

CLASS 2 - SIMPLIFICATION**Question 1**

If $5.12 \times 50625 \times 0.5488 = 2^a 3^b 5^c 7^d$, then find the value of $a + b + c + d$.

[A] 17 [B] 23 [C] 12 [D] 14

$5.12 \times 50625 \times 0.5488 = 2^a 3^b 5^c 7^d$ எனில், $a + b + c + d$ இன் மதிப்பைக் காண்க.

[A] 17 [B] 23 [C] 12 [D] 14

$$\begin{array}{r}
 2 \overline{) 512} \\
 \underline{2 \ 856} \\
 2 \ 128 \\
 \underline{2 \ 64} \\
 2 \ 32 \\
 \underline{2 \ 16} \\
 2 \ 8 \\
 \underline{2 \ 4} \\
 2
 \end{array}
 \quad
 \begin{array}{r}
 5 \overline{) 50625} \\
 \underline{5 \ 10125} \\
 5 \ 2025 \\
 \underline{5 \ 405} \\
 5 \ 81 \\
 \underline{5 \ 405} \\
 3 \ 81 \\
 \underline{3 \ 27} \\
 3 \ 27 \\
 \underline{3 \ 9} \\
 3 \ 9 \\
 \underline{3 \ 0} \\
 0
 \end{array}$$

$$\begin{array}{r}
 2 \overline{) 5488} \\
 \underline{2 \ 2744} \\
 2 \ 1372 \\
 \underline{2 \ 686} \\
 2 \ 343 \\
 \underline{2 \ 171} \\
 1 \ 71 \\
 \underline{1 \ 71} \\
 0
 \end{array}
 \quad
 \begin{array}{r}
 2 \overline{) 10} \\
 \underline{2 \ 5} \\
 5
 \end{array}$$

$$5.12 \times 50625 \times 0.5488$$

$$= \frac{512}{100} \times 50625 \times \frac{5488}{10000}$$

$$= \frac{2^9}{10^2} \times 5^4 \times 3^4 \times \frac{2^4 \times 7^3}{10^4}$$

$$= 2^9 \times 2^{-2} \times 5^{-2} \times 5^4 \times 3^4 \times 2^4 \times 7^3 \times 2^{-4} \times 5^{-4}$$

$$= 2^7 \times 3^4 \times 5^{-2} \times 7^3$$

$$a + b + c + d = 7 + 4 - 2 + 3 = 12$$



CLASS 2 - SIMPLIFICATION**Question 2**

If $9^k + 3^{(2k-1)} = \frac{2}{3} [5^{(k+\frac{1}{2})} + 5^{(k-\frac{1}{2})}]$, then k is equal to:

- [A] $\frac{1}{2}$ [B] $\frac{5}{2}$ [C] $\frac{3}{2}$ [D] 1

$9^k + 3^{(2k-1)} = \frac{2}{3} [5^{(k+\frac{1}{2})} + 5^{(k-\frac{1}{2})}]$ எனில், k இன் மதிப்பு:

- [A] $\frac{1}{2}$ [B] $\frac{5}{2}$ [C] $\frac{3}{2}$ [D] 1

$$\frac{3^{2k}}{3} = \frac{5^k}{\sqrt{5}}$$

$$\frac{3^{2k-1}}{3} = \frac{5^{k-\frac{1}{2}}}{\sqrt{5}}$$

$$\frac{3^{2(k-\frac{1}{2})}}{3} = \frac{5^{k-\frac{1}{2}}}{\sqrt{5}}$$

$$9^{k-\frac{1}{2}} = 5^{k-\frac{1}{2}}$$

$$\left(\frac{9}{5}\right)^{k-\frac{1}{2}} = 1$$

$$\left(\frac{9}{5}\right)^{k-\frac{1}{2}} = \left(\frac{9}{5}\right)^0$$

$$k-\frac{1}{2} = 0$$

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

$$(3^2)^k + 3^{(2k-1)} = \frac{2}{3} [5^k \times 5^{\frac{1}{2}} + 5^k \times 5^{-\frac{1}{2}}]$$

$$3 [3^{2k} + 3^{2k} \cdot \frac{1}{3}] = 2 [5^k (\sqrt{5} + \frac{1}{\sqrt{5}})]$$

$$3^{2k+1} + 3^{2k} = 2 \times 5^k \times \frac{6}{\sqrt{5}}$$

$$3^{2k} (3+1) = \frac{12 \times 5^k}{\sqrt{5}}$$

$$\frac{3^{2k}}{3} \times 4 = \frac{12}{\sqrt{5}} \times 5^k$$

CLASS 2 - SIMPLIFICATION**Question 3**

If $3^{\frac{x^4+x^2+1}{x^2+x+1}} = 3^{(2x+5)}$, then find the positive value of x .

