



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

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

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

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



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

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

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

62.

$$\left(\frac{a}{x} + \frac{b}{y}\right)^3$$

(2019 PRE)

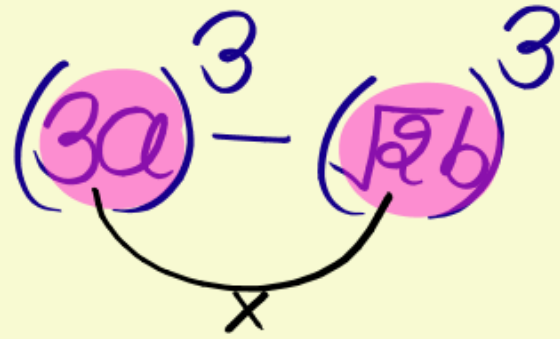
- [A] $\frac{x^3}{27} + \frac{x^2y}{25} + \frac{xy^2}{25} + \frac{y^3}{125}$
- [B] $\frac{x^3}{27} + \frac{x^2y}{15} + \frac{xy^2}{25} + \frac{y^3}{125}$
- [C] $\frac{x^3}{25} + \frac{x^2y}{25} + \frac{xy^2}{25} + \frac{y^3}{125}$
- [D] $\frac{x^3}{17} + \frac{x^2y}{15} + \frac{xy^2}{25} + \frac{y^3}{125}$

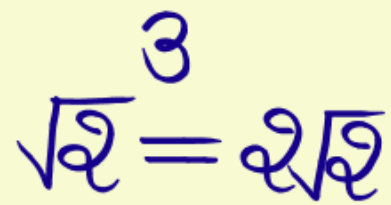
$$3 \times \frac{x^2}{3} \times \frac{y}{5}$$

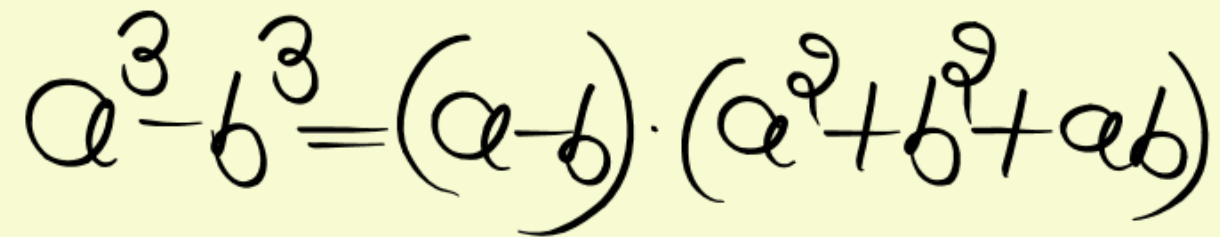
63. The value of $27a^3 - 2\sqrt{2}b^3$ is equal to:-
 $27a^3 - 2\sqrt{2}b^3$ का मान के बराबर है।

(2019 PRE)

- [A] $(3a - \sqrt{2}b)(9a^2 - 2b^2 + 6\sqrt{2}ab)$
- [B] $(3a - \sqrt{2}b)(9a^2 + 2b^2 + 6\sqrt{2}ab)$
- [C] $(3a - \sqrt{2}b)(9a^2 + 2b^2 + 3\sqrt{2}ab)$ ✓
- [D] $(3a - \sqrt{2}b)(9a^2 - 2b^2 - 3\sqrt{2}ab)$


$$(3a)^3 - (\sqrt{2}b)^3$$


$$\sqrt{2}^3 = 2\sqrt{2}$$


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

64. **Simplify the given expression/दिए गए व्यंजक को सरल कीजिए।**

$$(5x + 8y) \cdot (25x^2 + 64y^2 - 40xy)$$

(SSC CGL PRE 2022)

~~[A] $125x^3 - 51y^3$~~

[B] $25x^3 + 64y^3$

~~[C] $125x^3 + 512y^3$~~

[D] $25x^3 - 64y^3$

$(5x)^3 + (8y)^3$

65. The product $(a + b)(a - b)(a^2 - ab + b^2)(a^2 + ab + b^2)$ is equal to:

गुणनफल $(a + b)(a - b)(a^2 - ab + b^2)(a^2 + ab + b^2)$ निम्नलिखित में से किसके बराबर है?

