

Number Based Reasoning

Basic & Concept

$$\begin{aligned} 10 \times 7 &= 1 \\ 11 \times 6 &= 3 \\ 12 \times 6 &= 3 \end{aligned}$$

$4^3 + 5$

$23 \times 3 \leftarrow 69$

digit $\rightarrow 6 + 9 = 15$

$6 \times 9 = 54$



Topics based on Number based Reasoning

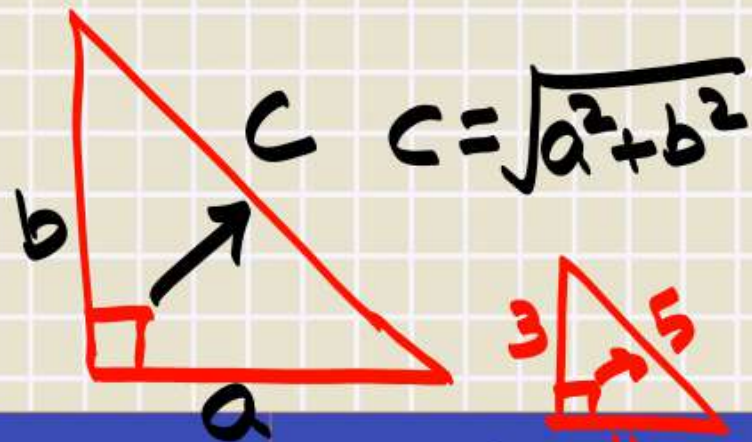
- Number Analogy
- Number Classification
- Number series
- Missing Number
- Numerical operations
- Alphanumeric Number Reasoning

Powers

घात

2	<u>$2^2 = 4$</u>	<u>$2^3 = 8$</u>	<u>$2^4 = 16$</u>	$2^5 = 32$	$2^6 = 64$	$2^7 = 128$	$2^8 = 256$	$2^9 = 512$
3	$3^2 = 9$	$3^3 = 27$	$3^4 = 81$	$3^5 = 243$	$3^6 = 729$	$3^7 = 2187$	$3^8 = 15309$	$3^9 = 45927$
4	$4^2 = 16$	$4^3 = 64$	$4^4 = 256$	$4^5 = 1024$	$4^6 = 4096$	$4^7 = 16384$	$4^8 = 65536$	$4^9 = 262144$
5	<u>$5^2 = 25$</u>	<u>$5^3 = 125$</u>	<u>$5^4 = 625$</u>	<u>$5^5 = 3125$</u>	<u>$5^6 = 15625$</u>	<u>$5^7 = 78125$</u>	<u>$5^8 = 390625$</u>	<u>$5^9 = 1953125$</u>
6	<u>$6^2 = 36$</u>	<u>$6^3 = 216$</u>	<u>$6^4 = 1296$</u>	<u>$6^5 = 7776$</u>				
7	$7^2 = 49$	$7^3 = 343$	$7^4 = 2401$	$7^5 = 16807$				
8	$8^2 = 64$	$8^3 = 512$	$8^4 = 4096$	$8^5 = 32768$				
9	$9^2 = 81$	$9^3 = 729$	$9^4 = 6561$	$9^5 = 59049$				

5^7
 $5 : 78125$



Triplet

$x \times \frac{1}{2}$ (Times $\frac{1}{2}$)	Pythagorean Triples	<u>$\times 2$</u> (Times 2)	<u>$\times 3$</u> (Times 3)	$\times 4$ (Times 4)
<u>1.5 – 2 – 2.5</u>	<u>3 – 4 – 5</u>	<u>6 – 8 – 10</u>	<u>9 – 12 – 15</u>	<u>12 – 16 – 20</u>
2.5 – 6.5 – 6.5	<u>5 – 12 – 13</u>	10 – 24 – 26	15 – 36 – 39	20 – 48 – 52
3.5 – 12 – 12.5	<u>7 – 24 – 25</u>	14 – 48 – 50	21 – 72 – 75	28 – 96 – 100
4.5 – 20 – 20.5	<u>9 – 40 – 41</u>	18 – 80 – 82	27 – 120 – 123	36 – 160 – 164
5.5 – 30 – 30.5	<u>11 – 60 – 61</u>	22 – 120 – 122	33 – 180 – 183	44 – 240 – 244

(25, 312, 313)	(27, 364, 365)	<u>(8, 15, 17)</u>	<u>(7, 24, 25)</u>
<u>(20, 21, 29)</u>	<u>(12, 35, 37)</u>	<u>(9, 40, 41)</u>	(28, 45, 53)
<u>(11, 60, 61)</u>	<u>(16, 63, 65)</u>	(33, 56, 65)	(48, 55, 73)
(13, 84, 85)	(36, 77, 85)	(39, 80, 89)	(65, 72, 97)
(20, 99, 101)	(60, 91, 109)	(15, 112, 113)	(44, 117, 125)
(88, 105, 137)	(17, 144, 145)	(24, 143, 145)	(51, 140, 149)
(85, 132, 157)	(119, 120, 169)	(52, 165, 173)	(19, 180, 181)
(57, 176, 185)	(104, 153, 185)	(95, 168, 193)	(28, 195, 197)
(84, 187, 205)	(133, 156, 205)	(21, 220, 221)	(140, 171, 221)
(60, 221, 229)	(105, 208, 233)	(120, 209, 241)	(32, 455, 257)
(23, 264, 265)	(96, 247, 265)	(69, 260, 269)	(115, 252, 277)

टेबल

Table of 2	Table of 3	Table of 4	Table of 5	Table of 6	Table of 7	Table of 8	Table of 9	Table of 10
2	3	4	5	6	7	8	9	10
4	6	8	10	12	14	16	18	20
6	9	12	15	18	21	24	27	30
8	12	16	20	24	28	32	36	40
10	15	20	25	30	35	40	45	50
12	18	24	30	36	42	48	54	60
14	21	28	35	42	49	56	63	70
16	24	32	40	48	56	64	72	80
18	27	36	45	54	63	72	81	90
20	30	40	50	60	70	80	90	100