- [A] 6 [B] 5 [C] 4 [D] 8

$3^{\frac{x^4+x^2+1}{x^2+x+1}} = 3^{(2x+5)}$ எனில், x இன் நேர்மதிப்பைக் காண்க.

- [A] 6 [B] 5 [C] 4 [D] 8

$$\frac{x^4+x^2+1}{x^2+x+1} = 2x+5$$

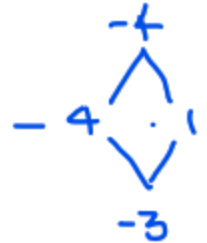
$$\frac{(x^2+x+1)(x^2-x+1)}{x^2+x+1} = 2x+5$$

$$x^2-x+1 = 2x+5$$

$$x^2-3x-4=0$$

$$x=4, -1$$

✓



CLASS 2 - SIMPLIFICATION**Question 4**

Find the value of the expression $\frac{0.079^2 + 0.25^2 + 3.37^2}{0.0079^2 + 0.025^2 + 0.337^2}$

- [A] 100 [B] 10000 [C] 699 [D] 3699

கீழ்க்கண்ட கோவையின் மதிப்பைக் காண்க: $\frac{0.079^2 + 0.25^2 + 3.37^2}{0.0079^2 + 0.025^2 + 0.337^2}$

- ✓ [A] 100 [B] 10000 [C] 699 [D] 3699

$$= \frac{1}{\frac{1}{10^2}}$$

$$= 100$$

$$\frac{0.079^2 + 0.25^2 + 3.37^2}{0.0079^2 + 0.025^2 + 0.337^2}$$

$$= \frac{0.079^2}{10^2} + \frac{0.25^2}{10^2} + \frac{9.37^2}{10^2}$$

$$= \frac{0.079^2}{10^2} + \frac{0.25^2}{10^2} + \frac{9.37^2}{10^2}$$



CLASS 2 - SIMPLIFICATION**Question 5**

Find the value of $\left\{ \frac{25 \times 4^{-4}}{5^{-3} \times 10 \times 4^{-8}} \right\} \div \left\{ \frac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}} \right\}$.

- [A] $\frac{73}{4}$ [B] $\frac{89}{6}$ [C] $\frac{149}{9}$ [D] $\frac{128}{5}$

பின்வருவனவற்றின் மதிப்பைக் காண்க: $\left\{ \frac{25 \times 4^{-4}}{5^{-3} \times 10 \times 4^{-8}} \right\} \div \left\{ \frac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}} \right\}$

- [A] $\frac{73}{4}$ [B] $\frac{89}{6}$ [C] $\frac{149}{9}$ [D] $\frac{128}{5}$

$$\begin{aligned}
 &= \frac{5^2 \times 2^{-8}}{5^{-3} \times 2 \times 5 \times 2^{-6}} \times \frac{5^{-7} \times 2 \times 5^{-5}}{3^{-5} \times 2 \times 5^{-5} \times 5^3} \\
 &= \frac{2^{-8}}{2} \times 5^3 \times 2^{-1} \times 5^{-1} \times 2^{16} \times 5^{-7} \times 5^5 \times 5^{-1} \\
 &= 2^7 \times 5^{-1} \\
 &= \frac{128}{5}
 \end{aligned}$$

$$\begin{array}{r}
 -8 \\
 -1 \\
 \hline
 -9 \\
 +16 \\
 \hline
 7
 \end{array}$$

CLASS 2 - SIMPLIFICATION**Question 6**

The value of $\frac{(0.66)^3 - (0.22)^3}{(0.66)^2 + 0.1452 + (0.22)^2}$ is:

