C$$

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

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

$$x = C9$$

15.

base 2	0001	0011	1111
base 16	1	3	F

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

$$x = 13F$$

16.

base 2	0001	1010	0101
base 16	1	A	5

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

$$x = 1A5$$

17.

base 2	1001	1110
base 16	9	E

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

$$x = 9E$$

18.

base 2	0001	1110	0111
base 16	1	E	7

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

$$x = 1E7$$

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

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

$$x = 14C$$

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

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

$$x = 1AC$$

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

$$(111000111)_2 = (1C7)_{16}$$

$$x = 1C7$$

27.

base 2	0001	1011	0111
base 16	1	B	7

$$(110110111)_2 = (1B7)_{16}$$

$$x = 1B7$$

28.

base 2	0001	1111	1110
base 16	1	F	E

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

$$x = 1FE$$

29.

base 2	1011	1000
base 16	B	8

$$(10111000)_2 = (B8)_{16}$$

$$x = B8$$

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

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

$$x = 1011001001$$

18.

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

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

$$x = 1110001100$$

16.

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

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

$$x = 11000000$$

19.

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

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

$$x = 1100010$$

17.

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

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

$$x = 1110110110$$

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

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

$$x = 1101001100$$

29.

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

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

$$x = 1110010001$$

28.

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

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

$$x = 1100100001$$

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

$$(1232)_8 = (1010011010)_2$$

$$x = 1010011010$$

3.

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

$$(1040)_8 = (1000100000)_2$$

$$x = 1000100000$$

2.

base 8	7	2	2
base 2	111	010	010

$$(722)_8 = (111010010)_2$$

$$x = 111010010$$

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.

477	
29	13
1	13
0	1

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

$$x = 1DD$$

2.

428	
26	12
1	10
0	1

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

$$x = 1AC$$

3.

280	
17	8
1	1
0	1

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

$$x = 118$$

4.

359	
22	7
1	6
0	1

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

$$x = 167$$

5.

183	
11	7
0	11

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

$$x = B7$$

6.

97	
6	1
0	6

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

$$x = 61$$

7.

4	
0	4

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

$$x = 4$$

8.

670	
41	14
2	9
0	2

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

$$x = 29E$$

9.

393	
24	9
1	8
0	1

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

$$x = 189$$

10.

957	
59	13
3	11
0	3

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

$$x = 3BD$$

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

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

$$x = 3D$$

15.

quoziente	resto
106	
6	10
0	6

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

$$x = 6A$$

16.

quoziente	resto
914	
57	2
3	9
0	3

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

$$x = 392$$

17.

quoziente	resto
140	
8	12
0	8

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

$$x = 8C$$

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

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

$$x = 35B$$

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

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

$$x = 35F$$

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

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

$$x = 15F$$

26.

quoziente	resto
723	
45	3
2	13
0	2

$$(723)_{10} = (2D3)_{16}$$

$$x = 2D3$$

27.

quoziente	resto
185	
11	9
0	11

$$(185)_{10} = (B9)_{16}$$

$$x = B9$$

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

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

$$x = 18F$$

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

$150 + 0 = 150$

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

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

$x = 10010110$

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

quoziente	resto
361	
60	1
10	0
1	4
0	1

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

$x = 1401$

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

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

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

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

$$x = 1100111$$

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

quoziente	resto
438	
27	6
1	11
0	1

$$(2010)_6 = (1B6)_{16}$$

$$x = 1B6$$

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

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

$$(101101101)_2 = (1C1)_{14}$$

$$x = 1C1$$

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

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

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

$$x = 28A$$

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

quoziente	resto
331	
23	9
1	9
0	1

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

$$x = 199$$

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

quoziente	resto
293	
19	8
1	4
0	1

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

$$x = 148$$

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

quoziente	resto
826	
63	7
4	11
0	4

$$(58A)_{12} = (4B7)_{13}$$

$$x = 4B7$$

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

quoziente	resto
982	
61	6
3	13
0	3

$$(2602)_7 = (3D6)_{16}$$

$$x = 3D6$$

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

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

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

$$x = 319$$

$$29. (1111000010)_2 = 1 \cdot 2^9 + 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 0 \cdot 2^4 + 0 \cdot 2^3 + 0 \cdot 2^2 + 1 \cdot 2^1 + 0 \cdot 2^0 = 1 \cdot 512 + 1 \cdot 256 + 1 \cdot 128 + 1 \cdot 64 + 0 \cdot 32 + 0 \cdot 16 + 0 \cdot 8 + 0 \cdot 4 + 1 \cdot 2 + 0 \cdot 1 = 943$$

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

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

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

$$x = 4402$$