SSC CHSL

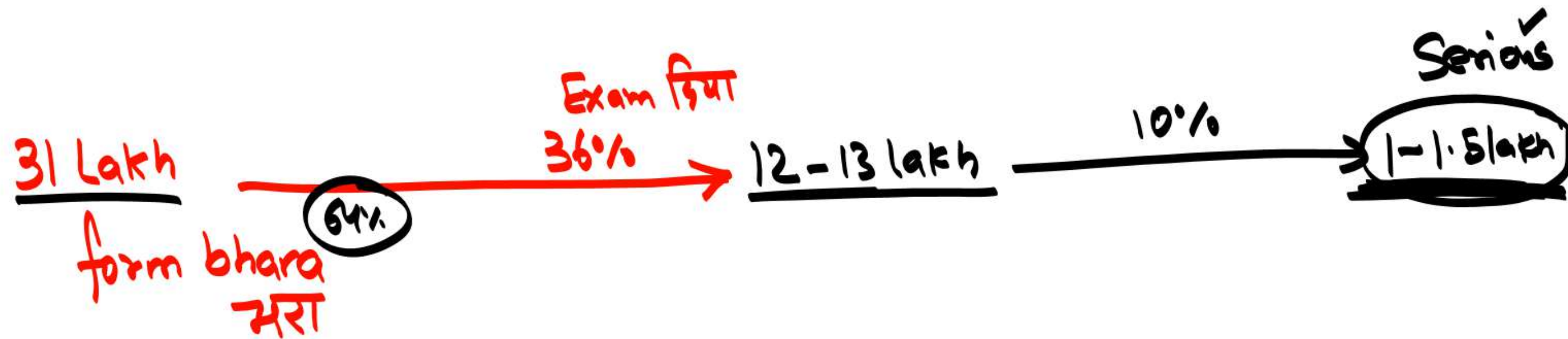


Table of 11	Table of 12	Table of 13	Table of 14	Table of 15	Table of 16	Table of 17	Table of 18	Table of 19	Table of 20
11	12	13	14	15	16	17	18	19	20
22	24	26	28	30	32	34	36	38	40
33	36	39	42	45	48	51	54	57	60
44	48	52	56	60	64	68	72	76	80
55	60	65	70	75	80	85	90	95	100
66	72	78	84	90	96	102	108	114	120
77	84	91	98	105	112	119	126	133	140
88	96	104	112	120	128	136	144	152	160
99	108	117	126	135	144	153	162	171	180
110	120	130	140	150	160	170	180	190	200

29x7

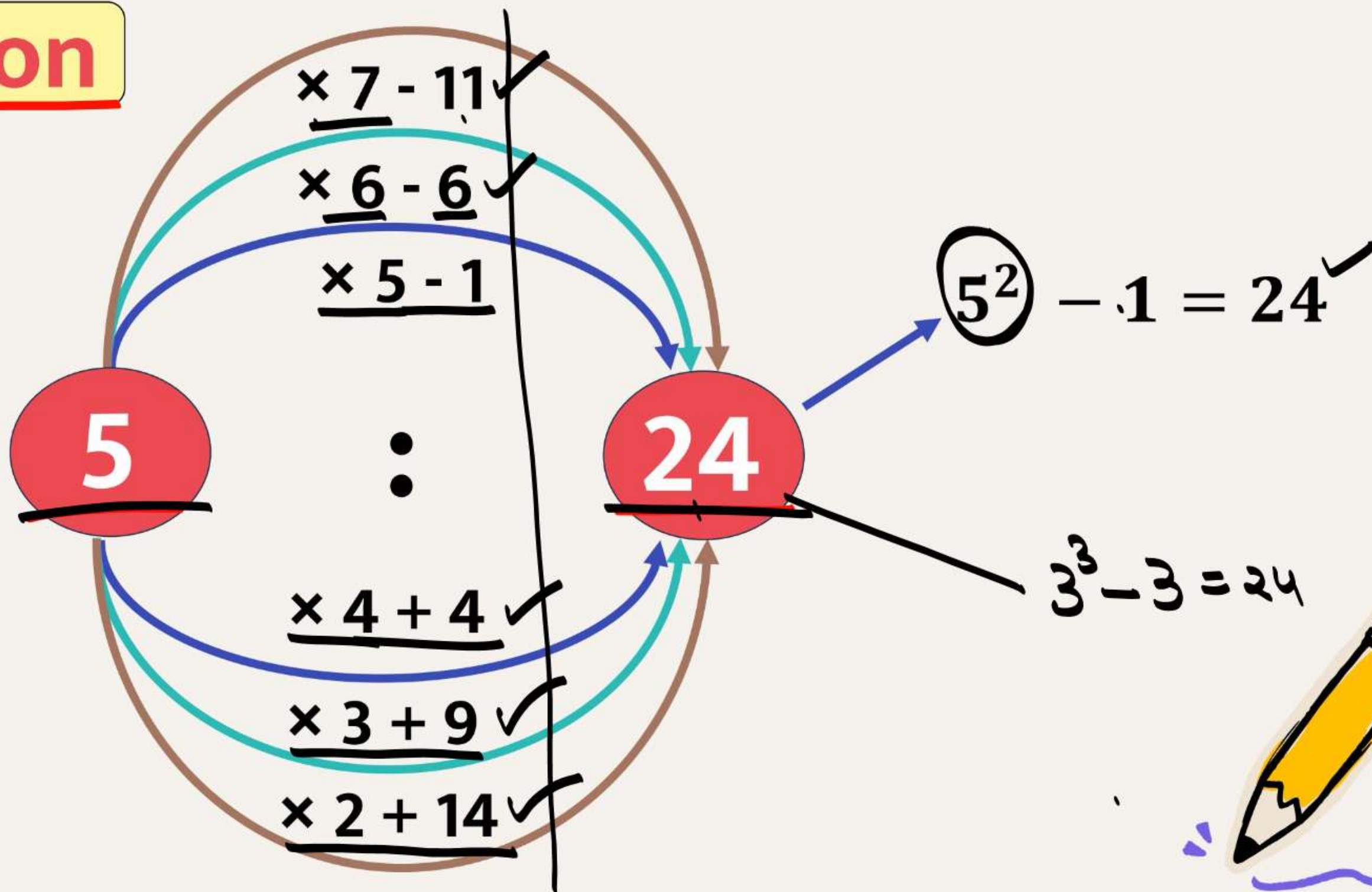
Table of 21	Table of 22	Table of  23	Table of 24	Table of 25	Table of 26	Table of  27	Table of 28	Table of  29	Table of 30
21	22	23	24	25	26	27	28	29	30
42	44	46	48	50	52	54	56	58	60
63	66	69	72	75	78	81	84	87	90
84	88	92	96	100	104	108	112	116	120
105	110	115	120	125	130	135	140	145	150
126	132	138	144	150	156	162	168	174	180
147	154	161	168	175	182	189	196		210
168	176	184	192	200	208	216	224	232	240
189	198	207	216	225	234	243	252	261	270
210	220	230	240	250	260	270	280	290	300

