

①

$$1 + 2 + 1 = 2^2$$

$$1 + 2 + 3 + 2 + 1 = 3^2$$

∴

$$1 + 2 + 3 + 4 + 5 + 4 + 3 + 2 + 1 = 5^2$$



$$1 + \textcircled{2} + 1 = 2^2$$

$$1 + 2 + \textcircled{3} + 2 + 1 = 3^2$$

$$1 + 2 + 3 + \textcircled{4} + 3 + 2 + 1 = 4^2$$

$$\sqrt{1 + \textcircled{2} + 1} = 2$$

$$\sqrt{1 + 2 + \textcircled{3} + 2 + 1} = 3$$

$$\sqrt{1 + 2 + 3 + \textcircled{4} + 3 + 2 + 1} = 4$$

$$1^2 = 1$$

$$11^2 = 121$$

$$111^2 = \mathbf{12321}$$

$$1111^2 = 1234321$$

$$11111^2 = 123454321$$

$$\sqrt{1234567654321} = \text{|||||}$$

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$$11^2 = 121$$

$$111^2 = 12321$$

$$1111^2 = 1234321$$

$$111111^2 = 1234567654321$$

$$\sqrt{123454321} = 11111$$




$$\begin{array}{r} +11111 \\ \hline 12345 \end{array}$$





ALGEBRA BASED SIMPLIFICATION FORMULAS

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

$$\frac{a^2 - b^2}{a + b} = a - b$$

$$\frac{a^2 - b^2}{a - b} = a + b$$

$$\begin{aligned} 867^2 - 133^2 &= 1000 \times 734 \\ &= 734000 \end{aligned}$$

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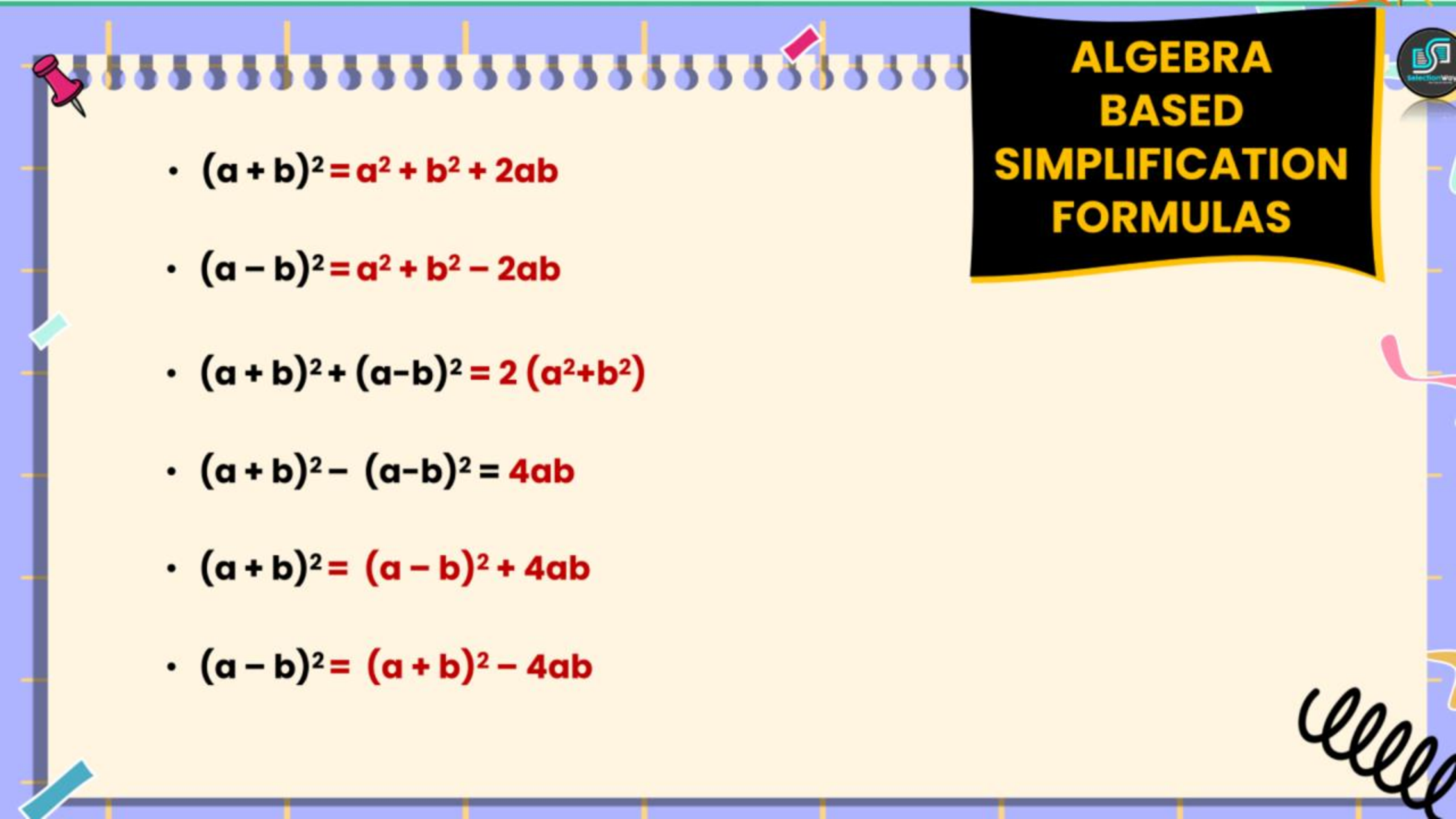

