



Name of the Bundle	Intermediate Bundle V1	Subject	Aptitude
Topic	Number System - 3	Last updated on	19 August 2024

CONCEPT 1 – SQUARE OF A NUMBER

1.NUMBER ENDING WITH NO.

1) Find the square of 20.

- a) 40
- b) 200
- c) 400
- d) 800

ANS: c) 400

Explanation:

- Step 1: Place double 0 at the end.
- Step 2: Then, the preceding digits will be $N*(N)$.
- $(20)^2=(2*2)|00 = 400$.

2) Find the square of 160.

- a) 1600
- b) 25600
- c) 4800
- d) 256000

ANS: b) 25600

Explanation:

- Step 1: Place double 0 at the end.
- Step 2: Then, the preceding digits will be $N*(N)$.
- $(160)^2=(16*16)|00 = 25600$.



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2. NUMBER ENDING WITH N5.

3) Find the square of 35.

- a) 1225
- b) 925
- c) 1625
- d) 1525

ANS: a) 1225

Explanation:

- Step 1: The last 2 digits of the answer will be 25.
- Step 2: Then, the preceding digits will be $N*(N+1)$.
- $(35)^2 = (3*4)|25 = 1225$.

4) Find the square of 105.

- a) 10025
- b) 11025
- c) 12125
- d) 13125

ANS: b) 11025

Explanation:

- Step 1: The last 2 digits of the answer will be 25.
- Step 2: Then, the preceding digits will be $N*(N+1)$.
- $(105)^2 = (10*11)|25 = 11025$.



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3.FINDING SQUARES USING BALANCING RULE.

NOTE: BALANCING RULE

- It is used in 2-digit, 3-digit multiplication, division to do it in an easy way.
- Let's learn it from the below example
- Write the final digit exactly as it is, and then begin adding the previously separated neighbouring digits.
- As for the first digit,

1. If there is no carry from the previous addition write as it is.

2. If there is a carry from the previous addition write first digit + carry.

Example : $7653 * 6$

- Multiply each digit of a number with 6.

$$7*6 \mid 6*6 \mid 5*6 \mid 3*6$$

$$\begin{array}{cccc}
 42 & | & 36 & | & 30 & | & 18 \\
 \downarrow & & + & & + & & + & & \downarrow \\
 4 & & 5 & & 9 & & 1 & & 8
 \end{array}$$



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5) Find the square of 13.

- a) 149
- b) 159
- c) 139
- d) 169

ANS: d) 169

Explanation:

Let's take $a = 1$; b (last single digit) = 3 ;

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$\begin{array}{r} a^2 \mid 2ab \mid b^2 \\ 01 \mid 06 \mid 09 \\ \downarrow \quad \downarrow \quad \downarrow \\ 1 \quad 6 \quad 9 \end{array}$$

6) Find the square of 26.

- a) 484
- b) 576
- c) 676
- d) 441

ANS: c) 676

Explanation:

$$\begin{array}{r} a^2 \mid 2ab \mid b^2 \\ 04 \mid 24 \mid 36 \\ \downarrow \quad \downarrow \quad \downarrow \\ 6 \quad 7 \quad 6 \end{array}$$



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7) Find the square of 46.

- a) 1026
- b) 2026
- c) 3116
- d) 2116

ANS: d) 2116

Explanation:

$$\begin{array}{r} a^2 \mid 2ab \mid b^2 \\ 16 \mid 48 \mid 36 \\ +1 \downarrow \quad \uparrow \quad \uparrow \quad \downarrow \\ 2 \quad 1 \quad 1 \quad 6 \\ +1 \rightarrow \text{Carry} \end{array}$$

ALTERNATIVE:

$$(46)^2 = (45)^2 + 45 + 46 = 2025 + 91 = 2116.$$



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8) Find the square of 74.

- a) 4276
- b) 5676
- c) 4576
- d) 5476

ANS: d) 5476

Explanation:

$$\begin{array}{r} a^2 \mid 2ab \mid b^2 \\ 49 \mid 56 \mid 16 \\ +1 \downarrow \quad \downarrow \quad \downarrow \\ 5 \quad 4 \quad 7 \quad 6 \\ +1 \rightarrow \text{Carry} \end{array}$$

ALTERNATIVE:

$$(74)^2 = (75)^2 - 75 - 74 = 5625 - 149 = 5476.$$

9) Find the square of 93.

- a) 6326
- b) 8855
- c) 8649
- d) 8945

ANS: c) 8649

Explanation:

$$\begin{array}{r} a^2 \mid 2ab \mid b^2 \\ 81 \mid 54 \mid 09 \\ \downarrow \quad \downarrow \quad \downarrow \\ 8 \quad 6 \quad 4 \quad 9 \end{array}$$



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10) Find the square of 127.

