

Square (वर्ग)

$1^2=1$

$2^2=4$

$3^2=9$

$4^2=16$

$5^2=25$

$6^2=36$

$7^2=49$

$8^2=64$

$9^2=81$

$10^2=100$

$11^2=121$

$12^2=144$

$13^2=169$

$14^2=196$

$15^2=225$

$16^2=256$

$17^2=289$

$18^2=324$

$19^2=361$

$20^2=400$

$21^2=441$

$22^2=484$

$23^2=529$

$24^2=576$

$25^2=625$

$26^2=676$

$27^2=729$

$28^2=784$

$29^2=741$

$30^2=900$

$31^2=961$

$32^2=1024$

$33^2=1089$

$34^2=1156$

$35^2=1225$

Cube (घन)

$$1^3=1$$

$$2^3=8$$

$$3^3=27$$

$$4^3=64$$

$$5^3=125$$

$$6^3=216$$

$$7^3=343$$

$$8^3=512$$

$$9^3=729$$

$$10^3=1000$$

$$11^3=1331$$

$$12^3=1728$$

$$13^3=2197$$

$$14^3=2744$$

$$15^3=3375$$

$$16^3=4096$$

$$17^3=4913$$

$$18^3=5832$$

$$19^3=6859$$

$$20^3=8000$$

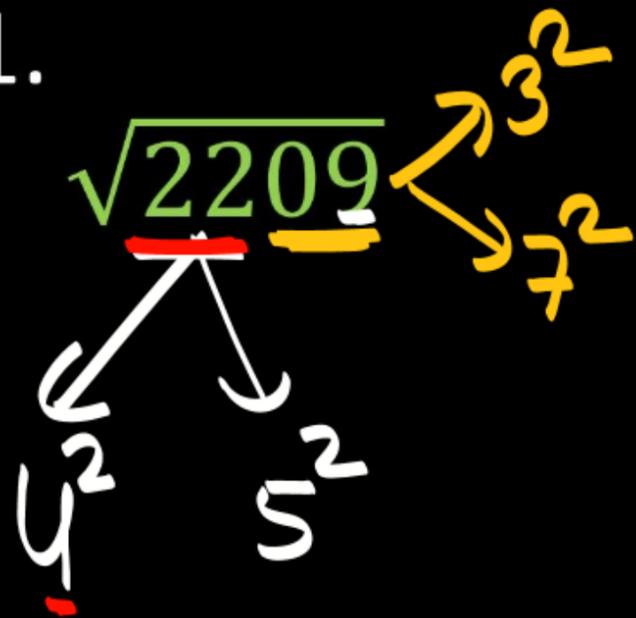
Square root (वर्गमूल):-

$$\sqrt{25} = 5$$

$$\sqrt{100} = 10$$

$$\sqrt{64} = 8$$

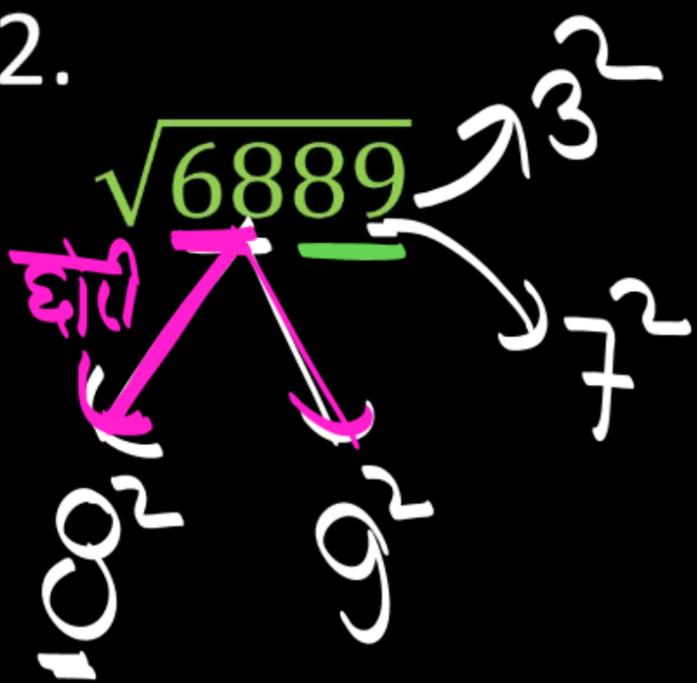
Q 1.



47

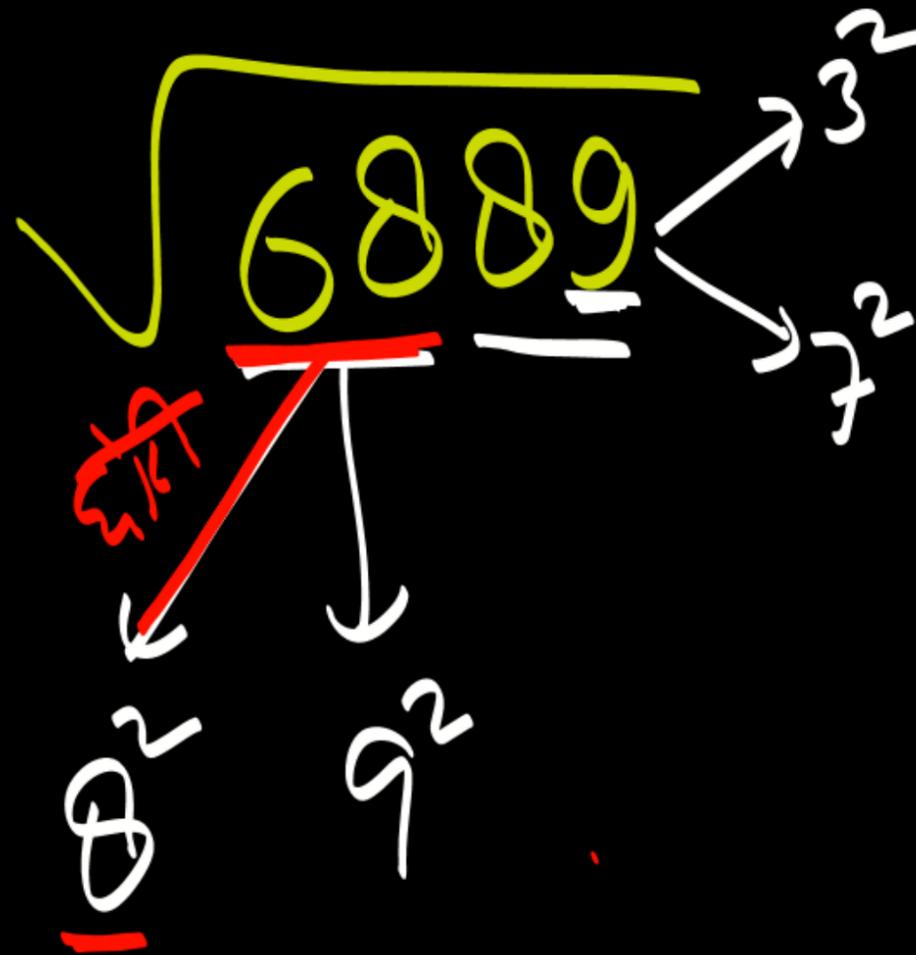
- a) 47
- b) 37
- c) 48
- d) 57

Q 2.



