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Lab 4 - Radix Conversion Worksheet

Convert:

1. 0x4F45 into octal

Binary: 0100 1111 0100 0101
Separate by every 3, starting from end: 000 100 111 101 000 101
Calculate the values: 0 + (2^2) + (2^2 + 2^1 + 2^0) + (2^2 + 2^0) + 0 + (2^2 + 2^0)
Add up the values: 0 4 7 5 0 5
Answer: **47505_8**

2. 269_{10} into radix 7

269/7 = 38 R 3
38/7 = 5 R 3
5/7 = R 5
Answer: **533_7**

3. 110011011110_2 into decimal

Calculate the values: (2^0) + **(2^1)** + **(2^2)** + **(2^3)** + **(2^4)** + (2^5) + **(2^6)** + **(2^7)** + (2^8) + (2^9) + **(2^10)** + **(2^11)**
Add up values in **bold**: 2 + 4 + 8 + 16 + 64 +128 + 1024 + 2048
Answer: **3294_{10}**

4. $2BD_{19}$ into decimal

Calculate values of each character in base 19:
(D: 13*(19^0)) + (B: 11*(19^1)) + (2: 2*(19^2))
Add up values: 13 + 209 + 722
Answer: **944_{10}**

5. Given the following positive binary integer in two's complement: 0101001101011101

   a) Convert the number to hexadecimal:

   Separate by 4: 0101 0011 0101 1101
   Calculate values: 5 3 5 15
   Answer: **0x535D**

   b) Negate the number

   Flip the bits: 1010 1100 1010 0010
   Add 1: 1010 1100 1010 0011
   Answer: **1010 1100 1010 0011**