93. *The value of* $\frac{(0.13)^2+(0.21)^2}{(0.39)^2+81(0.07)^2} \div \frac{(2.4)^4+3\times(11.52)+9}{(2.4)^6+6(2.4)^4+3\times(17.28)}$ *lies between:*

$\frac{(0.13)^2+(0.21)^2}{(0.39)^2+81(0.07)^2} \div \frac{(2.4)^4+3\times(11.52)+9}{(2.4)^6+6(2.4)^4+3\times(17.28)}$ का मान किसके बीच स्थित है?

[A] 0.4 and 0.5 [B] 0.7 and 0.8

[C] 0.5 and 0.6 [D] 0.6 and 0.7

$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$

$\frac{(.13)^2+(.21)^2}{(.39)^2+(.63)^2} = \frac{1}{3^2} = \frac{1}{9}$

$\frac{(2.4)^4+6(2.4)^2+9}{(2.4)^6+6(2.4)^4+9\times(2.4)^2} = \frac{1}{(2.4)^2}$

$\frac{1}{9} \div \frac{1}{(2.4)^2}$

$= \frac{1}{9} \times 5.76 = .64$

$(2.4)^2 = 5.76$

$3\times2\times5.76 = 6\times(2.4)^2$

$3\times3\times(2.4)^2$

SelectionWay
New way of Learning

ALGEBRA BASED SIMPLIFICATION FORMULAS

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

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

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

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

$(a+b)^2 = (a+b) \times (a+b)$

$a^2 + ab + ab + b^2$

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

94. ***Simplify the following expression.***

निम्नलिखित व्यंजक को हल कीजिए।

$$(2.19)^2 + 2(2.19)(3.81) + (3.81)^2$$

[A] 216 **[B]** 12

[C] 36 **[D]** 6

$a \rightarrow 2.19$

$b \rightarrow 3.81$

$= (2.19+3.81)^2$

$= 6^2$

95. If $m = -9$ and $n = 13$, then find the value of $25m^2 + 40mn + 16n^2$.

यदि $m = -9$ तथा $n = 13$ है, तो $25m^2 + 40mn + 16n^2$ का मान ज्ञात कीजिए।

RRB NTPC 2022

[A] 81

[B] 49

[C] 100

[D] 64

$(5m)^2 + 2 \times 5m \times 4n + (4n)^2 = (5m + 4n)^2$

$= (-45 + 52)^2$

96. *For what value of A, will the expression* $(13.56 \times 13.56 + 13.56 \times A + 0.04 \times 0.04)$ *be a perfect square?*

A के किस मान के लिए व्यंजक $(13.56 \times 13.56 + 13.56 \times A + 0.04 \times 0.04)$ एक पूर्ण वर्ग होगा?

RPF CONSTABLE 2024

[A] 0.12
[B] 0.04
[C] 0.16
[D] 0.08

$2X \cdot 04$

97. $Simplify\ (957 + 932)^2 - 4 \times 957 \times 932.$

$(957 + 932)^2 - 4 \times 957 \times 932.$ को सरल करें।

a b

RPF CONSTABLE 2024

[A] 576 [B] 676

[C] 529 [D] 625

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

$$= 25^2$$

98. *Find* $\sqrt{98235^2 + 98235 + 98236}$?

$\sqrt{98235^2 + 98235 + 98236}$ ज्ञात कीजिये?

[A] 98236 ✓

[B] 98328 ✗

[C] 98765 ✗

[D] 98237 ✗

$98235 = x$

$\sqrt{x^2 + x + x + 1}$

$\sqrt{x^2 + 2x + 1^2} = x + 1$

$= 98236$

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

$$\sqrt{a^2 + b^2 - 2ab}$$

- $a - b$ (if, $a > b$)
- $b - a$ (if, $b > a$)

$(+5)^2 = (-5)^2 = 25 \rightarrow \sqrt{25} = +5$ (only)