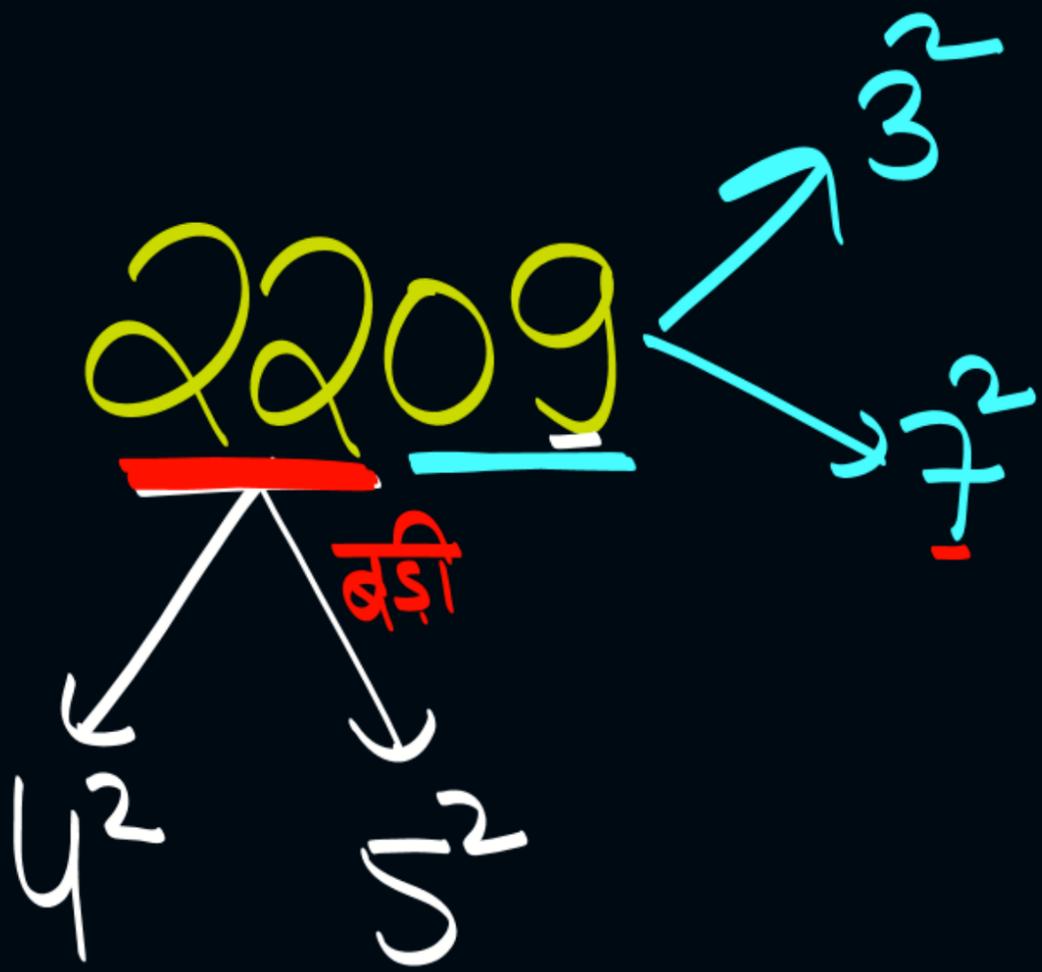
83

- a) 83
- b) 84
- c) 93
- d) 72



83

47



Q 3. $\sqrt{3481}$

Handwritten annotations: 5^2 , 6^2 , 9^2 , and the word "बड़ी" (Badi) written twice.

- a) 59
- b) 79
- c) 89
- d) 49

59 ✓

Q 4. $\sqrt{45369}$

Handwritten annotations: 21^2 , 22^2 , 3^2 , 7^2 , and the word "छोटी" (Choti) written twice.

- a) 223
- b) 213
- c) 233
- d) 222

213

Q 5.

$$\sqrt{34596}$$

Handwritten annotations: 18^2 , 19^2 , 4^2 , 16^2 , and the word "बड़ी" (Bड़ी) with an arrow pointing to the number 9 in 34596.

- a) 186
- b) 184
- c) 189
- d) 182

186

~~Q 6.~~

$$\sqrt{519841}$$

Handwritten annotations: 700^2 and $21^2 = 441$.

- a) 721
- b) 629
- c) 631
- d) 731



$$\sqrt{25} = 5$$

Approximate Square root

$$\sqrt{13}, \sqrt{27}, \sqrt{10}$$

Q 1.

$$\sqrt{10} = \sqrt{9+1} = 3 + \frac{1}{6} = 3.16$$

Q 2.

$$\sqrt{87} = \sqrt{81+6} = 9 + \frac{6}{18} = 9.3$$

Q 3.

$$\sqrt{138} = \sqrt{121+17} = 11 + \frac{17}{22} = 11.7$$

$$\begin{array}{r} 22 \overline{) 170} \cdot 7 \\ \underline{154} \\ 16 \end{array}$$

Q 4.

$$\sqrt{1.54}$$

$$\sqrt{154} = \sqrt{\underline{144} + 10} = 12 + \frac{10}{2 \cdot 12} = 12 + \frac{10}{24} = \frac{12 \cdot 4}{100} = \textcircled{1.24}$$

Q 5.

$$\sqrt{531}$$

Cube root (घनमूल)

Q 1.

$$\sqrt[3]{531441}$$

~~531441~~

$$8^3 - 9^3$$



81

Q 2.

$$\sqrt[3]{39304}$$

Q 3.

