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# “NUMBER SYSTEM CONVERSIONS SOLUTIONS”

**1**. **DECIMAL TO BINARY, OCTAL, HEXADECIMAL**

**A) 156 in Decimal**

To Binary (÷2):

156÷ 2 = 78 R0

78÷ 2 = 39 R0

39÷ 2 = 19 R1

19÷ 2 = 9 R1

9÷ 2 = 4 R1

4÷ 2 = 2 R0

2÷ 2 = 1 R0

1÷ 2 = 0 R1

* Result: **10011100** (Binary)

To Octal (÷8):

156÷ 8 = 19 R4

19÷ 8 = 2 R3

2÷ 8 = 0 R2

Result: **234** (Octal)

To Hexadecimal (÷16):

156÷ 16 = 9 R12 (C)

9÷ 16 = 0 R9

Result: **9C** (Hexadecimal)

**B) 1024 in Decimal**

To Binary (÷2):

1024÷ 2 = 512 R0

512÷ 2 = 256 R0

256÷ 2 = 128 R0

128÷ 2 = 64 R0

64÷ 2 = 32 R0

32÷ 2 = 16 R0

16÷ 2 = 8 R0

8÷ 2 = 4 R0

4÷ 2 = 2 R0

2÷ 2 = 1 R0

1÷ 2 = 0 R1

Result: **10000000000** (Binary)

To Octal (÷8):

1024÷ 8 = 128 R0

128÷ 8 = 16 R0

16÷ 8 = 2 R0

2÷ 8 = 0 R2

Result: **2000** (Octal)

To Hexadecimal (÷16):

1024÷ 16 = 64 R0

64÷ 16 = 4 R0

4÷ 16 = 0 R4

Result: **400** (Hexadecimal)

**C) 255 in Decimal**

To Binary (÷2):

255÷ 2 = 127 R1

127÷ 2 = 63 R1

63÷ 2 = 31 R1

31÷ 2 = 15 R1

15÷ 2 = 7 R1

7÷ 2 = 3 R1

3÷ 2 = 1 R1

1÷ 2 = 0 R1

Result: **11111111** (Binary)

To Octal (÷8):

255÷ 8 = 31 R7

31÷ 8 = 3 R7

3÷ 8 = 0 R3

Result: **377** (Octal)

To Hexadecimal (÷16):

255÷ 16 = 15 R15 (F)

15÷ 16 = 0 R15 (F)

Result: **FF** (Hexadecimal)

**2. CONVERT TO OCTAL**

**A) 124 in Decimal to Octal:**

124÷ 8 = 15 R4

15÷ 8 = 1 R7

1÷ 8 = 0 R1

Result: **174** (Octal)

**B) A78E in Hexadecimal to Octal:**

Step 1:Hex to Binary

A=1010,7=0111, 8=1000, E=1110

Binary:1010011110001110

Step 2: Binary to Octal (group in 3s)

001 010 011 110 001 110

1 2 3 6 1 6

Result: **123616** (Octal)

**3. CONVERT TO HEXADECIMAL**

**A) 784 in Decimal to Hexadecimal**:

784÷ 16 = 49 R0

49÷ 16 = 3 R1

3÷ 16 = 0 R3

Result: **310** (Hexadecimal)

**B) 372 in Octal to Hexadecimal:**

Step 1:Octal to Binary

3=011,7=111, 2=010

Binary:011111010 = 11111010

Step 2: Binary to Hexadecimal (group in 4s)

1111 1010

F A

Result: **FA** (Hexadecimal)

**4. CONVERT TO BINARY**

**A) 235 in Octal to Binary:**

2=010,3=011, 5=101

Result: **010011101** (Binary)

**B) 276 in Decimal to Binary:**

276÷ 2 = 138 R0

138÷ 2 = 69 R0

69÷ 2 = 34 R1

34÷ 2 = 17 R0

17÷ 2 = 8 R1

8÷ 2 = 4 R0

4÷ 2 = 2 R0

2÷ 2 = 1 R0

1÷ 2 = 0 R1

Result: **100010100** (Binary)

**C) C13E in Hexadecimal to Binary:**

C=1100,1=0001, 3=0011, E=1110

Result: **1100000100111110** (Binary)