$\sqrt{(17-31)^2}$

$17-31$

$= -14$

$\sqrt{17^2+31^2-2\times17\times31} = \sqrt{(31-17)^2} = 14$

$$\sqrt{a^2+b^2+2ab} = a+b$$

99. If $a = 0.4039$ then $\sqrt{4a^2 - 4a + 1} + 5a = ?$

[A] 2.2117

[B] 2.4039

[C] 2.8078

[D] 1.8273

$\sqrt{(2a)^2 - 4a + 1^2}$ → $2a - 1$ (−ve), $1 - 2a$

$(1 - 2a) + 5a$

$= 1 + 3X \cdot 4039$

$= 2 \cdot 2117$

100. If $a = 7 + \sqrt{2}, b = 7 - \sqrt{2}$, then what is the value of $a^2 + b^2$?

यदि $a = 7 + \sqrt{2}, b = 7 - \sqrt{2}$ है, तो $a^2 + b^2$ का मान क्या है?

[SSC MTS 2025]

[A] 104 [B] 100

[C] 102 [D] 98

$(7+\sqrt{2})^2 + (7-\sqrt{2})^2 = 2 \times (49+2)$

$= 102$

101. Simplify:/सरल करें:

$$\frac{(542+321)^2-(542-321)^2}{542\times321}$$

(RRB NTPC 2021)

[A] $\frac{1}{271}$

[B] $\frac{642}{271}$

[C] 1

[D] 4

$$\frac{(a+b)^2-(a-b)^2}{ab}=4$$

102. **Simplify the given expression**

दिये गए व्यंजक का सरलीकरण करें।

$$\frac{(326+222)^2-(326-222)^2}{(652\times37)}$$

SSC CGL 2023 PRE

[A] 16

[B] 4

[C] 3

[D] 12

$$\frac{4\times326\times222}{652\times37}$$

103. **Simplify:** $\frac{(379+276)^2+(379-276)^2}{379\times379+276\times276}$

सरल करें : $\frac{(379+276)^2+(379-276)^2}{379\times379+276\times276}$

(RRB NTPC 2021) **SSC CHSL 2023 PRE**

[A] 2

[B] 655

[C] 103

[D] 1

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

104. Simplify $\frac{(555+444)^2+(555-444)^2}{555\times555+444\times444}$.

$\frac{(555+444)^2+(555-444)^2}{555\times555+444\times444}$ **को सरल कीजिए।**

(RRB NTPC GRADUATE LEVEL 2025 CBT-1)

[A] 1000

[B] 2

[C] 111

[D] 999

105. The value of $\frac{[(68.4)^2+(31.6)^2]}{[(684+316)^2+(684-316)^2]}$ is:

$\frac{[(68.4)^2+(31.6)^2]}{[(684+316)^2+(684-316)^2]}$ का मान है:

[RRB Group- D 2025]

[A] 0.05

[B] 0.005

[C] 0.0005

[D] 0.5

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

$=\frac{1}{100}\times\frac{1}{2}=0.005$

106. *The value of* $\frac{4.669\times4.669-9\times(0.777)^2}{(4.669)^2+(2.331)^2+14(0.667)(2.331)}$ *is* $(1-k)$*, where* $k = ?$

$\frac{4.669\times4.669-(2.331)^2}{(4.669)^2+(2.331)^2+14(0.667)(2.331)}$ का मान (1–k) है, जिसमें k =?

[A] 0.467 [B] 0.768

[C] 0.647 [D] 0.666

$$\frac{a^2-b^2}{(a+b)^2} = \frac{a-b}{a+b} = \frac{2.338}{7} = .334 = 1-k$$

a^2+b^2+2ab

$\frac{a-b\times a+b}{(a+b)^2}$

$k = 1-.334$

ALGEBRA BASED SIMPLIFICATION FORMULAS

- $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$
  $= a^2 + b^2 + c^2 + 2[ab + bc + ca]$