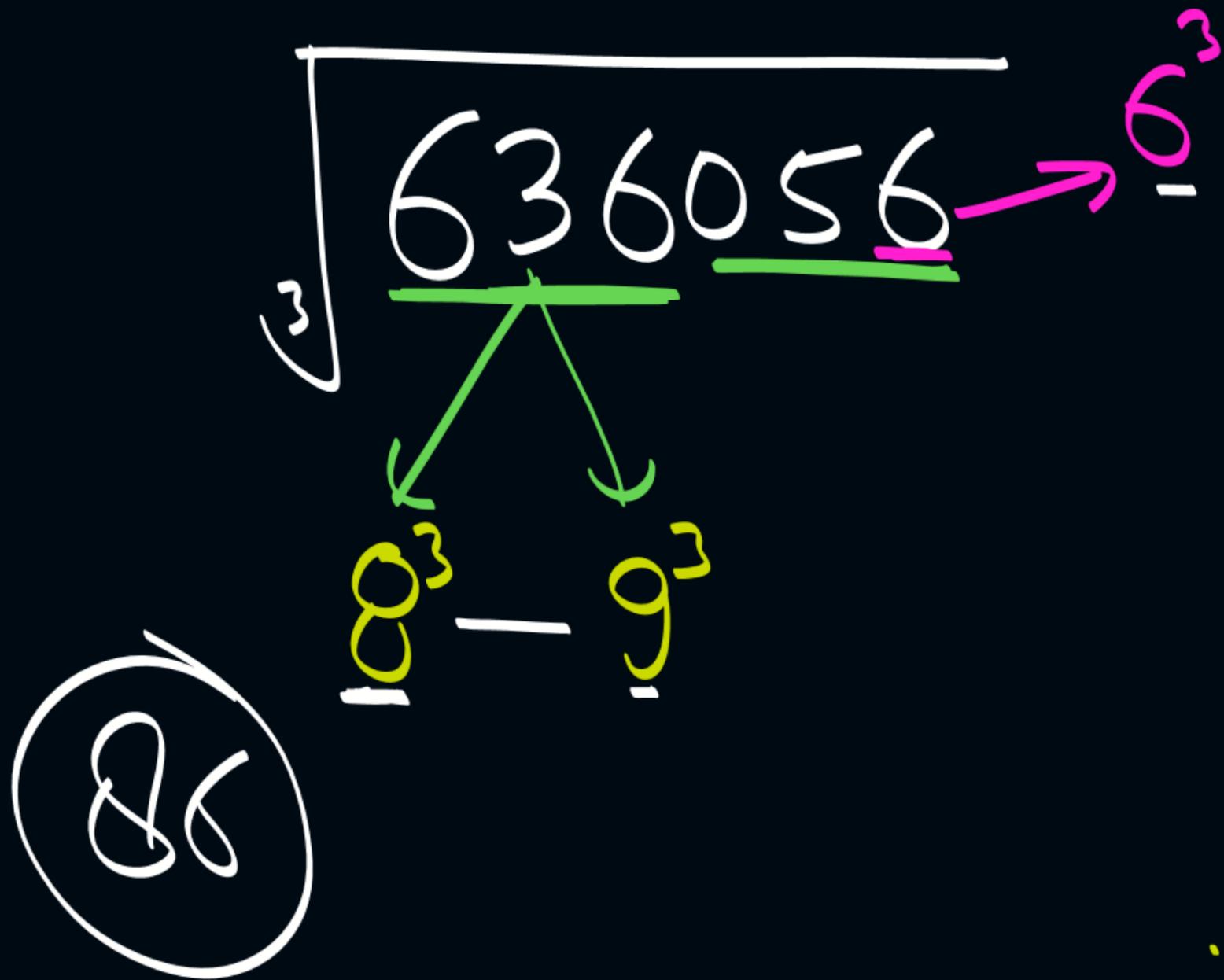
$$\sqrt[3]{636056}$$

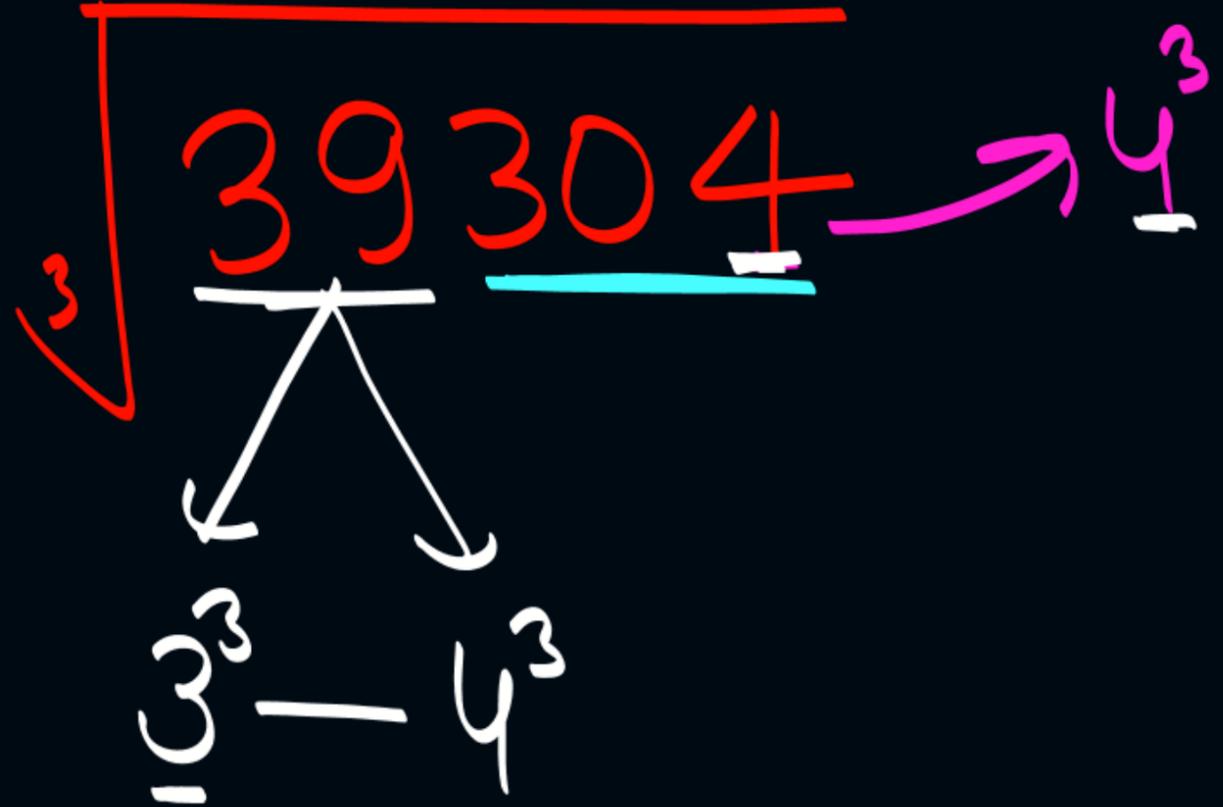
Q 4.