(RRB TECHNICIAN GRADE-3 2024)

[A] $a^3 - b^3$

[B] $a^3 + b^3$

[C] $a^6 + b^6$

[D] $a^6 - b^6$

$$\begin{aligned} & (a^3 + b^3)(a^3 - b^3) \\ &= (a^3)^2 - (b^3)^2 \\ &= a^6 - b^6 \end{aligned}$$

66. Find the factors of $(64x^6 - y^6)$.

$(64x^6 - y^6)$ का गुणनखंड ज्ञात कीजिए।

RRB Group D-2022

[A] $(2x - y)(2x + y)(4x^2 + 2xy + y^2)(4x^2 - 2xy - y^2)$

[B] $(2x + y)(2x + y)(4x^2 + 2xy + y^2)(4x^2 - 2xy + y^2)$

[C] $(2x - y)(2x + y)(4x^2 - 2xy + y^2)(4x^2 - 2xy - y^2)$

[D] $(2x - y)(2x + y)(4x^2 + 2xy + y^2)(4x^2 - 2xy + y^2)$

$$(8x^3)^2 - (y^3)^2$$

$$= (8x^3 - y^3) \cdot (8x^3 + y^3)$$

$$(8x^3)^2 - (y^3)^2$$

67. If $b = 5$, determine the value of an expression $\left(\frac{5}{b} + 5b\right)\left(\frac{25}{b^2} - 25 + 25b^2\right)$ using an identity?
यदि $b = 5$, तो एक समानता का उपयोग करके व्यंजक $\left(\frac{5}{b} + 5b\right)\left(\frac{25}{b^2} - 25 + 25b^2\right)$ का मान निर्धारित करें?

SSC CGL 2023 PRE

[A] 25726

[C] 15438

[B] 15626

[D] 25636

$$= \left(\frac{5}{b}\right)^3 + (5b)^3$$

$$= 1^3 + 25^3$$

$$= 1 + 15625$$

$\neq$

x^4

x^4 की coeff. = 20

68. The coefficient of x^2 in $(2x + y)^3$ is:

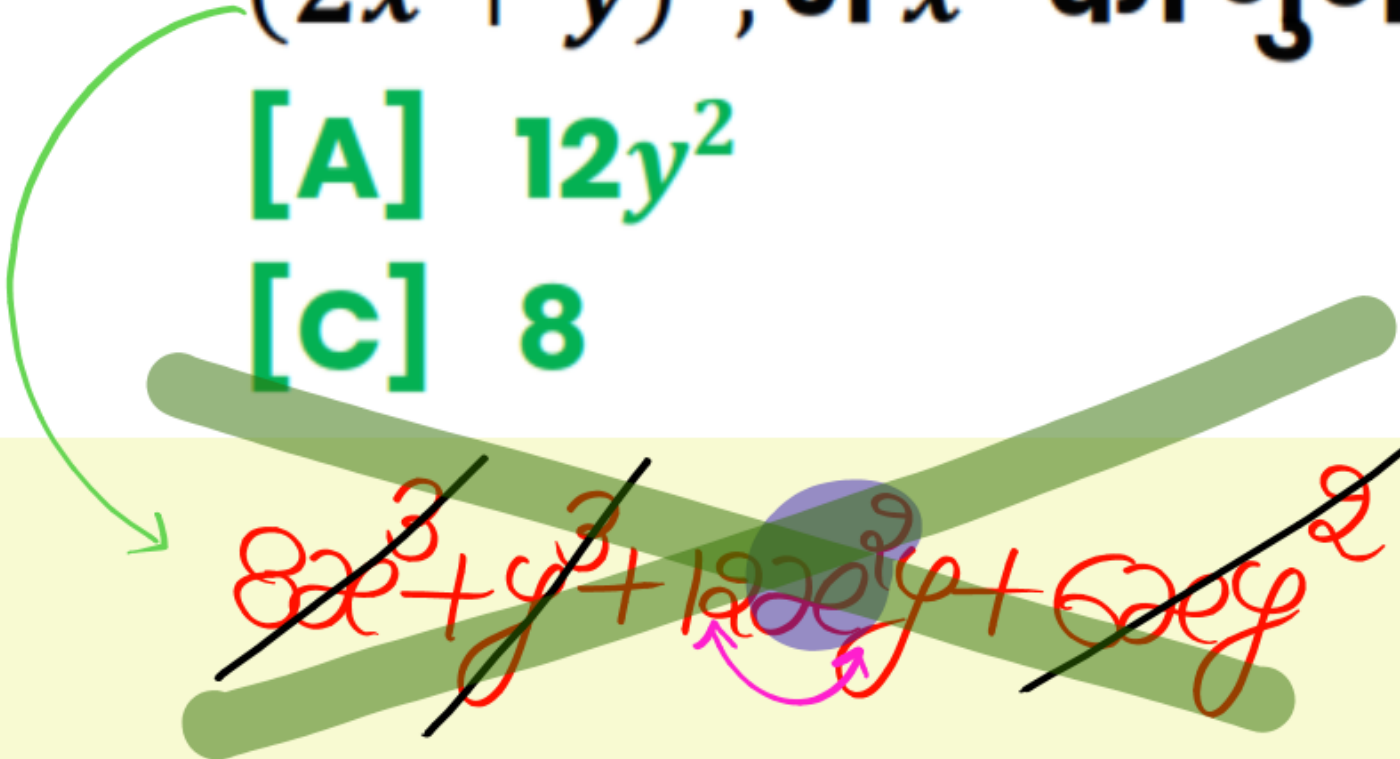
$(2x + y)^3$, में x^2 का गुणांक है:

