

Conversion Between Number Bases

Contemporary Math (MAT-130)

List the first 20 counting numbers in each base.

1. five
2. two
3. sixteen

Write the counting numbers (in the same base) just before and after the given number.

4. 27_{eight}
5. 100_{three}
6. 555_{six}
7. ABF_{sixteen}
8. 1520_{nine}

Convert each number to decimal form.

9. 10010_{two}
10. $E4C_{\text{sixteen}}$
11. 3201_{four}
12. 753_{eight}
13. 2643_{nine}

Convert each decimal number to the given base.

14. 26 to base five
15. 312 to base nine
16. 11 to base two
17. 8504 to base sixteen
18. 661 to base seven

Make each conversion as indicated.

19. 123_{four} to base eight
20. $A4_{\text{sixteen}}$ to base seven
21. 563_{nine} to base sixteen
22. 1212_{three} to base five
23. 451_{seven} to base four
24. 100101_{two} to base eight
25. 751_{eight} to base two

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Solutions:

1. (1, 2, 3, 4, 10, 11, 12, 13, 14, 20, 21, 22, 23, 24, 30, 31, 32, 33, 34, 40)
2. (1, 10, 11, 100, 101, 110, 111, 1000, 1001, 1010, 1011, 1100, 1101, 1110, 1111, 10000, 10001, 10010, 10011, 10100)
3. (1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, 12, 13, 14)
4. 26, 30
5. 22, 101
6. 554, 1000
7. ABE, ACO
8. 1518, 1521
9. 18
10. 3660
11. 225
12. 491
13. 1983
14. 101_{five}
15. 376_{nine}
16. 1011_{two}
17. $2138_{sixteen}$
18. 1633_{seven}
19. 33_{eight}
20. 323_{seven}
21. $1CE_{sixteen}$
22. 200_{five}
23. 3220_{four}
24. 45_{eight}
25. 111101001_{two}