$$\sqrt[3]{185193}$$

2	3	1
3	3	8
5	3	7
7	3	6
8	3	8
7	3	3
8	3	2
9	3	9

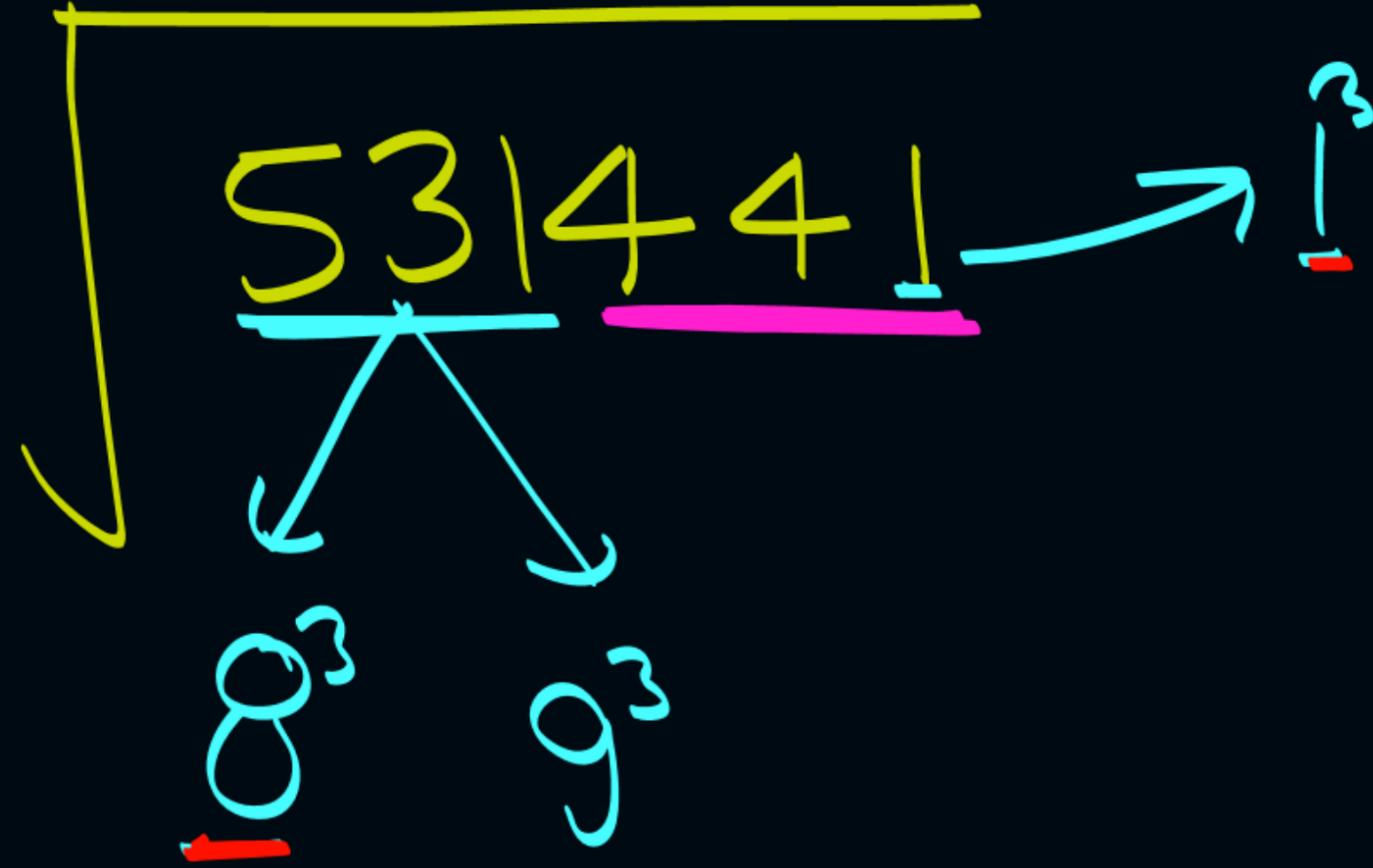
$$6^3 = 216$$





34

81 A



Q 5.

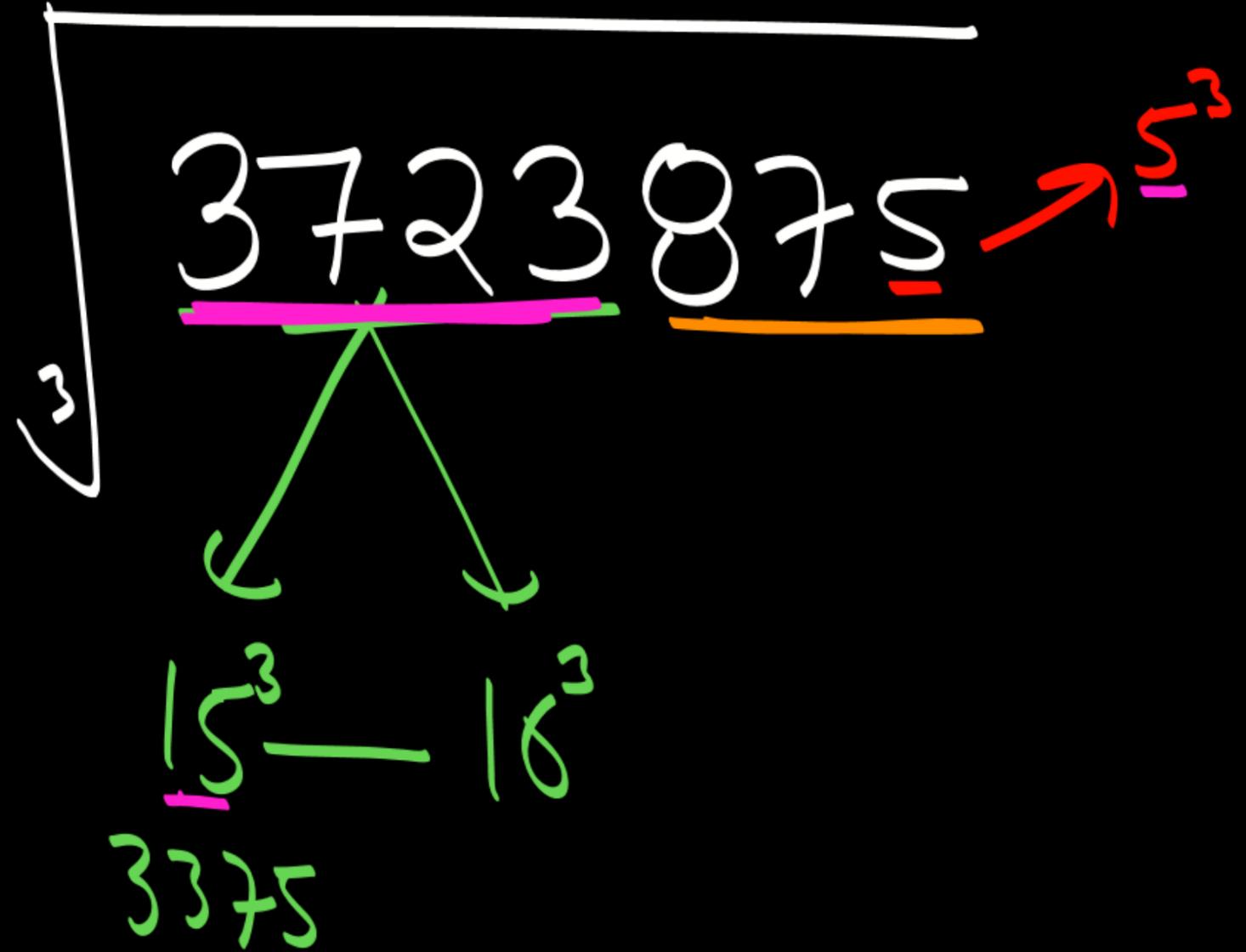
$$\sqrt[3]{103823}$$

155

$$5^3 = 125$$

Q 6.