[A] 0.44 [B] 100 [C] 1 [D] 0.88

$\frac{(0.66)^3 - (0.22)^3}{(0.66)^2 + 0.1452 + (0.22)^2}$ இன் மதிப்பு:

[A] 0.44 [B] 100 [C] 1 [D] 0.88

$$a = 0.66$$

$$b = 0.22$$

$$ab = \begin{array}{r} 0.66 \times 0.22 \\ \hline 132 \\ 132 \\ \hline 0.1452 \end{array}$$

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

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

$$= a - b$$

$$= 0.66 - 0.22$$

$$= 0.44$$





CLASS 2 - SIMPLIFICATION

$$a=3x, b=4z$$

Question 7

Simplify: $\frac{(3x)^3 - (4z)^3}{9x^2 + 12xz + 16z^2} \times (3x + 4z)$

[A] $9x^2 + 16z^2$ [B] $9x^2 - 16z^2$ [C] $\frac{1}{9x^2 - 16z^2}$ [D] $\frac{1}{9x^2 + 16z^2}$

எளிமையாக்குக: $\frac{(3x)^3 - (4z)^3}{9x^2 + 12xz + 16z^2} \times (3x + 4z)$

[A] $9x^2 + 16z^2$ [B] $9x^2 - 16z^2$ [C] $\frac{1}{9x^2 - 16z^2}$ [D] $\frac{1}{9x^2 + 16z^2}$

$$= \frac{a^3 - b^3}{a^2 + ab + b^2} \times 3x + 4z$$

$$= a - b$$

$$= (3x - 4z) \times (3x + 4z)$$

$$= (3x)^2 - (4z)^2 = 9x^2 - 16z^2$$

CLASS 2 - SIMPLIFICATION**Question 8**

If $5^{(x+y)} = 3125$ and $3^{(3x-y)} = 2187$, then the value of $41x - 32y$ is:

- [A] 57 [B] 53 [C] 59 [D] 55

$5^{(x+y)} = 3125$ மற்றும் $3^{(3x-y)} = 2187$ எனில், $41x - 32y$ இன் மதிப்பைக் காண்க.

- [A] 57 [B] 53 [C] 59 [D] 55

$$5^{(x+y)} = 5^5$$

$$x+y=5$$

$$y=5-x$$

$$y=5-3$$

$$\boxed{y=2}$$

$$3^{(3x-y)} = 3^7$$

$$3x-y=7$$

$$3x-5+x=7$$

$$4x=12$$

$$\boxed{x=3}$$

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$$\begin{array}{r} 3 \overline{) 8187} \\ \underline{3 729} \\ 3 243 \\ \underline{3 81} \\ 3 27 \\ \underline{3 9} \\ 3 \end{array}$$

$$\begin{array}{r} 5 \overline{) 3125} \\ \underline{5 625} \\ 5 125 \\ \underline{5 25} \\ 5 \end{array}$$

$$41x - 32y$$

$$41(3) - 32(2)$$

$$123 - 64 = 59$$



WATCH SOLUTION



800mas



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CLASS 2 - SIMPLIFICATION

Question 9

Find the value of $\frac{2}{3} \div \frac{12}{11}$ of $8\frac{1}{4} + 4\frac{1}{7} - 5\frac{1}{2} \times 1\frac{1}{7} + 5\frac{1}{3}$.

- [A] $\frac{389}{53}$ [B] $\frac{617}{189}$ [C] $\frac{511}{106}$ [D] $\frac{131}{17}$

பின்வருவனவற்றின் மதிப்பைக் காண்க: $\frac{2}{3} \div \frac{12}{11}$ of $8\frac{1}{4} + 4\frac{1}{7} - 5\frac{1}{2} \times 1\frac{1}{7} + 5\frac{1}{3}$.