$5.9^2 + 11.6^2 + 13.5^2 + 136.88 + 313.2 + 159.3 = ?$

$= (5.9 + 11.6 + 13.5)^2$

$= 31^2 = 961$

107. ***Simplify the following expression:/*** **निम्नलिखित ब्यंजक को सरल बनाएं:**

$$0.1^2 + 0.68 \times 0.68 + 0.22 \times 0.22 + 0.044 + 0.136 + 0.44 \times 0.68$$

[A] 0.69 [B] 1

[C] 0.9 [D] 0.8

$(\cdot 1 + \cdot 68 + \cdot 22)^2$

$1^2 = 1$

ALGEBRA BASED SIMPLIFICATION FORMULAS

$(a + b)^3 = a^3 + b^3 + 3a^2b + 3ab^2$

$(a+b)^3 = a^3 + b^3 + 3ab(a + b)$

$(a - b)^3 = a^3 - b^3 - 3a^2b + 3ab^2$

$(a-b)^3 = a^3 - b^3 - 3ab(a - b)$

$a^3+b^3 = (a + b)^3 - 3ab(a + b)$

$= (a + b)\cdot[(a + b)^2 - 3ab]$

$a^3+b^3 = (a + b)[a^2 + b^2 - ab]$

$a^3-b^3 = (a - b)^3 + 3ab(a - b)$

$= (a - b)\cdot[(a - b)^2 + 3ab]$

$a^3-b^3 = (a - b)[a^2 + b^2 + ab]$

ALGEBRA BASED SIMPLIFICATION FORMULAS

$$a^3+b^3=(a+b)\cdot(a^2+b^2-ab)$$

$$\frac{a^3+b^3}{a^2-ab+b^2}=a+b$$

$$a^3-b^3=(a-b)\cdot(a^2+b^2+ab)$$

$$\frac{a^3-b^3}{a^2+ab+b^2}=a-b$$

108. Find the value of: $0.78^3 + 0.22^3 + 3(0.78)(0.22) + 1$.

$0.78^3 + 0.22^3 + 3(0.78)(0.22) + 1$ का मान ज्ञात कीजिए।

$\times(.78+.22)$

[A] 8

[B] 4

[C] 1

[D] 2

$= 1^3 + 1 = 2$

109. Simplify the following expression.

नीचे दिए गए व्यंजक को सरल कीजिए।

$$32^3 - 3(32^2)(12) + 3(32)(12^2) - 12^3$$

[A] 8000 [B] 4000

[C] 16000 [D] 800

$(32-12)^3$

110. **Expression $(3.7)^3 - 3 \times (3.7)^2 \times (0.7) + 3(3.7) \times (0.7)^2 - (0.7)^3$ is equal to which of the following?**

व्यंजक $(3.7)^3 - 3 \times (3.7)^2 \times (0.7) + 3(3.7) \times (0.7)^2 - (0.7)^3$ निम्नलिखित में से किसके बराबर है?

(RRB GROUP D 2022)

[A] 10 **[B]** 27

[C] 30 **[D]** 35

$(3.7 - .7)^3$

111. If $p=(0.001)+3(0.1)(0.99)+(0.3)(98.01)+(9.9)(98.01)$, then find the value of $\frac{p}{25}$.

यदि $P=(0.001)+3(0.1)(0.99)+(0.3)(98.01)+(9.9)(98.01)$ है, तो $\frac{p}{25}$ का मान ज्ञात कीजिए।

RPF CONSTABLE 2024

[A] 400 [B] 540

[C] 50 [D] 40

$3X \cdot 1^2 X 9.9$

$3X \cdot 1X \cdot 99$

$9.9^2 = 98.01$

$b=(.1+9.9)^3$

$=1000$

$=40$

112. Find the value of p so that the expression $(15.97)^3 + 1.4373 \times p + (0.03)^3$ is a perfect cube.

p का मान ज्ञात करें ताकि व्यंजक $(15.97)^3 + 1.4373 \times p + (0.03)^3$ एक पूर्ण घन हो।

RPF CONSTABLE 2024

[A] 0.000027 [B] 4096

[C] 16 [D] 47.91

$1.4373b = 3 \times 15.97 \times .03 \times 16$

$b = 16$

$(a+b)^3$