$$\sqrt[3]{3723875}$$



Q 7.

$$\sqrt[3]{2406104}$$

$$\begin{array}{r}
 251 \\
 \times 323 \\
 \hline
 81073
 \end{array}$$

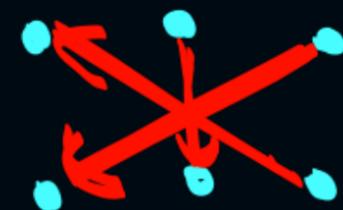
Step I



Step II



Step III



Step IV



Step V



Trick 1.

दो लगातार संख्याओ की multiplication करना :

$$32 \times 33 = \underline{32} \times 33$$

$$\begin{array}{r} \underline{50} \times 51 = \\ \downarrow \text{sq} \\ 2500 \\ + 50 \\ \hline 2550 \end{array}$$

$$\begin{array}{r} 1024 \\ + 32 \\ \hline 1056 \end{array}$$

Trick 2. Split method: -

$$512 \times 66 =$$

$$723 \times 55 =$$

$$68 \times 35 =$$

$$52 \times 85 =$$

$$52 \times 85$$

$$52 \times (80 + 5)$$


$$\begin{array}{r} 4160 \\ + 260 \\ \hline 4420 \end{array}$$

$$103 \times 108$$

$$+3 \quad +8$$

$$11124$$

Trick 3.

Multiplication when numbers closer to 100

$$99 \times 97$$

$$97 \times 94$$

$$103 \times 108$$

$$102 \times 103$$

$$103 \times 98$$

$$103 \times (100 - 2)$$

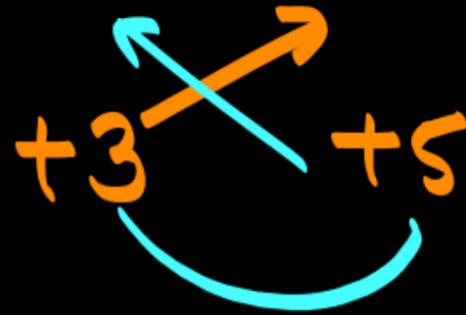

$$\begin{array}{r} 10300 \\ - 206 \\ \hline 10094 \end{array}$$

Trick 4.

दो संख्याओं की **multiplication** जो 200 के पास है।

200×2

$$203 \times 205$$



41615

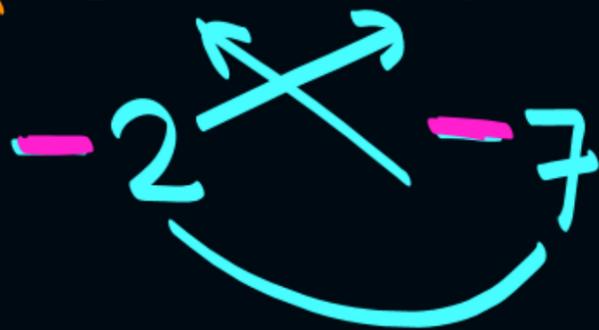
$$198 \times 212$$

$$(200 - 2) \times 212$$

$$\begin{array}{r} 42400 \\ - 424 \\ \hline 41976 \end{array}$$

191x2

198 x 193



38214

Trick 5.

Multiplication of 5, 25, 125, _____

$$\begin{array}{r} 65125 \\ \cancel{521} \times 125 \times \cancel{8} \\ \hline 65125 \end{array}$$

$$96 \times 5 =$$

$$572 \times 5 =$$

$$36 \times 25 =$$

$$973 \times 25 =$$

$$432 \times 125 =$$

$$521 \times 125 =$$

$$\begin{array}{r} 54 \\ \cancel{432} \times 125 \times \cancel{8} \\ \hline 54000 \end{array}$$

Trick 6.

50 का special multiplication :-

$$456 \times 50 =$$

$$7804 \times 50 =$$

$$\begin{array}{l} 228 \\ \cancel{4}56 \times 50 \times \cancel{2} \\ \phantom{\cancel{4}56 \times 50 \times} 2 \end{array}$$

$$22800$$

$$\overline{63254} \times \overline{99999}$$

Trick 7.



9,99,999 ----- से multiplication

$$4 \times 9 =$$

$$47 \times 99 =$$

$$543 \times 999 =$$

$$476 \frac{142}{999} \times 999$$

$$\overline{47} \times \overline{99}$$



$$4653 \text{ Ans}$$

Trick 8.

“जब 9 ज्यादा हो और दूसरी संख्या के अंक 9 की संख्या से कम हो ”

$$\overline{47} \times \overline{999}$$

$$47 \times (1000 - 1)$$

$$47000$$

$$- 47$$

$$\hline 46953$$

$$4756 \times 999$$

Trick 9.

✓ $34 \times 101 =$ $34 \times (100 + 1)$

✓ $24 \times 1001 =$

\Downarrow
 $24 \times (1000 + 1)$

$$\begin{array}{r} 24000 \\ + 24 \\ \hline 24024 \end{array}$$

$$\begin{array}{r} 3400 \\ + 34 \\ \hline 3434 \end{array}$$

Trick 10.

यदि आखिरी अंक (unitdigit) का योग 10 हो :-

$$\begin{array}{r} \text{Same} \\ \times \quad \begin{array}{c} \text{112} \\ \text{118} \end{array} \\ \hline \text{SUM=10} \\ \hline 13216 \end{array}$$

$$46 \times 44$$

$$72 \times 78$$

$$\begin{array}{r} 112 \\ \times 118 \\ \hline \end{array}$$

$$\begin{array}{r} 106 \\ \times 104 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Same} \\ \times \quad \begin{array}{c} \text{72} \\ \text{78} \end{array} \\ \hline \text{SUM=10} \\ \hline 5616 \end{array}$$

Trick 11.

