Class - X^th

29 April

Upsutra Anurupyena :-

"Find the square" "find the cube"

Find the square :-

(Two digit NO)

Rule

(ab)^2 :-

I	II	III
a^2	$a \times b$	b^2
	$+ a \times b$	

for ex. $(21)^2 \Rightarrow$

I	II	III
$(2)^2$	2×1	1^2
	$+ 2 \times 1$	
4	4	1

$\Rightarrow$ 441 Ans

Ex ②

$= (87)^2$

I	II	III
$(8)^2$	$8 \times 7 + 8 \times 7$	$(7)^2$

$64 \mid 56 + 56 \mid 49$

$= 64 \mid 112 \mid 49$

$\Rightarrow 75 \mid 6 \mid 9$

$\Rightarrow 7569$ Ans

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Find the cube

$(ab)^3 \Rightarrow$

I	II	III	IV
a^3	$a^2 \times b$ + $2a^2b$	$a \times b^2$ + $2ab^2$	b^3

Ex① $(21)^3 \Rightarrow$

I	II	III	IV
$(2)^3$	$(2)^2 \times 1$ + $2 \times (2)^2 \times 1$	$2 \times (1)^2$ + $2 \times 2 \times (1)^2$	$(1)^3$
8	4 + 8	2 + 4	1

$\Rightarrow$ 8 | 12 | 6 | 1 $\Rightarrow$ 9261 Ans.

Ex. $(47)^3$

I	II	III	IV
$(4)^3$	$4^2 \times 7$ + $2 \times 4^2 \times 7$	4×7^2 + $2 \times 4 \times 7^2$	7^3
64	112 + 224	196 + 392	343

$\Rightarrow$

64	336	588	343
	39	62	
103	8	2	3

$\Rightarrow$ 103823 Ans

Example 1. Using a proper upsutra, find the cube of 31.

Solution :

Parts	I	II	III	IV
31^3	$= 3^3$	$3^2 \times 1$	3×1^2	1^3
	$= 27$	9	3	1
		$+18$	$+6$	
	$= 27$	27	9	1

$= 29791$

Hints

$27 : 9 = 9 : 3 = 3 : 1$ are proportions

Example 2. Find the cube of 47 by the Upsutra Anurupyena.

Solution :

Parts	I	II	III	IV
47^3	$= 4^3$	$4^3 \times 7$	4×7^2	7^3
	$= 64$	112	196	343
			$+224$	$+392$
	$= 64$	336	588	343

$= 64 / {}_{33} 6 / {}_{58} 8 / {}_{34} 3 = 103823$

Example 3. Find the cube of 92 by the Upsutra Anurupyena.

Solution :

Parts	I	II	III	IV
92^3	$= 9^3$	$9^2 \times 2$	9×2^2	2^3
	$= 729$	162	36	8
		$+324$	$+72$	
	729	486	108	8

$= 729 / {}_{48} 6 / {}_{10} 8 / 8$

$= 778688$

Exercise 1.2

Using upsutra yavadunam tavadunikritya vargecha yojayet find the square of :

1. 93 **2.** 106 **3.** 211 **4.** 405

Using Upsutra Anurupyena find the square of :

5. 16 **6.** 31 **7.** 24 **8.** 56

Using the Sutra Ekadhikena Poorvena find the square of :

9. 45 **10.** 85 **11.** 115 **12.** 125

Using the Sutra Sankalana Vyavakalan, find the square of :

13. 23 **14.** 38 **15.** 69 **16.** 89

Find the square of the following by Dwandwa Yog :

17. 362 **18.** 453 **19.** 4312 **20.** 2456

Find the cubes of the following by the Sutra Nikhilam

21. 14 **22.** 97 **23.** 27 **24.** 395

Using the Sutra Anurupyena find the cubes of :

25. 16 **26.** 33 **27.** 41 **28.** 52

Find the cubes of the following by the Sutra Ekadhikena Poorvana :

29. 45 **30.** 73 **31.** 24 **32.** 106