[A] $12y^2$

[B] $12y$

[C] 8

[D] 12



~~$8x^3 + y^3 + 12x^2y + 6xy^2$~~

A green 'X' is drawn over the handwritten expansion. A green arrow points from the question text to the expansion. A purple circle highlights the term $12x^2y$ in the expansion, with a pink arrow pointing to it.

69. What is the coefficient of x^2 in the expansion of $\left(5 - \frac{x^2}{3}\right)^3$?

$\left(5 - \frac{x^2}{3}\right)^3$ के विस्तार में x^2 का गुणांक ज्ञात करें।

[A] $-\frac{25}{3}$

[B] -25

[C] $-\frac{5}{3}$

[D] 25

$$-\cancel{3} \times 25 \times \frac{x^2}{\cancel{3}}$$

$$-25x^2$$

70. What is the constant term in the expansion of $\left(5x^2 - \frac{1}{x}\right)^3$?

$\left(5x^2 - \frac{1}{x}\right)^3$ के विस्तार में अचर पद (constant term) ज्ञात करें।

[A] 5

[B] -15

[C] 15

[D] 75

~~$+3 \times 5x^2 \times \frac{1}{x}$~~
 $+15$

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

71. What is the coefficient of y^2 in the expansion of $(\sqrt{2}y^2 - 5\sqrt{3})^3$?

व्यंजक $(\sqrt{2}y^2 - 5\sqrt{3})^3$ के विस्तार में y^2 का गुणांक ज्ञात करें।

[A] $-225\sqrt{2}$

[B] $-30\sqrt{3}$

[C] $225\sqrt{2}$

[D] $30\sqrt{3}$

$+3 \times \sqrt{2} y^2 \times 75$

72. The coefficient of x^3y in $(x-2y) \times (5x+y)^3$ is:

$(x-2y) \times (5x+y)^3$ में x^3y का गुणांक (coefficient) ज्ञात करें।

[A] 75

[B] -150

[C] 250

[D] -175

$$75 - 250 = -175$$

$$(x-2y) \times (125x^3 + 75x^2y)$$

$$\begin{array}{l} x \times 125x^3 \\ -2y \times 75x^2y \end{array}$$

$$3 \times 125x^3y$$



73. If $x^4 + y^4 = x^2y^2$, then the value of $x^6 + y^6$ is:
यदि $x^4 + y^4 = x^2y^2$ है, तो $x^6 + y^6$ का मान क्या होगा?
(SSC CPO 2023)

[A] 1

[C] 2

[B] 3

☒ [D] 0

$$x^4 + y^4 - x^2y^2 = 0$$

$$\begin{aligned} & (x^2)^3 + (y^2)^3 \\ &= (x^2 + y^2) \cdot \cancel{(x^4 + y^4 - x^2y^2)}_0 \end{aligned}$$



74. If $A + B = 12$ and $AB = 17$, what is the value of $A^3 + B^3$?
यदि $A + B = 12$ और $AB = 17$ है, तो $A^3 + B^3$ का मान क्या होगा?