$$35 \times 37 + 1 = \underline{(36-1) \times (36+1)} + 1 = 36^2 - \cancel{1} + \cancel{1} = 1296$$


$$\sqrt{291 \times 295 + 4} = \sqrt{\underline{(293-2) \times (293+2)}} = \sqrt{293^2 - \cancel{2} + \cancel{4}} = 293$$

$$\sqrt{871 \times 881 + 25} = 876$$

avg = 876

lllll



ALGEBRA BASED SIMPLIFICATION FORMULAS

- $(a + b)^2 = a^2 + b^2 + 2ab$
 - $(a - b)^2 = a^2 + b^2 - 2ab$
 - $(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$
 - $(a + b)^2 - (a - b)^2 = 4ab$
 - $(a + b)^2 = (a - b)^2 + 4ab$
 - $(a - b)^2 = (a + b)^2 - 4ab$
- 

73. **Simplify the following expression:**
 निम्नलिखित व्यंजक को सरलीकृत कीजिए।

$$\sqrt{\frac{0.6859 \times 0.1156 \times 0.64000}{0.289 \times 0.1600 \times 0.54872}} \quad (\text{Correct your answer up to three decimal places})$$

$$\sqrt{\frac{6859 \times 1156 \times 64000}{289 \times 1600 \times 54872}} \quad (\text{अपने उत्तर को तीन दशमलव स्थानों तक पूर्णांकित कीजिए।})$$

[RRB NTPC 12TH LEVEL CBT-1, 2026]

[A] 1.314

[C] 2.414

[B] 1.414

[D] 2.314

$$\sqrt{2} \approx 1.414$$

$$\sqrt{3} \approx 1.732$$

$$6859 \times 8$$

74. Find the value of $\sqrt{\frac{(169)^2 \times (2.56)^2 \times (0.25)^2}{(13)^4 \times (1.6)^4 \times (0.5)^2}}$.

$\sqrt{\frac{(169)^2 \times (2.56)^2 \times (0.25)^2}{(13)^4 \times (1.6)^4 \times (0.5)^2}}$ का मान ज्ञात कीजिए।

[RRB NTPC 12TH LEVEL CBT-1, 2026]

[A] 0.05

$$\frac{.25}{.5} = .5$$

[B] 1.5

[C] 1.05

✓ [D] 0.5

$$(1.6^2)^2$$

$$\sqrt{a^2} = a$$

$$169^2 = (13^2)^2 = 13^4$$

75. Evaluate $\sqrt{36} + \sqrt{\frac{324}{81}} + \sqrt{\frac{9.5 \times 0.0085 \times 18.9}{0.021 \times 0.0017 \times 1.9}}$

$\sqrt{36} + \sqrt{\frac{324}{81}} + \sqrt{\frac{9.5 \times 0.0085 \times 18.9}{0.021 \times 0.0017 \times 1.9}}$ मूल्यांकन कीजिए।

[RRB NTPC 12TH LEVEL CBT-1, 2026]

[A] 154

[C] 158

[B] 156

[D] 152

$6 + 9 + 150$

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76. **Simplify** $\frac{1.2 \times 1.2 \times 1.2 - 0.12 \times 0.12 \times 0.12}{12 \times 12 \times 12}$ सरल करें।

RRB PARAMEDICAL 2025

[A] 0.0000999

☒ [B] 0.00999

[C] 0.0999

[D] 0.000999

$$\frac{.12}{12} = .01$$

$$.1^3 - .01^3$$

$$= .001 - .000001$$



#



77. *Simplify:*

$$1 + 2 + 3 + \text{-----} + 999 + 1000 + 999 + \text{-----} + 2 + 1$$

[A] 999000

[C] 999999

[B] 1000000

[D] 990000

$$= 1000^2$$


78. *Simplify:*

$$\sqrt{1 + 2 + 3 + \dots + 78 + 79 + 78 + \dots + 2 + 1} = ?$$

[A] 78

[B] 6084

[C] ~~79~~ ✓

[D] 6241

79. $\sqrt{1 + 2 + 3 + \dots + (2N - 2) + (2N - 1) + 2N + (2N - 1) + (2N - 2) + \dots + 2 + 1} = 90$