Table of 31	Table of 32	Table of 33	Table of 34	Table of 35	Table of 36	Table of 37	Table of 38	Table of 39	Table of 40 ✓
31	32	33	34	35	36	37	38	39	40
62	64	66	68	70	72	74	76	78	80
93	96	99	102	105	108	111	114	117	120
124	128	132	136	140	144	148	152	156	160
155	160	165	170	175	180	185	190	195	200
186	192	198	204	210	216	222	228	234	240
217	224	231	238	245	252	259	266	273	280
248	256	264	272	280	288	296	304	312	320
279	288	297	306	315	324	333	342	351	360
310	320	330	340	350	360	370	380	390	400

Table of 41	Table of 42	Table of 43	Table of 44	Table of 45	Table of 46	Table of 47	Table of 48	Table of 49	Table of 50
41	42	43	44	45	46	47	48	49	50
82	84	86	88	90	92	94	96	98	100
123	126	129	132	135	138	141	144	147	150
164	168	172	176	180	184	188	192	196	200
205	210	215	220	225	230	235	240	245	250
246	252	258	264	270	276	282	288	294	300
287	294	301	308	315	322	329	336	343	350
328	336	344	352	360	368	376	384	392	400
369	378	387	396	405	414	423	432	441	450
410	420	430	440	450	460	470	480	490	500

Relation

संबंध ✓

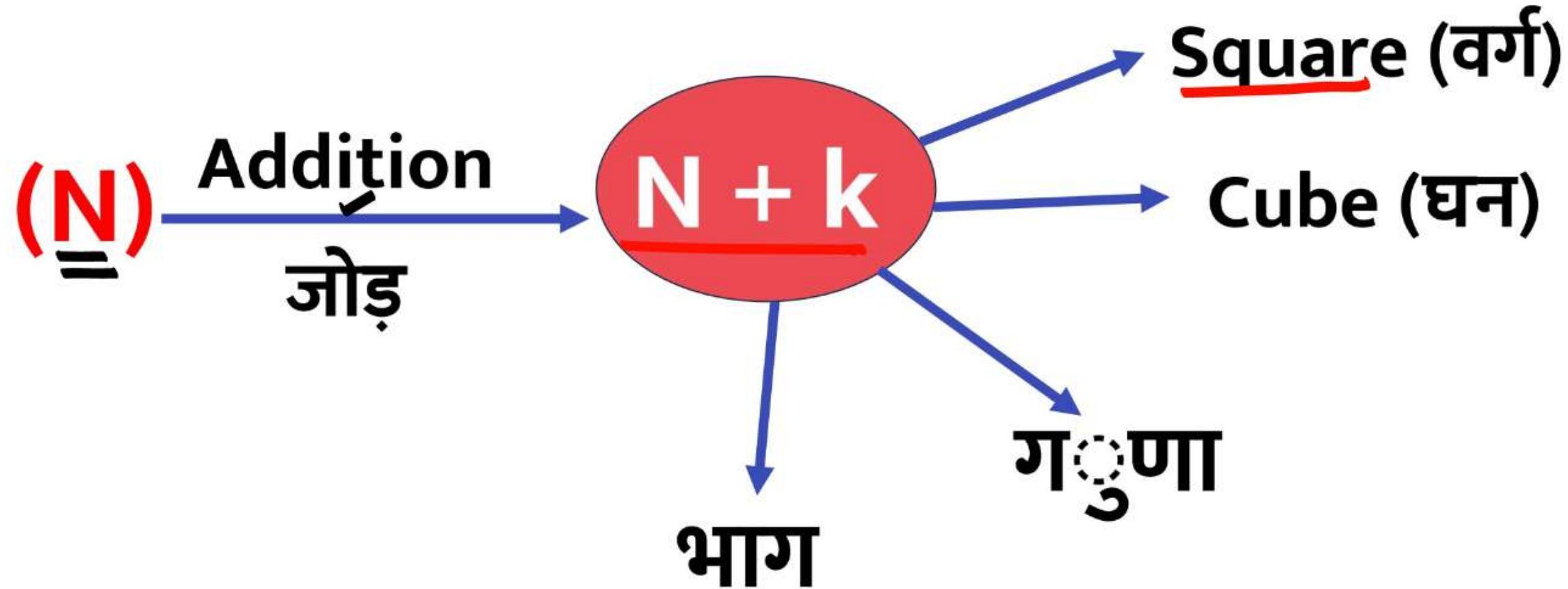


Relation

संबंध

Number $\rightarrow (N)$

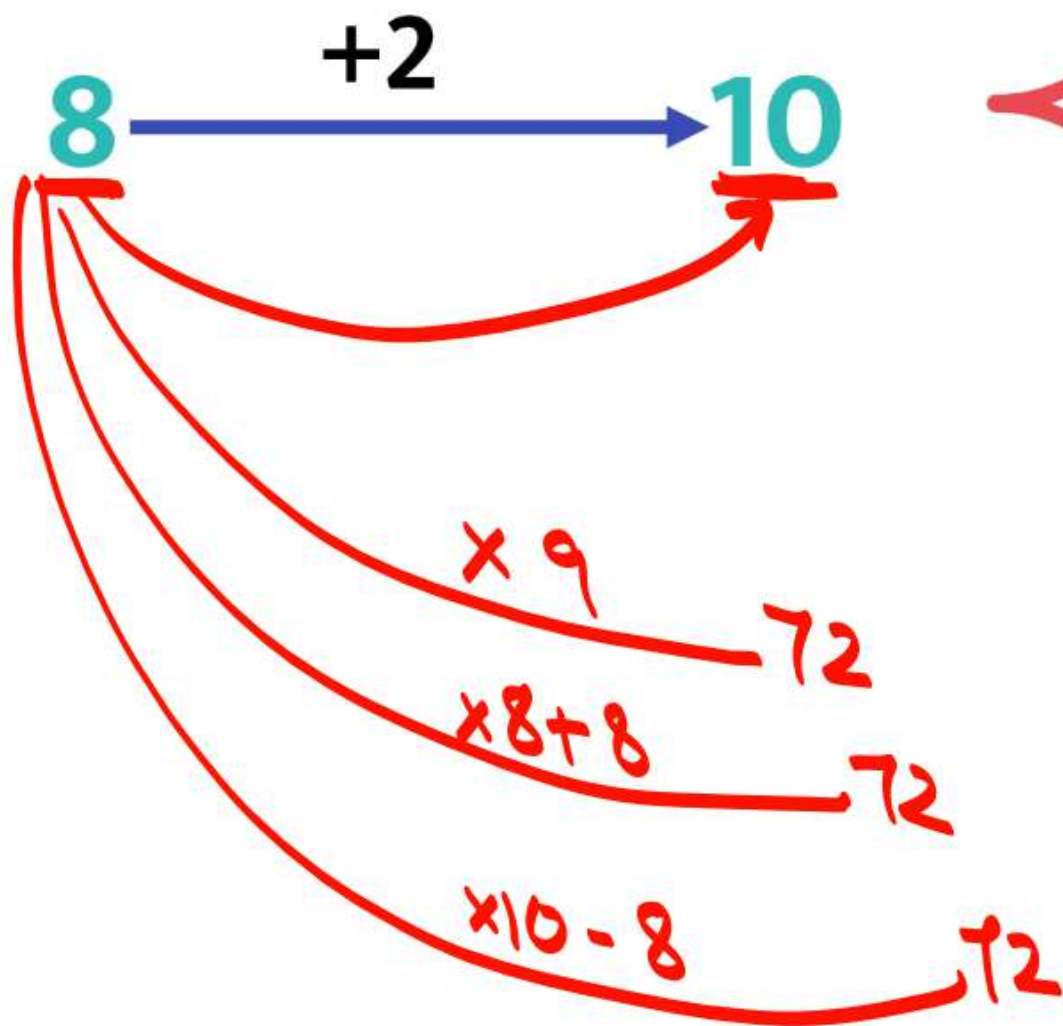
(1) Addition / Subtraction (जोड़ / घटाव)