(SSC CGL 2019 PRE)

[A] 1116 ✓

[B] 1106 ✗

[C] 1166 ✗

[D] 1213 ✗

$$A^3 + B^3 = (A+B) \times [(A+B)^2 - 3AB]$$

12 × ~

4 × 3

75. If $a + b = 48$ and $ab = 56$, then find the value of $a^3 + b^3$.
यदि $a + b = 48$ और $ab = 56$ है, तो $a^3 + b^3$ का मान ज्ञात कीजिए।

[RRB Group D-2022]

[A] 1,20,825

[C] 1,02,258

[B] 1,02,528

[D] 1,20,528

$\frac{NX100}{2}$


$$\begin{aligned} a^3 + b^3 &= (a+b) \cdot [(a+b)^2 - 3ab] \\ &= 48 \times (2304 - 168) \\ &= 48 \times 2136 \\ &= 102528 \end{aligned}$$

$(50-2) \times 2136$
 $106800 - 4272$

76. If $a + b = 24$ and $a^2 + b^2 = 320$ then find the value of, $(a^3 + b^3)$.

अगर, $a + b = 24$ और $a^2 + b^2 = 320$, तो $(a^3 + b^3)$ का मान ज्ञात कीजिए।

SSC CHSL PRE 2025

[A] 4608

[C] 3890

[B] 4567

[D] 4112

$$= 4096 + 512$$

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

$$ab = \frac{24^2 - 320}{2}$$

$$ab = 128$$

77. If $x + y = 4$ and $\frac{1}{x} + \frac{1}{y} = \frac{16}{15}$, then what is the value of $(x^3 + y^3)$?

यदि $x + y = 4$ and $\frac{1}{x} + \frac{1}{y} = \frac{16}{15}$ है, तो $(x^3 + y^3)$ का मान ज्ञात करें।

[A] 18

[C] 21

[B] 19

[D] 16

$$= (x+y) \cdot [(x+y)^2 - 3xy]$$

$$= 4 \cdot [4^2 - 3 \times \frac{15}{4}]$$

$$= 64 - 45$$

$$= 19$$

$$\frac{4}{xy} = \frac{16}{15}$$

$$xy = \frac{15}{4}$$



78. If $5x + y = 17$ and $xy = 6$, then what is the value of $125x^3 + y^3$?

यदि $5x + y = 17$ और $xy = 6$ तो $125x^3 + y^3$ का मान क्या है?

SSC CHSL TIER – I 2022

[A] 3383

[C] 3183

[B] 1530

[D] 4913

$$17 \times (1000 - 1) \\ 1000 - 17$$

$$\begin{aligned} &= (5x + y) \cdot [(5x + y)^2 - 3xy] \\ &= 17 \times [17^2 - 15 \times 6] \\ &= 17 \times 199 \end{aligned}$$

79. If $3x + 2y = 15$ & $xy = 6$, then find $\frac{3}{2}x^3 + \frac{4}{9}y^3$?

यदि $3x + 2y = 15$ और $xy = 6$, तो $\frac{3}{2}x^3 + \frac{4}{9}y^3$ ज्ञात कीजिए?

^{$3+12=15$}
 ^{1×6}
(ICAR Technician 2022)

[A] 98.6

[C] 95.8

[B] 97.5

[D] 92.5

~~$\frac{27x^3 + 8y^3}{18}$~~

$$\frac{3}{2} + \frac{4}{9} \times \frac{24}{16}$$

$$= 1.5 + 96$$

$$= 97.5$$



80. If $x - y = 25$ and $xy = 444$, compute the value of $x^3 - y^3$.
यदि $x - y = 25$ और $xy = 444$ है, तो $x^3 - y^3$ के मान की गणना करें।

SSC CPO 2024

[A] 48925

[B] 42985

[C] 28495

[D] 26725

