DAY-3

MAH-CET 2024

VISION ACADEMY

FOR BBA/BBM/BMS/BCA

Basic MATHS

ALGEBRAIC FORMULAES

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Algebraic Formulae's

The simplified form of an expression in Algebra is known as a Algebraic Formula

Formula 1:

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

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What will be the value of $0.245 \times 0.245 + 0.655 \times 0.655 + 2 \times 0.245 \times 0.655$?

A. 0.81 B. 81 C. 83 D. 78

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

(A)

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

$= (a+b)^2$

$= (0.245 + 0.655)^2$

$= (0.9)^2 = 0.9 \times 0.9$

0.81

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Formula 2:

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

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

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What will be the value of
$2 \times 2 + 0.5 \times 0.5 - 2 \times 2 \times 0.5$?

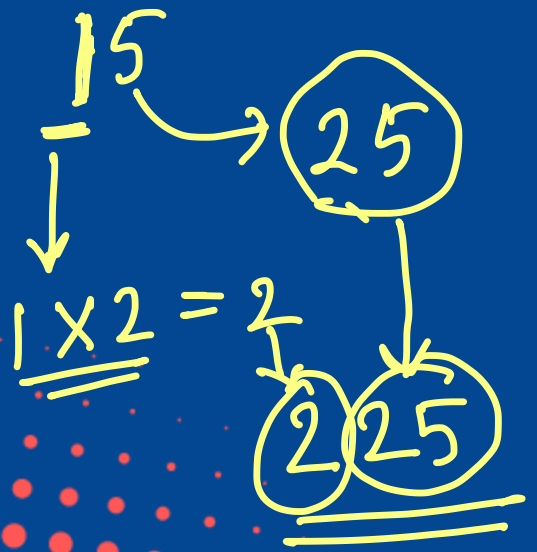
$(a-b)^2 = a^2 - 2ab + b^2$

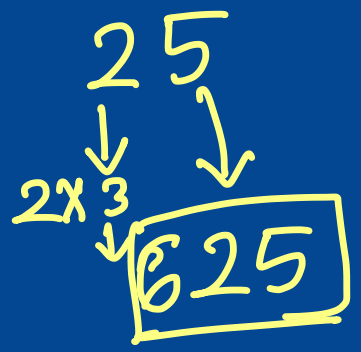
A. 4 **B. 22.5** **C. 2.25** **D. 30**

C

TRICK

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





$= (2-0.5)^2$

$= (1.5)^2$

$= 1.5 \times 1.5 = 2.25$

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Formula 3:

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

$(a+b)(a-b)$

$(5\frac{1}{2}+1\frac{1}{2})(5\frac{1}{2}-1\frac{1}{2})=?$ a^2-b^2

A. $15\frac{2}{8}$

B. $12\frac{2}{3}$

C. $25\frac{5}{16}$

D. $21\frac{3}{4}$

20

$5\frac{1}{2}-1\frac{1}{2}$

$=\left(\frac{11}{2}\right)^2-\left(\frac{3}{2}\right)^2$

$=\frac{121}{4}-\frac{9}{4}$

$=\frac{121-9}{4}=\frac{112}{4}$ 28

Mixed

$5\frac{1}{2}=\frac{11}{2}$

$1\frac{1}{2}=\frac{3}{2}$

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Formula 4:

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

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

$(x+3)(x-2) = ?$ $\rightarrow$ $x^2 + (3+(-2))x + (3)(-2)$

$a = 3 \quad b = -2$

$= x^2 + (3-2)x + (-6)$

$= x^2 + 1x - 6$

$= x^2 + x - 6$

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Formula 5:

$3a^2b + 3ab^2$

$= 3ab(a + b)$

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

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

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Formula 6:

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

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

Formula 7:

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

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Formula 8:

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

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

Formula 9:

$(a+b)^2$

$$(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ac$$

Formula 10: SPECIAL

$$\frac{a^3 + b^3 + c^3 - 3abc}{a^2 + b^2 + c^2 - ab - bc - ac} = a + b + c$$

$$\frac{(0.1)^3+(0.2)^3+(0.3)^3-3(0.1)(0.2)(0.3)}{(0.1)^2+(0.2)^2+(0.3)^2-(0.1)(0.2)-(0.2)(0.3)-(0.1)(0.3)} = ?$$

$a^3 \quad b^3 \quad c^2 - 3abc \qquad (a+b+c)$

$a^2 + b^2 + c^2 - ab - bc - ac$

A. 60 B. 0.6 C. 0.06 D. 0.006

0.1
0.2
0.3
0.6

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ALL FORMULAE's

CET Simplification

1. $(a+b)^2 = a^2 + 2ab + b^2$
2. $(a-b)^2 = a^2 - 2ab + b^2$
3. $a^2 - b^2 = (a+b)(a-b)$
4. $(x+a)(x+b) = x^2 + (a+b)x + ab$
5. $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3 \quad = a^3 + b^3 + 3ab(a+b)$
6. $(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3 \quad = a^3 - b^3 - 3ab(a-b)$
7. $a^3 + b^3 = (a+b)(a^2 - ab + b^2)$
8. $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$
9. $(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ac$
10. $\frac{a^3+b^3+c^3-3abc}{a^2+b^2+c^2-ab-bc-ac} = a + b + c$

$$\frac{a \times a - b \times b}{3.47 \times 3.47 - 2.53 \times 2.53} = ?$$
$$\frac{1}{1 - 0.06}$$

A. 12 B. 8 C. 6 D. 10

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

$$\frac{1}{0.94}$$

C

$$\frac{(3.47 + 2.53)(3.47 - 2.53)}{0.94}$$

$$= \frac{(6.00)(0.94)}{0.94} = 6$$

$a^3 + b^3 + 3ab(a+b) = (0.9+0.1)$

$0.9 \times 0.9 \times 0.9 + 0.1 \times 0.1 \times 0.1 + 3 \times 0.9 \times 0.1 = ?$

B

A. 3.5 B. 1 C. 0 D. None

1

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

$0.9^3 + 0.1^3 + 3(0.9)(0.1)(1)$

$\hookrightarrow (0.9+0.1)$

$(0.9+0.1)^3 = 1^3 = 1$

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$(a+b) \Rightarrow (0.8+0.2) = 1$

$0.8^3 + 0.2^3 + 3(0.8)(0.2) = ?$

(B)

A. 0 **B. 1** C. 0.8 D. None

$(0.8+0.2)^3 = 1^3 = 1$

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$$\frac{(a+b)^2+(a-b)^2}{(17.5+29.3)^2+(17.5-29.3)^2} = ?$$

$$\frac{}{17.5^2+29.3^2}$$

a^2 b^2

a^2-b^2

a^2+b^2

A. 5 **B. 8** **C. 2** **D. 4**

$a = 17.5$

$b = 29.3$

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

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

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

$= 2$

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4

3PM

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EQN. IN 1 VARIABLE

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