$$\begin{array}{r} 4 \\ 5 : 64 \\ 8 \end{array}$$

Handwritten annotations: -1 (from 5 to 4), $+3$ (from 5 to 8), $+3$ (from 8 to 64), $+2$ (from 8 to 64).

Example



$$\underline{(10)^2 + 2} = \underline{102}^{\checkmark}$$

8:102

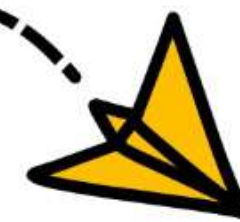
$$\underline{(10)^3 + 10} = \underline{1010}^{\checkmark}$$

8:1010

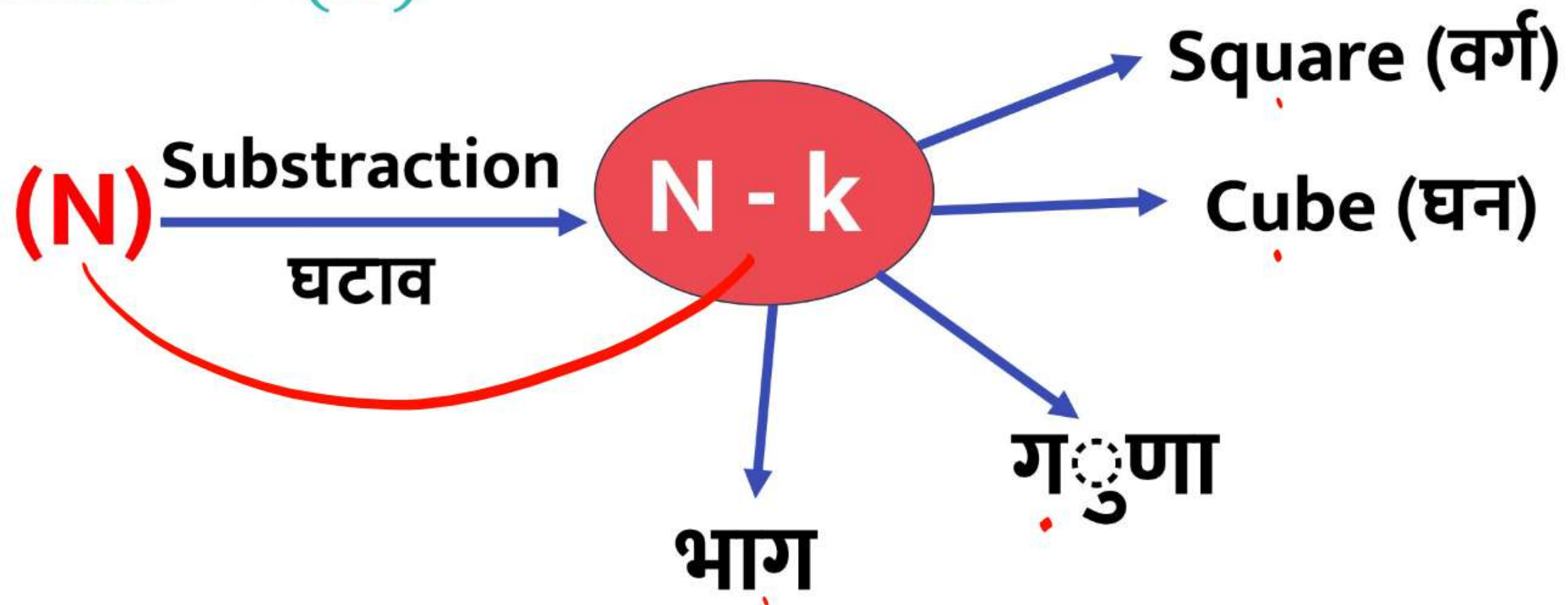
$$\underline{10 \times 7 + 2} = \boxed{72}$$

8:72

$$\underline{10 \times 8 - 8} = \boxed{72}$$



Number $\rightarrow (N)$



Example

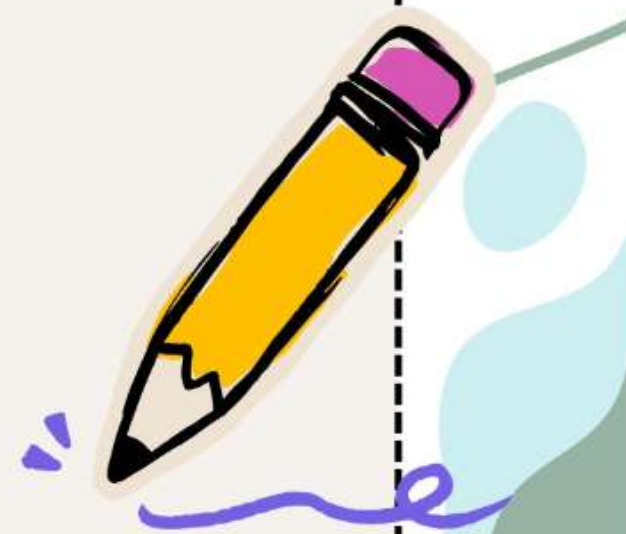
$$\textcircled{17} \xrightarrow{-4} \underline{13}$$