“जब दोनो संख्याओं के 10^{th} का sum 10 हो तथा दोनो संख्याओं का unit digit same हो”

Sum=10
x

$$\begin{array}{r} 76 \\ \times 36 \\ \hline 2736 \end{array}$$

same

$$\begin{array}{r} 76 \\ \times 36 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ \times 27 \\ \hline \end{array}$$

$$\begin{array}{r} 36 \\ \times 76 \\ \hline \end{array}$$

$$\begin{array}{r} 93 \\ \times 13 \\ \hline \end{array}$$

Sum=10
x

$$\begin{array}{r} 93 \\ \times 13 \\ \hline 1209 \end{array}$$

same

Trick 12.

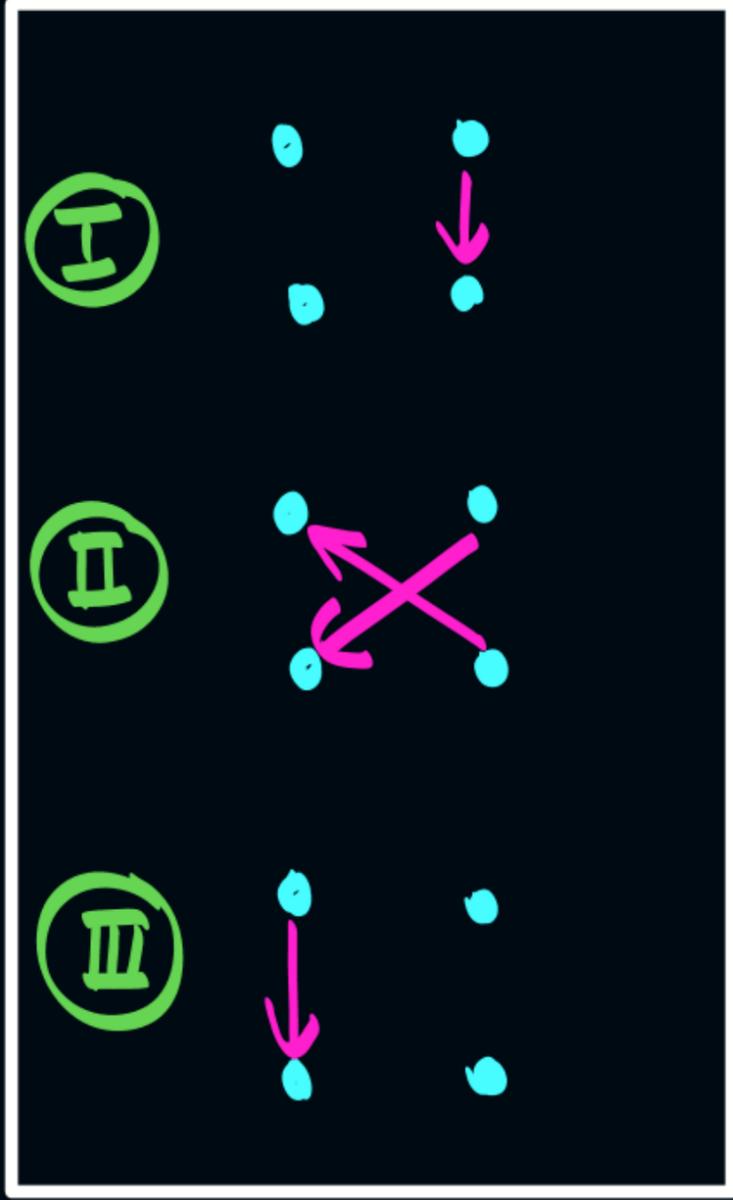
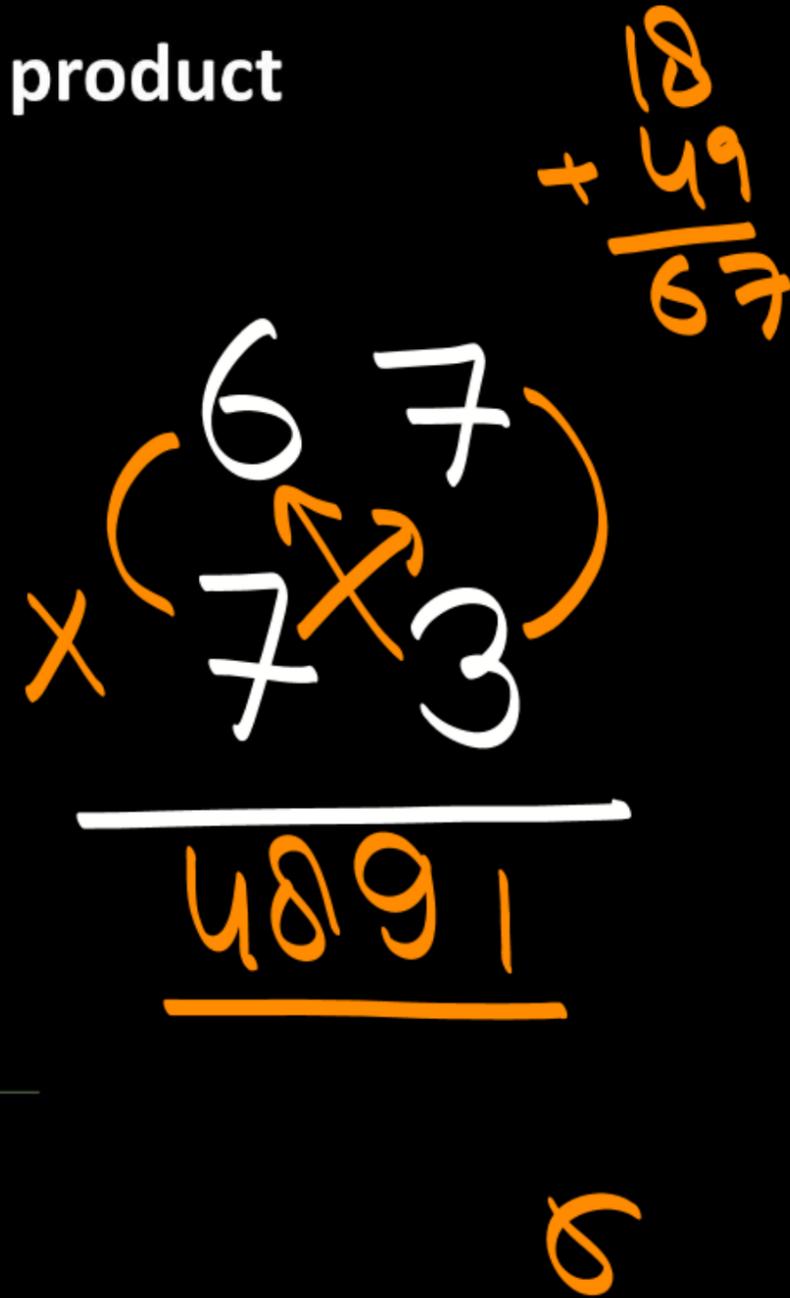
Cross product

