

# CPSC 231: Asst 2 Extra Material: Number conversions and Non-decimal based math: Questions

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## 1 Common notation

- $N_B = N$  is the number, B is the base the number is represented in.
- <http://www.cstc.org/data/resources/60/convexp.html>
- <http://www.mathpath.org/concepts/Num/conv.htm>
- <http://www.math.grin.edu/~rebelsky/Courses/152/97F/Readings/student-binary.html> (The Binary System)

## 2 Number conversions

### 2.1 Decimal to binary

Convert the following from base 10 (decimal) to base 2 (binary):

2.1.1  $6_{10}$

2.1.2  $12_{10}$

2.1.3  $23_{10}$

2.1.4  $256_{10}$

2.1.5  $1529_{10}$

### 2.2 Decimal to octal or hexadecimal or binary

Convert the following from base 10 (decimal) to base 2 (binary), base 8 (octal) and base 16 (hexadecimal) :

**2.2.1**  $12_{10}$

**2.2.2**  $35_{10}$

**2.2.3**  $256_{10}$

**2.2.4**  $512_{10}$

**2.2.5**  $1189_{10}$

### **3 Non-decimal based math**

Perform the following binary additions and subtractions:

Note: For the subtractions use borrows (where needed) rather than employing the complement and add technique.

**3.0.6**  $10010101_2 + 01101001$

**3.0.7**  $1110_2 + 0010_2$

**3.0.8**  $01100110_2 - 01100001_2$

**3.0.9**  $0110_2 - 0010_2$