$$(\underline{13})^2 + \underline{14} = 183 \quad 17:183$$

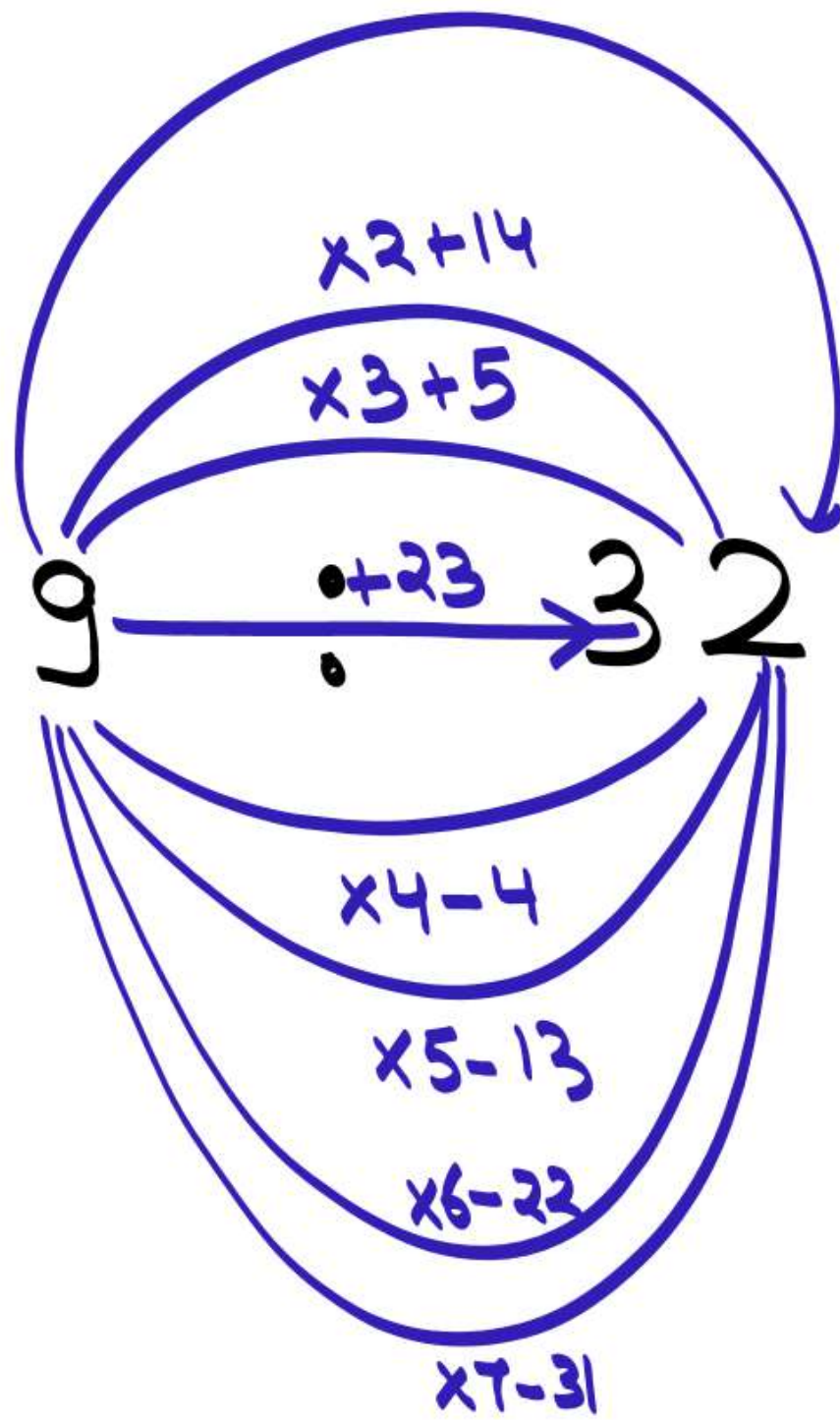
$$(\underline{13})^3 - \underline{17} = 2180 \quad 17:2180$$

