Anybase to Decimal

- Number has two parts: integer and fraction
- interger multiplication
- Fraction division

If we have only interger for the conversion:

$$(254)_{8} \rightarrow (?)_{10}$$

$$(254)_{8}$$

$$= (2 \times 8^{2} + 5 \times 8^{1} + 4 \times 8^{0})_{10}$$

$$= (128 + 40 + 4)_{10}$$

$$= (172)_{10}$$

If we have only fraction for conversion:

(0.ABDF)₁₆
$$\rightarrow$$
 (?)₁₀
(0.ABDF)₁₆
= (0 x 16⁰ + A x 16⁻¹ + B x 16⁻² + D x 16⁻³ + F x 16⁻⁴)₁₀
= (0 x 1 + 10 x 16⁻¹ + 11 x 16⁻² + 13 x 16⁻³ + 15 x 16⁻⁴)₁₀
= (0 + 0.625 + 0.0429 + 0.0032 + 0.0002)₁₀
= (0.6713)₁₀

If we have both integer and fraction for the conversion :

$$(254.7014)_{8} \rightarrow (?)_{10}$$

$$(254.7014)_{8}$$

$$= (2 \times 8^{2} + 5 \times 8^{1} + 4 \times 8^{0} + 7 \times 8^{-1} + 0 \times 8^{-2} + 1 \times 8^{-3} + 4 \times 8^{-4})_{10}$$

$$= (128 + 40 + 4 + 0.875 + 0.0019 + 0.0009)_{10}$$

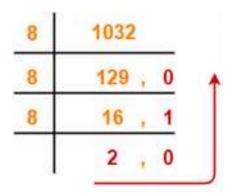
$$= (172.8778)_{10}$$

Decimal to Anybase

- Number has two parts : Interger and Fraction
- Interger division
- Fraction multiplication

If we have only interger for the conversion:

$$(1032)_{10} \rightarrow (2010)_8$$



If we have only fraction for the conversion:

 $(.35)_{10}$ --- $(01011)_2$

.35 x 2	.70 x 2	.40 x2	.80 x 2	.60 x2
0.70	1.40	0.8	1.60	1.2
0	1	0	1	1

If we have both integer and fraction for the conversion:

 $(172.878)_{10} \rightarrow (254.7014)_{8}$

.878	.024	.192	.536
x 8	x 8	x8	x8
7.024	0.192	1.536	4.288

4
5

Another way through table

	Real part	Fractional Part
0.878 x 8	7	0.024
0.024 x 8	0	0.192
0.192 x 8	1	0.536
0.536 x 8	4	0.288

Anybase to Anybase

Step 1 : Anybase to Decimal

Step 2 : Decimal to Anybase

Convert (1056)₁₆ to (?)₈

1.
$$(1056)_{16} \rightarrow (?)_{10}$$

$$= 1 \times 16^3 + 0 \times 16^2 + 5 \times 16^1 + 6 \times 16^0$$

$$=4096+0+80+6$$

$$=(4182)_{10}$$

$$2 (4182)_{10} \rightarrow (?)_{8}$$

$$=(10126)_8$$

Ans: $(1056)_{16} = (10126)_8$