Find the value of N^2

[A] 1600

[C] 2500

[B] 2025

[d] 8100

$$2N = 90$$

$$N = 45$$

✕



80. *If $N = 1 + 11 + 111 + 1111 + \dots + 111111111$, then what is the sum of the digit's of N ?*

यदि $N = 1 + 11 + 111 + 1111 + \dots + \underline{111111111}$ हो, तो N के अंकों का योग क्या है?

[A] ~~45~~

[B] 18

[C] 36

[D] 5

$$N = 123456789$$

$$\frac{9 \times 10}{2}$$

81. $\sqrt{121} + \sqrt{12321} + \dots + \sqrt{1234567654321} = ?$

[A] ~~1234567~~ [B] ~~1234566~~
 [C] 1234565 [D] None

$$11 + 111 + \dots + 1111111 = 1234567-1$$

$$= 1234566$$

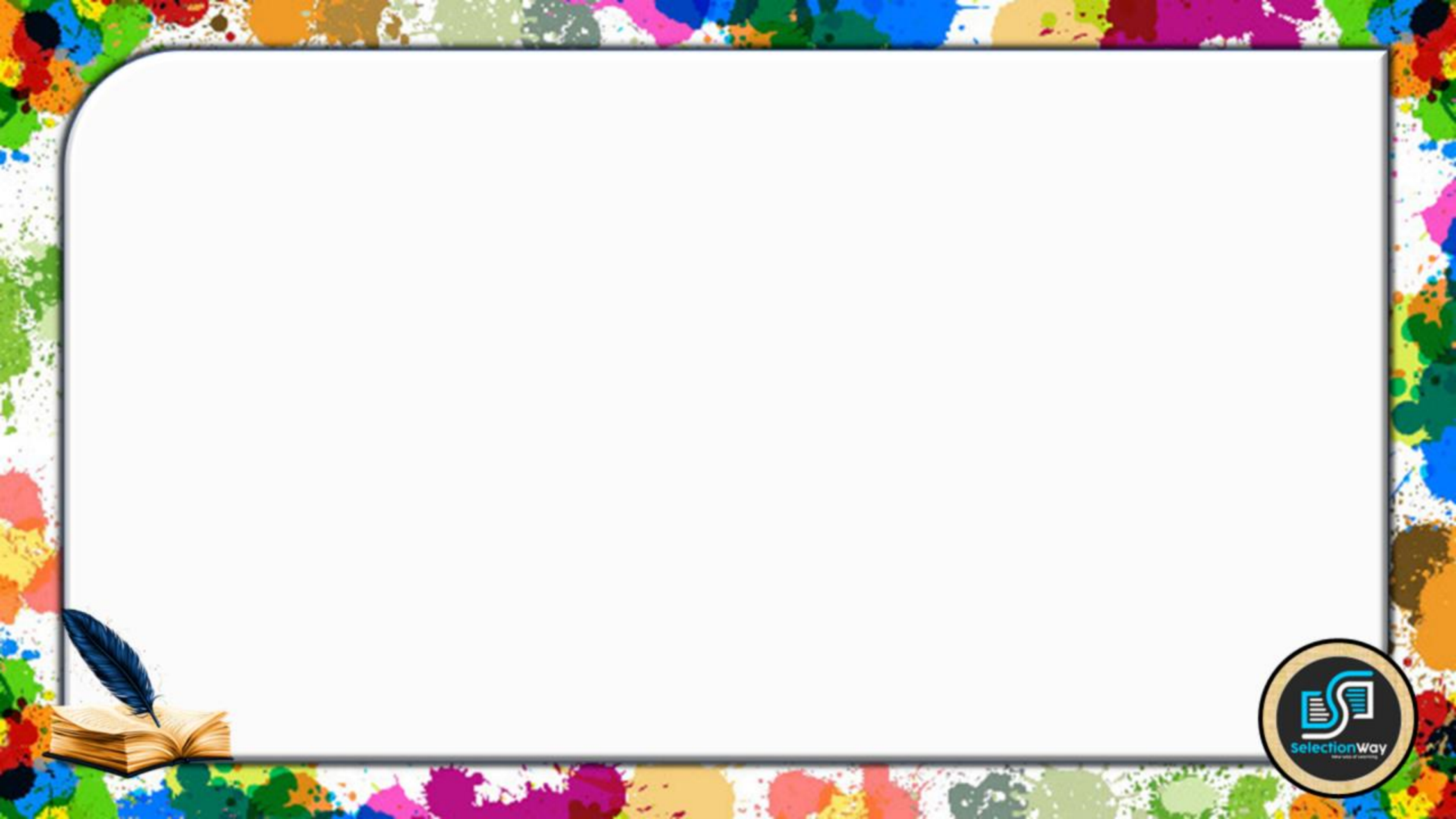
$$11111^2 = 123454321$$

82. $\sqrt{121} + \sqrt{12321} + - - - - - + \sqrt{N} = 123456788$. Find the value of N .