$$\underline{13 \times 12 + 2} = 158$$

$$\frac{(\underline{13})^2 + 3}{4} = 43$$

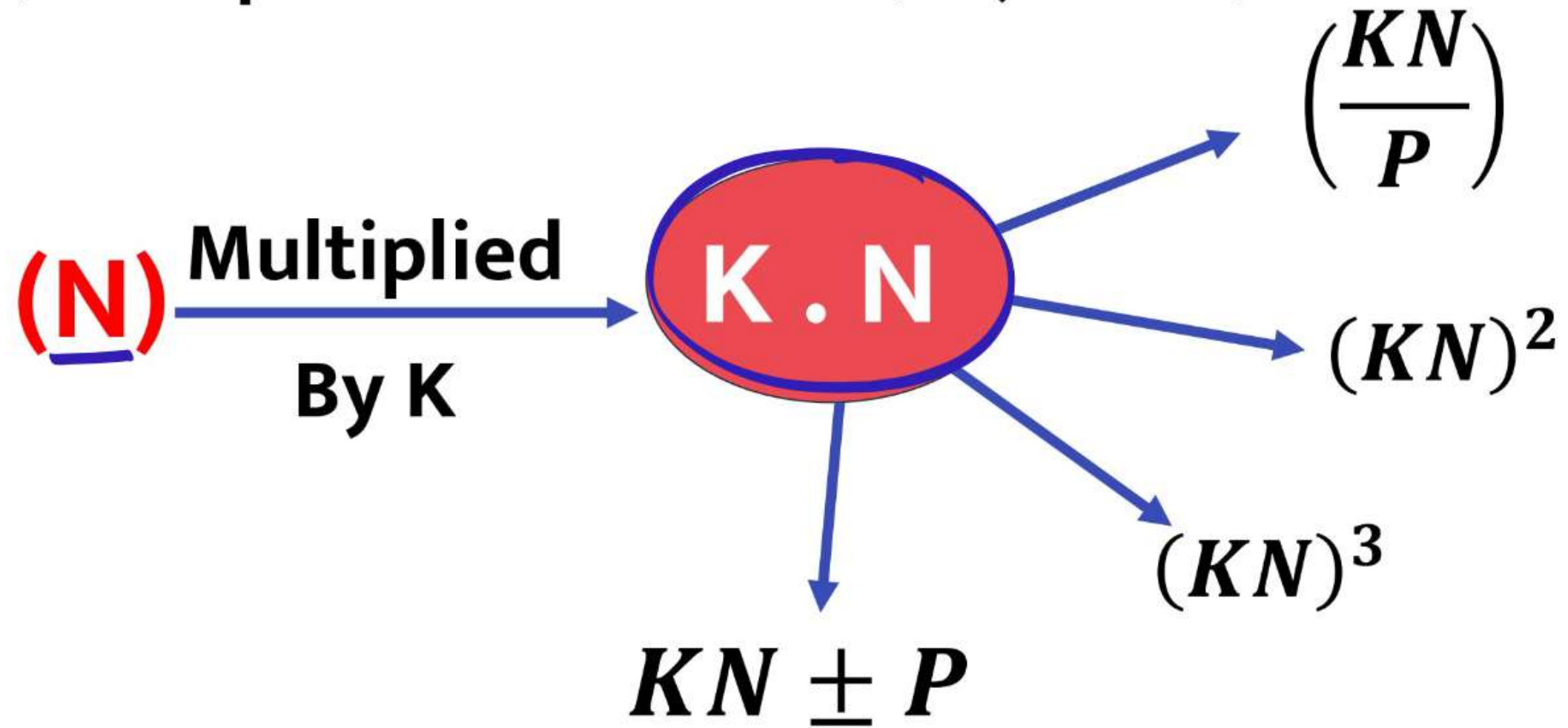


$$q^2 = 81 - 49$$



Number $\rightarrow (N)$

(2) Multiplication / division (जोड़ / घटाव)