- [A] $\frac{389}{53}$ [B] $\frac{617}{189}$ [C] $\frac{511}{106}$ [D] $\frac{131}{17}$

$$= \frac{2}{27} + \frac{29}{7} - \frac{11}{2} \times \frac{8}{7} + \frac{16}{3}$$

$$= \frac{2}{27} + \frac{29}{7} - \frac{44}{7} + \frac{16}{3}$$

$$= \frac{2}{27} - \frac{15}{7} + \frac{16}{3} = \frac{189}{189}$$

$$\frac{3}{12} \div \frac{3}{11} = 9$$

$$\frac{2}{3} \times \frac{1}{9} = \frac{2}{27}$$

$$\frac{63 \times 3}{189}$$

$$\begin{array}{r} 3 \overline{) 27.3} \\ \underline{9.71} \\ 9.71 \end{array}$$

9 x 7 x 3



CLASS 2 - SIMPLIFICATION

Question 10

Solve: $\frac{(112+99)^2 + (112-99)^2}{112 \times 112 + 99 \times 99}$

[A] 4 [B] 2 [C] 1 [D] 3

தீர்க்கவும்: $\frac{(112+99)^2 + (112-99)^2}{112 \times 112 + 99 \times 99}$

[A] 4 [B] 2 [C] 1 [D] 3

$$\begin{aligned} a &= 112, \quad b = 99 \\ &= \frac{(a+b)^2 + (a-b)^2}{a^2 + b^2} \\ &= \frac{a^2 + b^2 + 2ab + a^2 + b^2 - 2ab}{a^2 + b^2} \\ &= \frac{2(a^2 + b^2)}{a^2 + b^2} \\ &= 2 \end{aligned}$$

CLASS 2 - SIMPLIFICATION

Question 11

 $\rightarrow n+1 = 6$ $\rightarrow n = 5$

If $x = \sqrt{30 + \sqrt{30 + \sqrt{30 + \sqrt{30 + \dots \infty}}}}$ and $y = \sqrt{30 - \sqrt{30 - \sqrt{30 - \sqrt{30 - \dots \infty}}}}$, then what will the remainder be when the product of x and y is divided by 7?

- [A] 1 [B] 2 [C] 4 [D] 3

$30 < \begin{matrix} 5 = n \\ 6 = n+1 \end{matrix}$

$x = \sqrt{30 + \sqrt{30 + \sqrt{30 + \sqrt{30 + \dots \infty}}}}$ மற்றும் $y = \sqrt{30 - \sqrt{30 - \sqrt{30 - \sqrt{30 - \dots \infty}}}}$ எனில், x மற்றும் y இன்

பெருக்கற்பலனை 7ஆல் வகுக்கும்போது கிடைக்கும் மீதி என்ன?

- [A] 1 [B] 2 [C] 4 [D] 3

$$\frac{6 \times 5 = 30}{7} \quad \textcircled{2}$$

CLASS 2 - SIMPLIFICATION

Question 12

Solve: $\frac{(6.9)^3 + (2.8)^3 + (6.3)^3 - 3 \times 6.9 \times 2.8 \times 6.3}{(6.9)^2 + (2.8)^2 + (6.3)^2 - 3 \times 6.9 \times 2.8 \times 6.3}$

[A] 14 [B] 18 [C] 16 [D] 12

தீர்க்கவும்: $\frac{(6.9)^3 + (2.8)^3 + (6.3)^3 - 3 \times 6.9 \times 2.8 \times 6.3}{(6.9)^2 + (2.8)^2 + (6.3)^2 - 3 \times 6.9 \times 2.8 \times 6.3}$

[A] 14 [B] 18 [C] 16 [D] 12

$$a = 6.9, b = 2.8, c = 6.3$$

$$\frac{(6.9)^3 + (2.8)^3 + (6.3)^3 + 3 \times 6.9 \times 2.8 \times 6.3}{(6.9)^2 + (2.8)^2 + (6.3)^2 - 6.9 \times 2.8 - 2.8 \times 6.3 - 6.9 \times 6.3}$$

$$(6.9)^2 + (2.8)^2 + (6.3)^2 - 6.9 \times 2.8 - 2.8 \times 6.3 - 6.9 \times 6.3$$

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

$$= \frac{(a+b+c)(a^2 + b^2 + c^2 - ab - bc - ca)}{a^2 + b^2 + c^2 - ab - bc - ca}$$

$$= a + b + c = 6.9 + 2.8 + 6.3 = 16.0$$