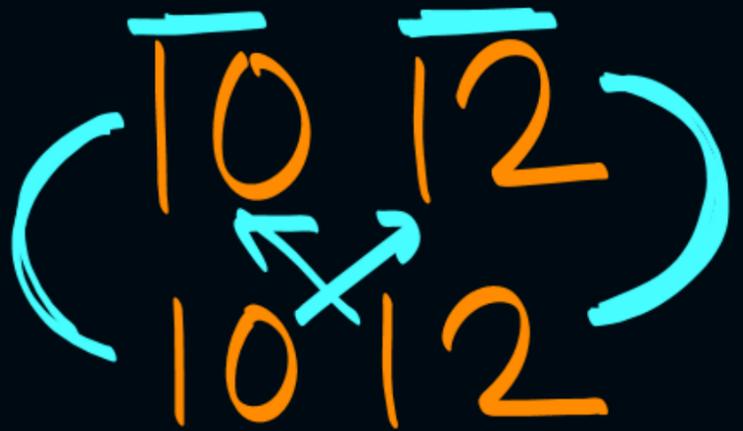
$$\begin{array}{r} 43 \\ \times 86 \\ \hline \end{array}$$

$$\begin{array}{r} 1012 \\ \times 1012 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ \times 73 \\ \hline \end{array}$$

$$\begin{array}{r} 1112 \\ \times 1112 \\ \hline \end{array}$$

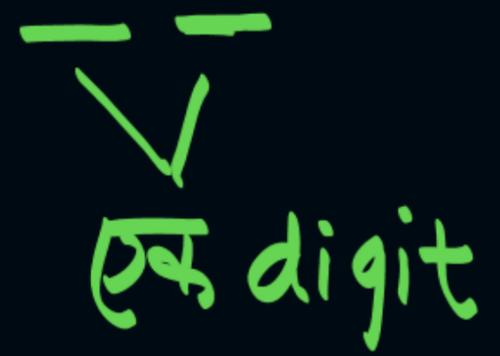


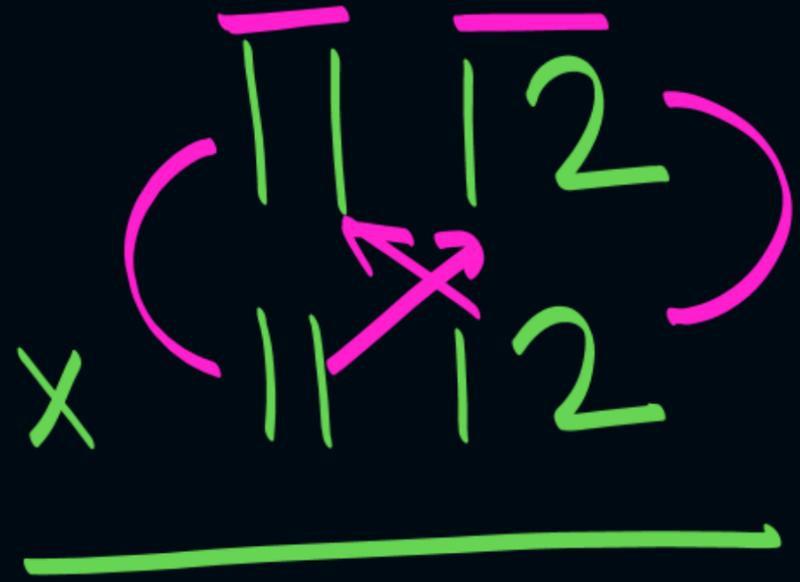


1024144

241

Two digit





123 55 44

101 @ 101

Trick 13.

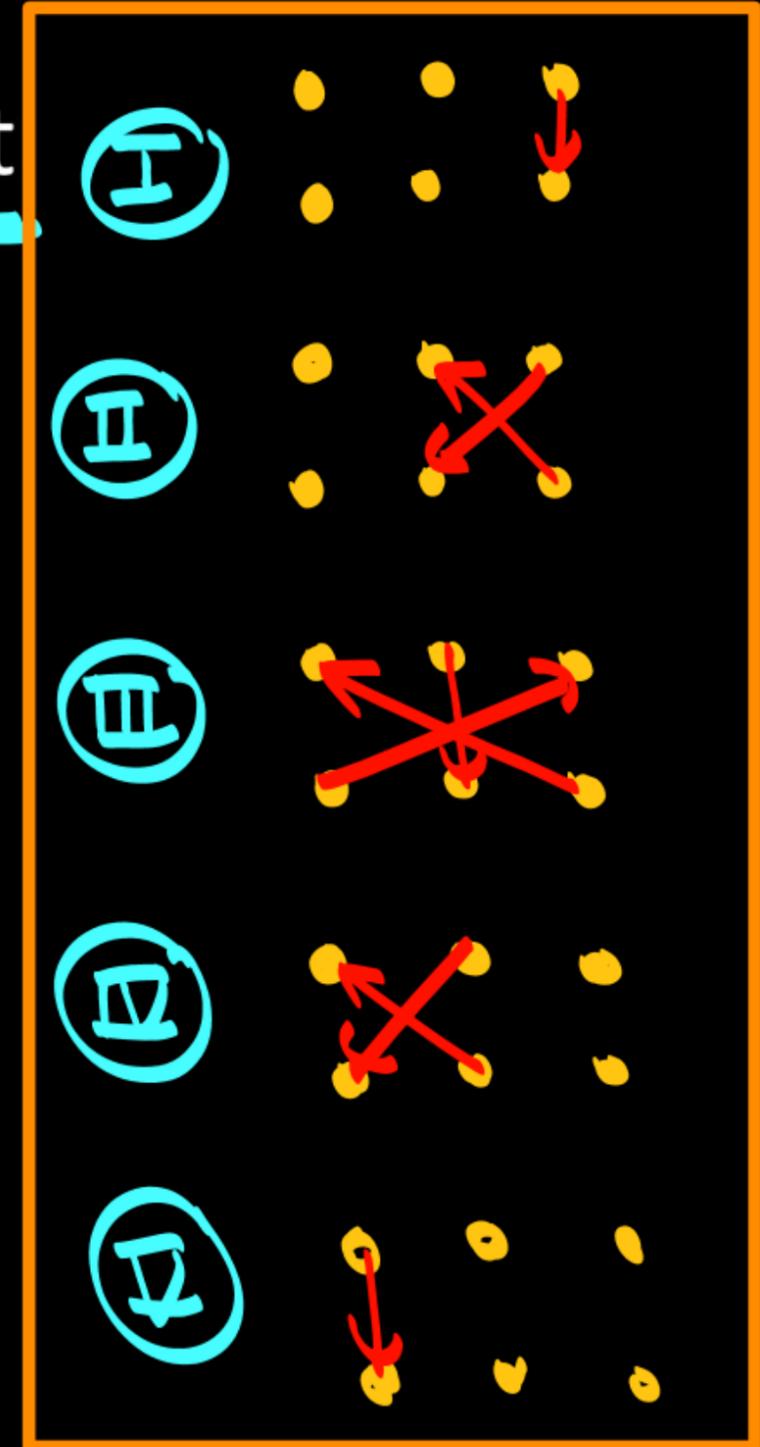
Three digit multiplication with three digit

