Decimal to another base conversion

Steps for conversion

- 1.devide the decimal number by the value of new base

- Record the remainder from step 1 as the rightmost digit

- Divide the quotient of the previous division by the new base.

- Record the remainder from step 3 as the next digit.(to the left) of the new base number

- Ex
- $25_{10} = ?_2$
- Solution
- Step1 and 2: 25/2=12 and remainder 1
- Step 3and 4:12/2=6 and remainder 0
- Step 3and 4: 6/2= 3 and remainder 0
- Step 3and 4:3/2=1 and remainder 1
- Step 3and 4:1/2=0 and remainder 1

- Remainders are now arranged in the reverse order

- Making the first remainder the last significant digit(LSD)

- And the last remainder the most significant digit(MSD)

- Ex:
- $25_{10}=?_2$

2	25	remainder
2	12	1
2	6	0
2	3	0
2	1	1
	0	1

- Write remainder from down to up
- Hence
- $25_{10} = 11001_2$

- Ex
- $42_{10} = ?_2$

2	42	remainder
2	21	0
2	10	1
2	5	0
2	2	1
	1	0
	0	1

- Write remainder from bottom to up

- 101010
- Hence
- $42_{10} = 101010_2$

Decimal to hexadecimal

- $428_{10} = ?_{16}$

- Similarly

- 428 divide by16 till then we get reminder less than 16

- Solution:

16	428	remainder
16	26	12=C(in hexadecimal system)
16	1	10=A
	0	1=1

- hence
- $428_{10}=1AC_{16}$

- Similarly:
- $1oo_{10}=?_4$

4	100	remainder
4	25	0
4	6	1
4	1	2
4	0	1

- Hence
- $42_{10} = 1210_4$

Some more example

- $1715_{10} = ?_{12}$

12	1715	remainder
12	142	11 =B
12	11	10=A
	0	11=B

Hence

1715_{10} $= BAB_{12}$

- $952_{10}=?_8$
- Solution:

8	952	remainder
8	119	0
8	14	7
8	1	6
8	0	1

- hence:
- $952_{10}=1670_8$