Example



12 Multiplied
By 3 $\rightarrow 12 \times 3 = \underline{36}$

$$(36)^2 = 1296 \checkmark$$

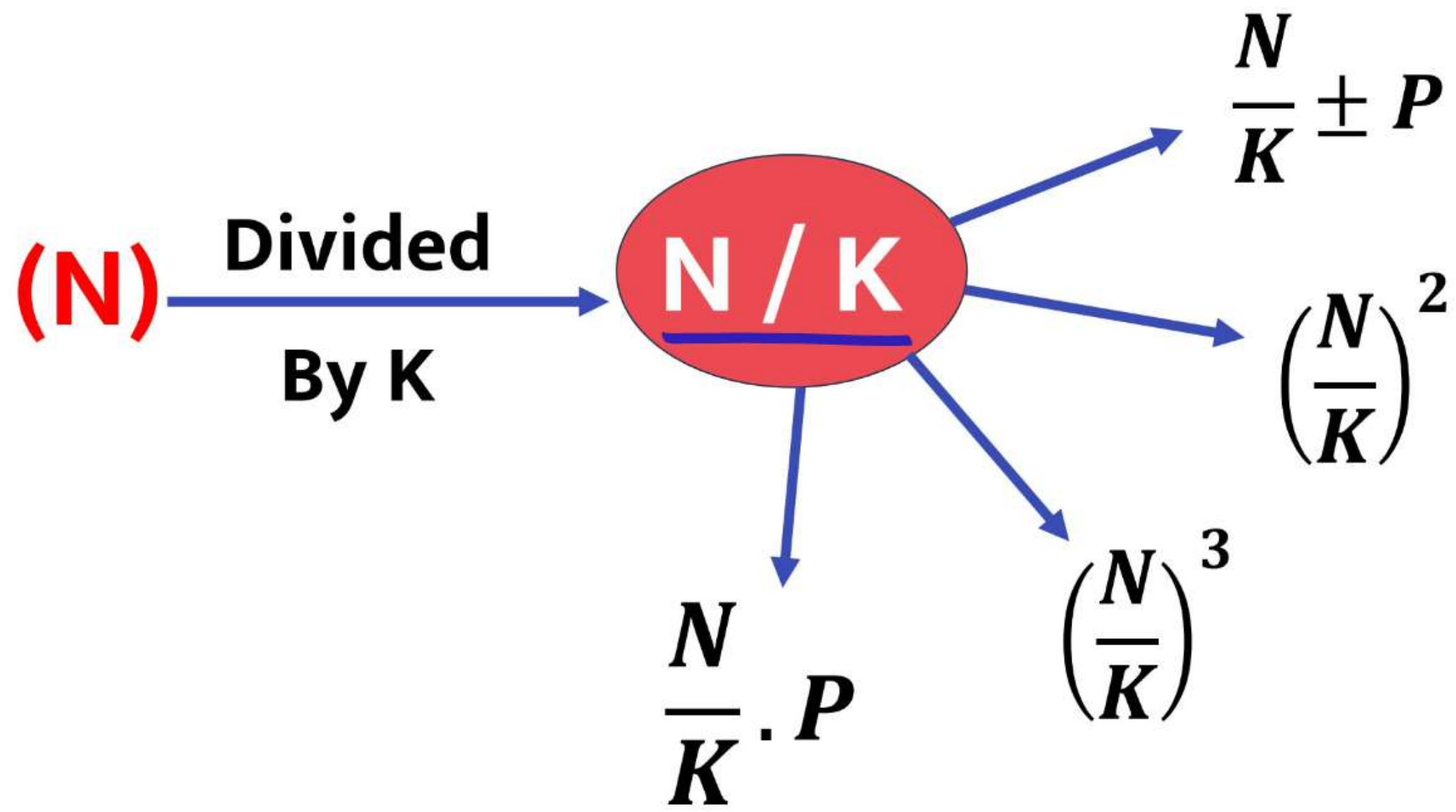
$$(36)^3 = \underline{46656}$$

$$\left(\frac{36}{2}\right)^2 = 324$$

$$\underline{36} + \underline{12} = 48$$



Number $\rightarrow (N)$





Example

144 ^{divide}
~~Multiplied~~
By 12 → $144/12 = \underline{12}$

$$(12)^2 + 10 = 154$$

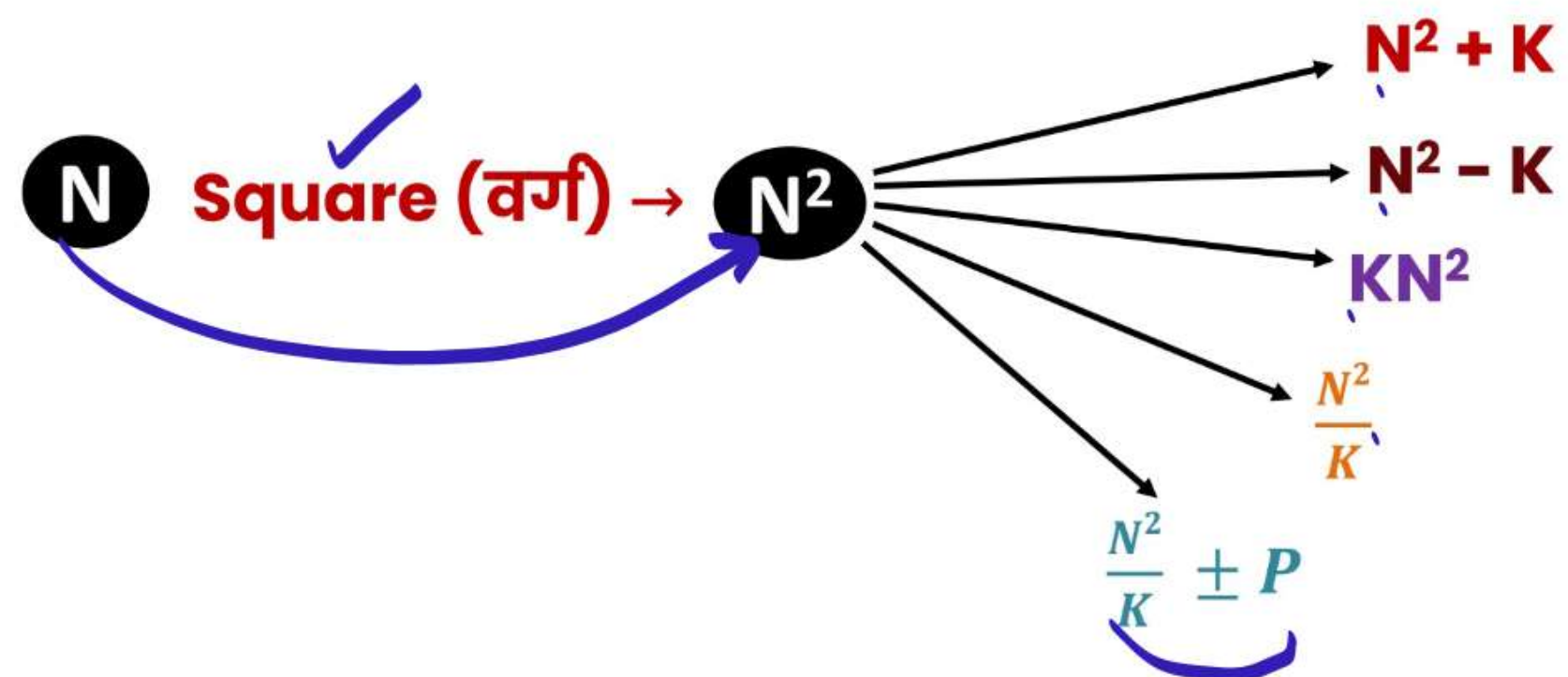
$$(12)^3 = 1728$$

$$12 + 4 = 16$$

$$12 - 4 = 8$$

$$12 \times 5 = 60$$





EXAMPLE :-

18

Square (वर्ग) → 324

18 : 324

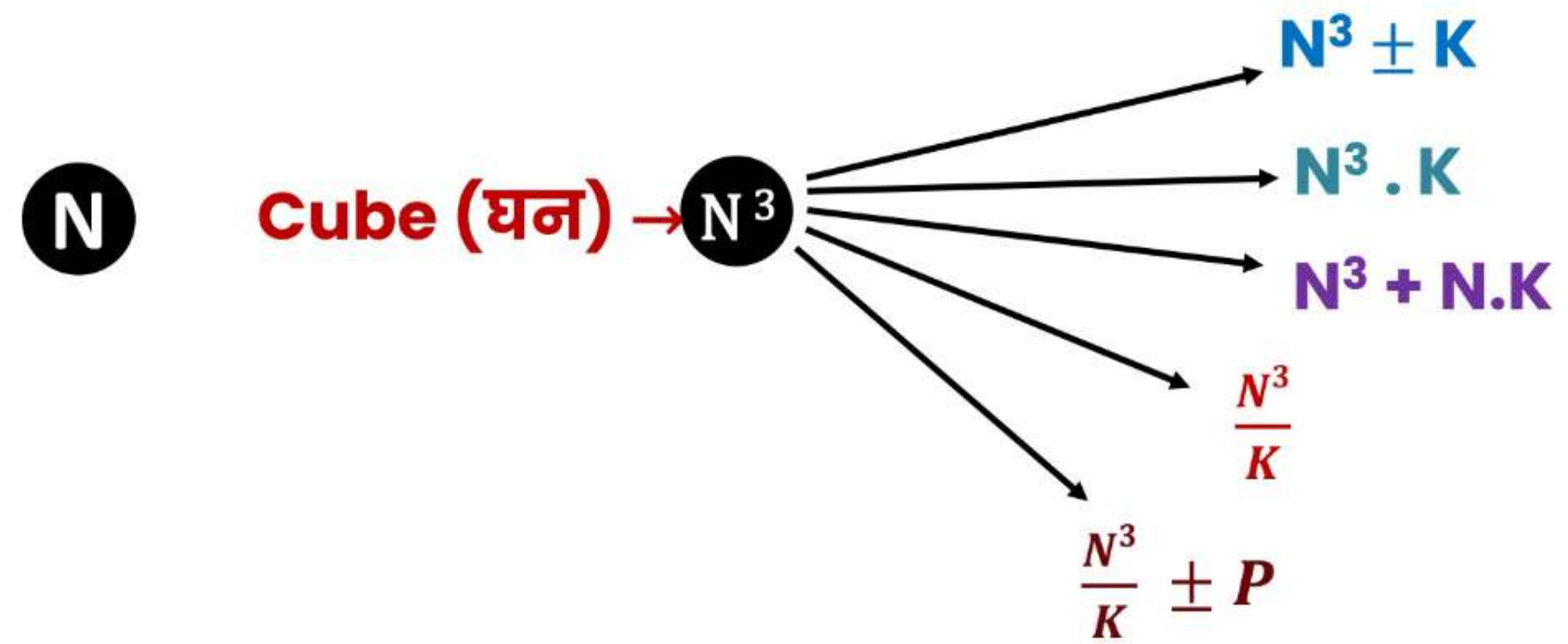
$$324 + 11 = 335$$

$$324 - 11 = 313$$

$$324 \times 3 = 972$$

$$324 \div 4 = 81$$

$$\frac{324}{4} + 7 = 88$$



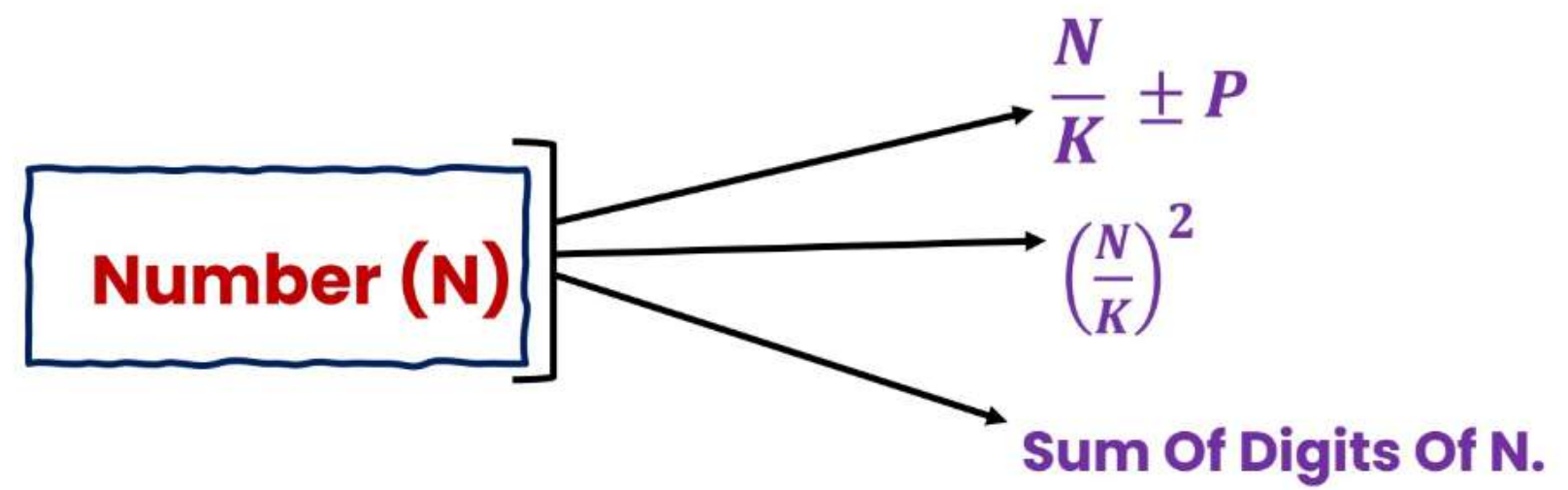
EXAMPLE :-

12 Cube (घन) → **1728**

12 : 1728



→	$1728 + \underline{12} = 1740$
→	$1728 - \underline{12} = 1716$
→	$1728 \times \underline{2} = 3456$
→	$1728 \div \underline{9} = 192$
→	$\frac{1728}{9} + \underline{4} = 196$



EXAMPLE :-

$$27 : 9$$

$$2+7=9$$


$$144 \left\{ \begin{array}{l} \frac{144}{4} + 12 = 48 \\ \left(\frac{144}{18} \right)^2 = 64 \\ 1+4+4 = 9 \\ \text{(Digit sum)} \end{array} \right.$$

SIMPLIFICATION (सरलीकरण)

V-BODMAS

—

BODMAS

❖ Mathematical Operations →

V $\bar{a}$	B $\{[()]\}$	O <i>of</i>	D $\div$	M $\times$	A $+$	S $-$
Vineculum bar	Bracket	Order	Division	multiplication	Addition	Subtraction
बार	$\{$ $[$ $]$ $\}$	को।के।सी	भाग	गुणा	जोड़	घटाता



Mod (%) → शेषफल

Eg :- (i) $19 \text{ MOD } 6 \rightarrow \text{शेष}\left(\frac{19}{6}\right) = 1 \checkmark$

Eg :- (ii) $(3^2 - 4 + 5) \text{ MOD } 7$
 $\downarrow$
 $(9 - 4 + 5) \text{ MOD } 7$
 $\downarrow$
 $10 \text{ MOD } 7$
 $\downarrow$
 $\text{शेष}\left(\frac{10}{7}\right) = 3 \checkmark$

$$8 \% 7$$

↓

$$\text{शेष}\left(\frac{8}{7}\right) = 1 \checkmark$$

RELATION BETWEEN 3 NUMBER

$(A, B, C) \rightarrow \text{SET}$