- a) 15119
- b) 16139
- c) 16129
- d) 16124

ANS: c) 16129

Explanation:

Let's take $a = 12$; b (last single digit) = 7 ;

$$\begin{array}{r} a^2 \mid 2ab \mid b^2 \\ 144 \mid 168 \mid 49 \\ \begin{array}{c} +2 \downarrow \\ +1 \quad + \\ \downarrow \end{array} \\ 16 \quad 1 \quad 2 \quad 9 \\ +1, +2 \rightarrow \text{Carry} \end{array}$$



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CONCEPT 2 – SQUARE ROOT OF A NUMBER

1.NUMBER ENDING WITH NO.

11) Find the square root of 400.

- a) 2
- b) 40
- c) 20
- d) 200

ANS: c) 20

Explanation:

- Step 1: Divide the number of zeros at the end by 2 and place it at the end.
- Step 2: Then, the preceding digits will be \sqrt{N} .
- $\sqrt{400} = \sqrt{4|0} = 20$.

12) Find the square root of 16900.

- a) 300
- b) 1300
- c) 13
- d) 130

ANS: d) 130

Explanation:

- Step 1: Divide the number of zeros at the end by 2 and place it at the end.
- Step 2: Then, the preceding digits will be \sqrt{N} .
- $\sqrt{16900} = \sqrt{169|00} = 130$.



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3.NUMBER ENDING WITH N25.

13) Find the square root of 5625.

- a) 85
- b) 75
- c) 55
- d) 58.

ANS: b) 75

Explanation:

- Step 1: The last digit of the answer will be $\sqrt{25} = 5$.
- Step 2: Then, the preceding digits will be $N = X(X+1)$; Preceding digits = X.
- $\sqrt{5625} = 7 \cdot 8 \mid 5 = 75$.

14) Find the square root of 13225.

- a) 125
- b) 115
- c) 135
- d) 105

ANS: b) 115

Explanation:

- Step 1: The last digit of the answer will be $\sqrt{25} = 5$.
- Step 2: Then, the preceding digits will be $N = X(X+1)$; Preceding digits = X.
- $\sqrt{13225} = 11 \cdot 12 \mid 5 = 115$.



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Unit Digit of a Number	Unit Digit of a Squared Number
1 or 9	1
2 or 8	4
3 or 7	9
4 or 6	6
5	5
0	0

15) Find the square root of 196?

- a) 16
- b) 12
- c) 14
- d) 13

ANS: c) 14

Explanation:

STEP 1: The unit digit of the squared number is 6. Therefore, the unit digit of a number will be 6 or 4.

STEP 2: Strike out the last 2 digits (i.e.96) of the number, let's concentrate on the left most part (i.e.1) of the number.

STEP 3: Find the squared number which is less than or equal to the left most part (i.e.1) which is 1.

STEP 4: The answer may be 14 or 16 , let's check it with a middle number which ends with 5 between them, since it is easy to calculate the square of 15. $15^2 = 225$.

STEP 5: 15^2 is more than 196 ; therefore, 14 is the square root of 196.

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$$\begin{array}{r} 1 \quad 96 \\ \downarrow \quad \downarrow \\ 1 \quad 4/6 \end{array}$$

$$196 \begin{cases} \nearrow 14 \\ \searrow 16 \end{cases} \quad \text{—————} \quad 15^2 = 225 > 196$$

$225 > 196$, therefore 14 is the square root of 196.

16) Find the square root of 1849?

- a) 47
- b) 43
- c) 41
- d) 45

ANS: b) 43

Explanation:

$$\begin{array}{r} 18 \quad 49 \\ \downarrow \quad \downarrow \\ 4 \quad 3/7 \end{array}$$

$$1849 \begin{cases} \nearrow 43 \\ \searrow 47 \end{cases} \quad \text{—————} \quad 45^2 = 2025 > 1849$$

$2025 > 1849$, therefore 43 is the square root of 1849.



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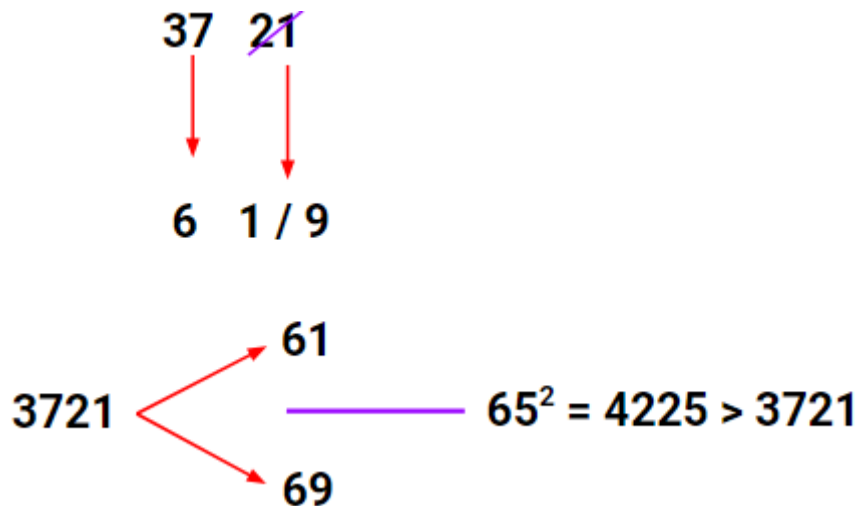
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17) Find the square root of 3721.