$$\begin{array}{r} 132 \\ \times 214 \\ \hline \end{array}$$

$$\begin{array}{r} 134 \\ \times 253 \\ \hline \end{array}$$

$$\begin{array}{r} 324 \\ \times 513 \\ \hline \end{array}$$

$$\begin{array}{r} 325 \\ \times 413 \\ \hline \end{array}$$



$$\begin{array}{r} 324 \\ \times 513 \\ \hline 166212 \end{array}$$

$$\begin{array}{r} 132 \\ \times 214 \\ \hline 28248 \end{array}$$

$$137 \times 11$$

$$1567329 \times 11$$

$$17240619$$

Square (वर्ग)

$1^2=$

$11^2=121$

$21^2=441$

$31^2=961$

$2^2=4$

$12^2=144$

$22^2=484$

$32^2=1024$

$3^2=9$

$13^2=169$

$23^2=529$

$33^2=1089$

$4^2=16$

$14^2=196$

$24^2=576$

$34^2=1156$

$5^2=25$

$15^2=225$

$25^2=625$

$35^2=1225$

$6^2=36$

$16^2=256$

$26^2=676$

$7^2=49$

$17^2=289$

$27^2=729$

$8^2=64$

$18^2=324$

$28^2=784$

$9^2=81$

$19^2=361$

$29^2=841$

$10^2=100$

$20^2=400$

$30^2=900$

$$\begin{array}{r} (57)^2 \\ \begin{array}{r} \times 7 \\ \hline 39 \\ + 350 \\ \hline 326 \end{array} \\ \begin{array}{r} \times 50 \\ \hline 2850 \\ \hline 3260 \\ \hline 3280 \\ \hline 3290 \end{array} \\ \hline 3249 \end{array}$$

Diagram illustrating the calculation of $(57)^2$ using the distributive property. The number 57 is circled in pink. A green arrow labeled "sav (two digit)" points from the 7 to the 56 in the second row. Another green arrow labeled "sav (two digit)" points from the 5 to the 2850 in the third row. The final result is 3249.

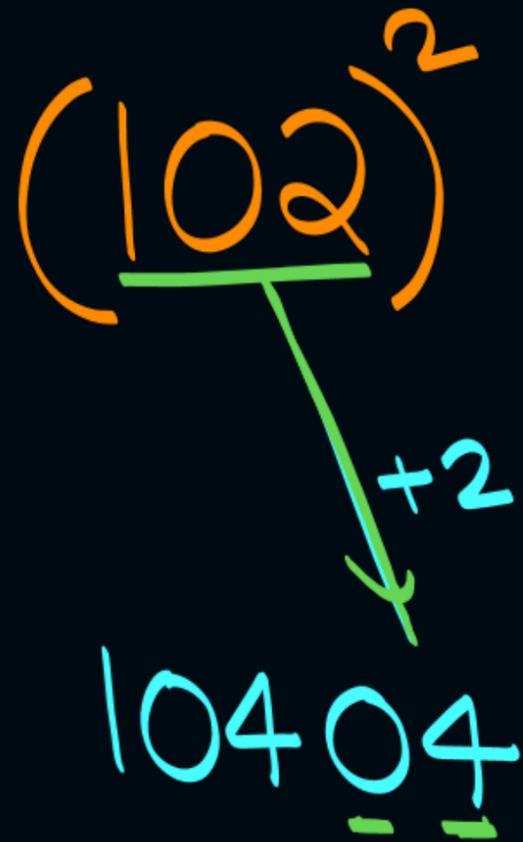
$$\begin{array}{r} (34)^2 \\ \begin{array}{r} \times 4 \\ \hline 12 \\ + 120 \\ \hline 132 \end{array} \\ \begin{array}{r} \times 30 \\ \hline 960 \\ \hline 1320 \\ \hline 1352 \end{array} \\ \hline 1356 \end{array}$$

Diagram illustrating the calculation of $(34)^2$ using the distributive property. The number 34 is circled in white. A green arrow labeled "sav (two digit)" points from the 4 to the 12 in the second row. Another green arrow labeled "sav (two digit)" points from the 3 to the 960 in the third row. The final result is 1356.

$$\begin{array}{r} (22)^2 \\ \begin{array}{r} \times 2 \\ \hline 44 \\ + 40 \\ \hline 484 \end{array} \\ \hline 484 \end{array}$$

Diagram illustrating the calculation of $(22)^2$ using the distributive property. The number 22 is circled in orange. A green arrow labeled "sav (two digit)" points from the 2 to the 44 in the second row. Another green arrow labeled "sav (two digit)" points from the 2 to the 40 in the third row. The final result is 484.

Base: 100



$$(112)^2$$

+12

$$12544$$

①

Base: 200

208x2

$$\begin{array}{r} (204)^2 \\ \hline +4 \\ \hline 416 \quad 16 \end{array}$$

192x2

$$\begin{array}{r} (196)^2 \\ \hline -4 \\ \hline 384 \quad 16 \end{array}$$

Bank: 300

322 x 3
966

$(311)^2$

+11
96721

10

276 x 3
829

$(288)^2$

-12
82944

10

...

66
2/6

#

$$\begin{array}{r} (58)^2 \\ \hline +8 \\ \hline 3364 \end{array}$$

$\times \frac{1}{2}$	$\times 1$	$\times \frac{3}{2}$	$\times 2$	$\times 3$
50	100	150	200	300

$$\begin{array}{r} 2 \times 206 \\ \hline 412 \end{array}$$

$$\begin{array}{r} (203)^2 \\ \hline +3 \\ \hline 41209 \end{array}$$

$$1^3=1$$

$$2^3=8$$

$$3^3=27$$

$$4^3=64$$

$$5^3=125$$

$$6^3=216$$

$$7^3=343$$

$$8^3=512$$

$$9^3=729$$

$$10^3=1000$$

$$11^3=1331$$

$$12^3=1728$$

$$13^3=2197$$

$$14^3=2744$$

$$15^3=3375$$

$$16^3=4096$$

$$17^3=4913$$

$$18^3=5832$$

$$19^3=6859$$

$$20^3=8000$$

Square root (वर्गमूल):-