Adding 2 Numbers in a Different Base:

A. Adding numbers in a different base is similar to adding numbers in base 10.

   1. Add the one's digits first like you would in base 10.

   2. If the number is less than the base, write it down. If the number is greater than or equal to the base, you must carry. So find the remainder after dividing by the base and write it down (i.e. n MOD b) and to find the number you should carry, find out how many times b will go into n (i.e. n DIV b).

   3. Continue adding the next digits as described in step 2 until all numbers are added. Don't forget to add in any carried numbers.

   4. Note: You must add the digits from the right to left. In other words, add the ones digit first, followed by the tens digit, and so on.

   Ex [1] $143_5 + 41_5 = $_____$_5$.

   a. $3 + 1 = 4$. Since 4 is less than 5, write it down.

   b. $4 + 4 = 8$. Since 8 is greater than 5, we must carry. 8 Mod 5 = 3. Write down 3. 8 DIV 5 = 1. Carry the *1.

   c. $1 + {*}1 = 2$. Since 2 is less than 5, write it down.

   d. The answer is 234.

   Ex [2] $222_3 + 121_3 + 220_3 = $_____$_3$.

   a. $2 + 1 + 0 = 3$. Since 3 is equal to 3, we must carry. 3 MOD 3 = 0. Write this down. 3 DIV 3 = 1. Carry *1.

   b. $2 + 2 + 2 = 6 + {*}1 = 7$. Since 7 is greater than 3, we must carry. 7 MOD 3 = 1. Write down 1. 7 DIV 3 = 2. Carry *2.

   c. $2 + 1 + 2 = 5 + {*}2 = 7$. Since 7 is greater than 3, we must carry. 7 MOD 3 = 1. Write down 1. 7 DIV 3 = 2. Since there are no more numbers we can just write down 2.

   d. The answer is 2110.

Ex [3] $788_9 + 824_9 =$_____$_9$.

    a. $8 + 4 = 12$. Since 12 is greater than 9, we must carry. 12 MOD 9 = 3. Write down 3. 12 DIV 9 = 1. Carry *1.

    b. $8 + 2 = 10 + *1 = 11$. Since 11 is greater than 9, we must carry. 11 MOD 9 = 2. Write down 2. 11 DIV 9 = 1. Carry *1.

    c. $7 + 8 = 15 + *1 = 16$. Since 16 is greater than 9, we must carry. 16 MOD 9 = 7. Write down 7. 16 DIV 7 = 1. Since there are no more numbers we can just write down 1.

    d. The answer is 1723.