[A] 123456787654321 [B] 1234567654321

[C] 12345654321 [D] None





83. Simplify the following expression: 9993×10007 ?

निम्नलिखित व्यंजक को सरल कीजिए: 9993×10007 ?

(RRB TECHNICIAN GRADE - 3 2024)

[A] ~~555559~~

[B] ~~99999~~

[C] 9999951

[D] ~~999951~~

$$(10000 - 7) \times (10000 + 7)$$

$$= 10000^2 - 7^2$$

84. Find the value of 987×999

987×999 का मान ज्ञात कीजिए।

(RRB NTPC 2021)

[A] 976023

[B] 980613

[C] 996023

[D] 986013

$$987 \times (1000 - 1)$$

$$987000 - 987$$

85. *The value of 596×604 is:*

596×604 का मान ज्ञात कीजिए।

[A] 364199

[B] 366958

[C] 356822

[D] 359984

$$600^2 - 4^2$$

$$360000 - 16$$

86. Simplify the following expression: $\frac{4.33 \times 4.33 - 2.65 \times 2.65}{1.68}$

निम्नलिखित व्यंजक को सरल कीजिए।: $\frac{4.33 \times 4.33 - 2.65 \times 2.65}{1.68}$

(RRB ALP 2024)

[A] 6.94

[C] 6.99

[B] 6.98

[D] 6.96

$$\frac{1.68 \times 6.98}{1.68}$$

$$4.33^2 - 2.65^2$$

87. Evaluate the following:

निम्नलिखित का मान ज्ञात कीजिए:

$$\frac{(3.49)^2 - (1.71)^2}{3.49 - 1.71}$$

RPF CONSTABLE 2024

[A] 5.2

[C] 2.48

[B] 4.4

[D] 1.78

$$= 3.49 + 1.71$$

88. *The value of $\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$ is:*

$\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$ का मान है:

[A] 23.62

[C] 26

[B] 25

[D] 24.12

89. **Simplify:** $\frac{32672 \times 32672 - 21864 \times 21864}{10808}$

सरल करें: $\frac{32672^a \times 32672^b - 21864 \times 21864}{10808}$

(RRB GROUP D 2024)

[A] 54836

[B] 54536

[C] 54636

[D] 54436

$$= \frac{\cancel{10808} \times 54536}{\cancel{10808}}$$

90. What is the value of $(2^2 + 1)(2^4 + 1)(2^8 + 1)(2^{16} + 1) \dots$

$(2^2 - 1) \times (2^2 + 1)(2^4 + 1)(2^8 + 1)(2^{16} + 1) \dots (2^{128} + 1)$ का मान क्या है?

$(2^2 - 1)$
[A] $\frac{2^{256} - 1}{2}$

~~[B] $\frac{2^{256} - 1}{3}$~~

[C] $2^{256} - 1$

[D] $\frac{2^{256} + 1}{3}$

$$\frac{2^{256} - 1}{3}$$

$$(2^2)^2 - 1^2 = 2^4 - 1$$

$$(2^4 - 1) \times (2^4 + 1) = 2^8 - 1$$

91. The value of $\frac{1}{4} + \frac{[(20.35)^2 - (8.35)^2] \times 0.0175}{(1.05)^2 + (1.05)(27.65)}$ is:

$\frac{1}{4} + \frac{[(20.35)^2 - (8.35)^2] \times 0.0175}{(1.05)^2 + (1.05)(27.65)}$ का मान ज्ञात करें।

RPF CONSTABLE 2024

[A] $\frac{3}{10}$

[C] $\frac{7}{20}$

✓ [B] $\frac{9}{20}$

[D] $\frac{3}{20}$

$\frac{1}{4} + \frac{1}{5} = \frac{9}{20}$

92. If $(x + 7957 \times 7965)$ is a perfect square, then find the ^{minimum} value of x ?

[A] 1

[C] 9

[B] 16

[D] 25

avg = 7961

~~$x^2 + 7961^2 - 4^2$~~ = पूर्ण वर्ग

$(7961-4) \times (7961+4)$