- a) 61
- b) 51
- c) 69
- d) 63

ANS: a) 61

Explanation:



4225 > 3721, therefore 61 is the square root of 3721.



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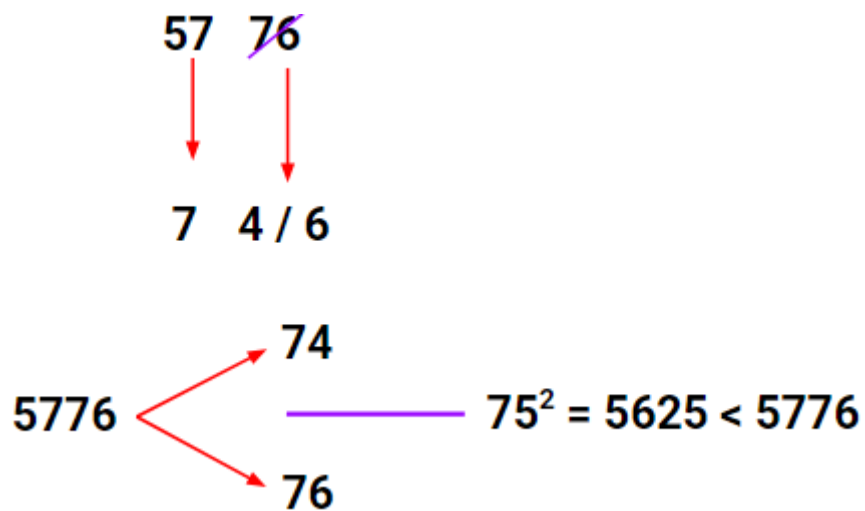
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18) Find the square root of 5776.

- a) 72
- b) 64
- c) 74
- d) 76

ANS: d) 76

Explanation:



5625 < 5776 , therefore 76 is the square root of 5776.



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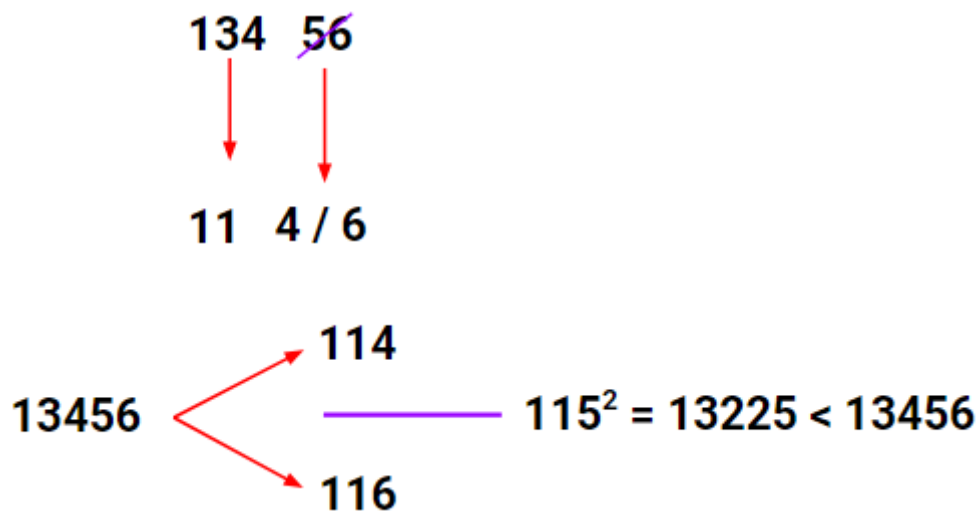
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19) Find the square root of 13456.

- a) 116
- b) 114
- c) 126
- d) 124

ANS: a) 116

Explanation:



13225 < 13456 , therefore 116 is the square root of 13456.



