

Title: Hexadecimal (A80C) to Decimal and Back Conversion

Description: In this activity, students will learn how to convert an **Hexadecimal number (base-16)** to a **Decimal number (base-10)**, and then convert it back to **Hexadecimal**, step by step. This will help students understand how base-16 systems work and how each position has its own value based on powers of 16.

Purpose: To help students:

- Understand how Hexadecimal numbers are structured.
- Learn to convert Hexadecimal numbers to Decimal using positional values.
- Practice reverse conversion from Decimal to Hexadecimal using division method.
- Strengthen number system understanding with practical examples.

Part A: Convert Hexadecimal A80C to Decimal

Steps:

1. Write down the hexadecimal number:

A 8 0 C

2. Assign powers of 16 from right to left (starting at 0):

16^3 16^2 16^1 16^0

Which equals:

4096 256 16 1

3. Multiply each binary digit by its power of 16. Also add them:

Step-by-Step Explanation (with Visual Aid):

Hex Digits:	A	8	0	C
	↓	↓	↓	↓
Decimal Value:	10	8	0	12
	↓	↓	↓	↓
Powers of 16:	16^3	16^2	16^1	16^0
	↓	↓	↓	↓
Multiplication:	10×4096	8×256	0×16	12×1
	↓	↓	↓	↓
Results:	$40960 + 2048 + 0 + 12 = 43020$			

✓ So, Hexadecimal A80C = Decimal 43020

Part B: Convert Decimal **43020** to Hexadecimal

Steps:

1. Take the decimal number: **43020**
2. Divide the number by **16** and record the **remainder**.
3. Repeat until the quotient is 0.
4. Read the remainder in reverse order (bottom to up).

Step-by-Step Explanation (with visual Aid):

Division Step	Quotient	Remainder	Hex Digit
$43020 \div 16$	2688	12	C
$2688 \div 16$	168	0	0
$168 \div 16$	10	8	8
$10 \div 16$	0	10	A

👉 Write the hex digits from bottom to top: A 8 0 C

✅ So, Decimal 43020 = Hexadecimal A80C

Conclusion:

- ✓ This proves that hexadecimal and decimal conversions are reversible when done correctly.
- ✓ This activity helps reinforce the importance of **place value in base-16** and **division-based reverse conversion**.