(1) $C = K(a + b), \quad C = K(a + b) \pm P, \quad C = K(a - b),$

(2) $b = (c - a) + c$

(3) $b = k.(a \times c), \quad b = \frac{a \times c}{K}, \quad b = \frac{a^2 \times c}{K}$

(4) $b = ac + k$

(5) $c = a^2 \pm \left(\frac{b}{k}\right)^2$

(6) $c = \frac{a+b}{K},$

(7) $c = \frac{a}{b} \times k,$

(8) $b = \sqrt{a + c}$

(9) $a - b = b - c = \text{Constant}$

$$(10) \quad c = (a + b)^2 \pm P$$

$$(11) \quad c = \frac{a}{b}, \quad c = \left(\frac{a}{b}\right)^2$$

$$(12) \quad c = a^2 + b, \quad c = a^2 + b^2, \quad c = (a - b)^2$$

$$(13) \quad c = \frac{a}{b} \pm P$$

$$(14) \quad c = \frac{a - b}{k}$$

$$(15) \quad c = \frac{a}{k} + \frac{b}{P}, \quad c = ka + Pb$$

$$(16) \quad c = a \times b - \frac{a}{b}$$

$$(17) \quad c = a^3 - b^3, \quad c = k(a^3 - b^3)$$

$$(18) \quad c = a^2 - b^2, \quad c = k(a^2 - b^2), \quad c = (a^2 - b^2) \pm P$$

$$(19) \quad c = \frac{a^2 - b^2}{k}$$

$$(20) \quad c = a^2 + b^2, \quad c = k(a^2 + b^2), \quad c = \frac{a^2 + b^2}{k}$$

$$(21) \quad c = a^2 + b^2 + (a + b) \quad c = a^2 + b^2 + ab$$

$$(22) \quad c = \left(\frac{a}{k}\right)^2 \pm \left(\frac{b}{p}\right)^2$$

$$(23) \quad c = \sqrt{ab}$$

$$(24) \quad c = \frac{a}{b} + a, \quad c = \frac{a}{b} + a^2,$$

❖ MORE THAN 3 NUMBERS

□ (A, B, C, D, E)

□ A – B – C – D

□ A : B : C : D

A^2



A



A^3

+

-

×

÷

B^2



B



B^3

+

-

×

÷

C^2



C



C^3

+

-

×

÷

D^2



D



D^3

*Thank
you*

The background is a solid light beige color. It is decorated with several faint, light grey circular floral motifs, each composed of small dots arranged in a ring. Scattered throughout the background are small, colorful dots in shades of green, yellow, and pink. There are also a few small white star-like shapes. Two dark green leafy branches are positioned on either side of the text, one extending upwards and the other downwards.