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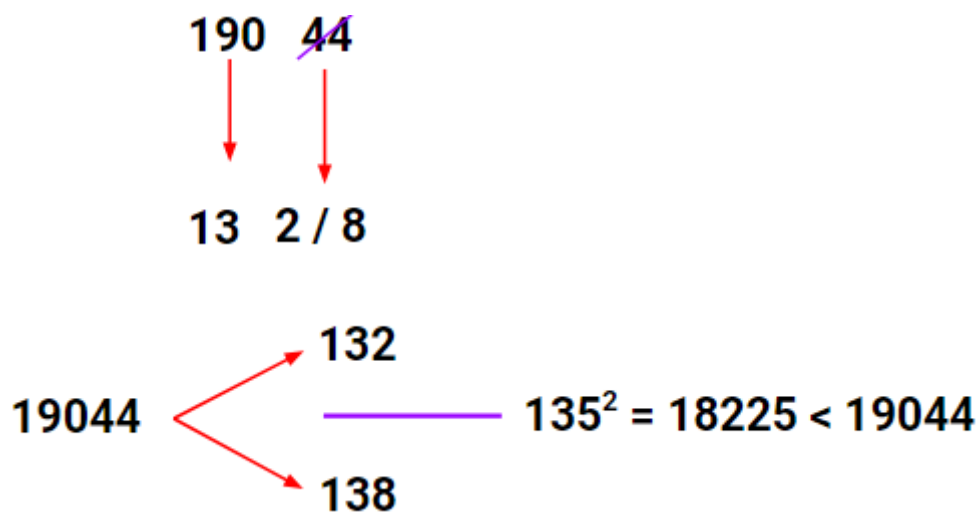
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20) Find the square root of 19044.

- a) 144
- b) 138
- c) 142
- d) 132

ANS: b) 138

Explanation:



18225 < 19044 , therefore 138 is the square root of 19044.



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CONCEPT 3 – CUBE OF A NUMBER

21) Find the cube of 12

- a) 1528
- b) 1428
- c) 1728
- d) 1628

ANS: c) 1728

Explanation:

Let's take $a = 1$; b (last single digit) = 2.

$$\begin{array}{r} a^3 \mid a^2b \mid ab^2 \mid b^3 \\ 01 \mid 02 \mid 04 \mid 08 \\ \quad \quad \quad *2 \left(\quad \quad \right) *2 \\ + \quad \quad 04 \mid 08 \\ \hline 01 \mid 06 \mid 12 \mid 08 \\ \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ \quad \downarrow \quad \downarrow \quad \downarrow \\ 1 \quad 7 \quad 2 \quad 8 \end{array}$$



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22) Find the cube of 26.

- a) 13256
- b) 15576
- c) 17376
- d) 17576

ANS: d) 17576

Explanation:

$$\begin{array}{r} a^3 \mid a^2b \mid ab^2 \mid b^3 \\ 08 \mid 24 \mid 72 \mid 216 \\ \quad \quad \quad *2 \quad \quad \quad *2 \\ + \quad \quad \quad 48 \mid 144 \\ \hline 08 \mid 72 \mid 216 \mid 216 \\ \begin{array}{ccccccc} +1 & & & & & & \\ \downarrow & \curvearrowright & \curvearrowright & \curvearrowright & \downarrow & & \\ & +2 & +2 & + & & & \\ \downarrow & & & & & & \\ 1 & 7 & 5 & 7 & 6 & & \end{array} \end{array}$$



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23) Find the cube of 35.

- a) 42575
- b) 42375
- c) 42875
- d) 32375

ANS: c) 42875

Explanation:

$$\begin{array}{r} a^3 \mid a^2b \mid ab^2 \mid b^3 \\ 27 \mid 45 \mid 75 \mid 125 \\ \quad \quad \quad \color{red}{*2} \left(\quad \quad \quad \right) \color{red}{*2} \\ + \quad \quad \quad 90 \mid 150 \\ \hline 27 \mid 135 \mid 225 \mid 125 \\ \color{red}{+2} \downarrow \quad \color{red}{+2} \quad \color{red}{+1} \quad \color{red}{+} \quad \color{red}{\downarrow} \\ 4 \quad 2 \quad 8 \quad 7 \quad 5 \end{array}$$



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CONCEPT 4 – CUBE ROOT OF A NUMBER

Unit Digit of a Number	Unit Digit of a Cubed Number
1	1
2	8
3	7
4	4
5	5
6	6
7	3
8	2
9	9
0	0



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24) Find the cube root of 4096.

- a) 24
- b) 14
- c) 16
- d) 26

ANS: c) 16

Explanation:

Step 1: See the last digit of the number of which we have to find the cube root.

Step 2: Cross the last three digits after this step 1.

Step 3: Now check the remaining number. Take the perfect cube less than this number

4 096
↓ ↓
1 6

25) Find the cube root of 50653.

- a) 37
- b) 16
- c) 24
- d) 35

ANS: a) 37

Explanation:

50 653
↓ ↓
3 7