

Foundation Batch



MATHS

Simplification (सरलीकरण)

Part -2

LIVE

02-12-2024 07:00PM



एक छात्र को $\frac{\left(2\frac{1}{3} + 2\frac{1}{2} - \frac{1}{6}\right) \div 2\frac{1}{3} \times 5\frac{2}{3} \div 1\frac{2}{3}}{3\frac{1}{5} \div 4\frac{1}{2}} \text{ का } 4\frac{1}{4}$ का मान ज्ञात

करने के लिए कहा गया था। उसका उत्तर $\frac{6}{7}$ था। सही उत्तर और उसके उत्तर में क्या अंतर है ?

(a) $\frac{9}{14}$

(b) $\frac{5}{14}$

(c) $\frac{11}{49}$

(d) $\frac{6}{49}$

(2)

$$\left(\frac{7}{3} + \frac{5}{2} - \frac{1}{6}\right) \div \frac{7}{3} \times \frac{17}{3} \div \frac{5}{3} \text{ का } \frac{17}{4}$$

$$\left(\frac{14+15-1}{6}\right) \times \frac{3}{7} \times \frac{17}{3} \div \frac{85}{12}$$

4 :

$\frac{8}{51}$

5

(1) $\frac{16}{3} \div \frac{3}{2} \text{ का } \frac{8}{3} + \frac{16}{3} \times \frac{3}{4} \div \frac{8}{3}$

$$\frac{16}{3} \div 24 + \frac{16}{3} \times \frac{3}{4} \times \frac{3}{8}$$

$$\frac{16}{5} \times \frac{1}{24} + \frac{3}{24}$$

$$\frac{2}{15} + \frac{3}{2} = \frac{49}{30}$$

$\frac{6}{12} = \frac{8}{51}$

$\frac{240}{245} \frac{48}{49}$

$$-\frac{6}{7} \times \frac{7}{7}$$

$$\frac{18}{49} - \frac{42}{49}$$

$\frac{6}{49}$



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TYPE-III

14. The value of $99\frac{95}{99} \times 99 - 95$ is:

$99\frac{95}{99} \times 99 - 95$ का मान है :

(a) 9897

(b) 9993

(c) 9999

(d) 9801

$$\frac{9801 + 95}{99} \times 99 - 95$$

$$9801 + 95 - 95$$

$$= \underline{9801}$$

SSC MTS 09/08/2019 (Shift-I)

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

14. The value of $99\frac{95}{99} \times 99 - 95$ is:

$99\frac{95}{99} \times 99 - 95$ का मान है :

(a) 9897

(b) 9993

(c) 9999

(d) 9801

$$\begin{array}{r} 9900 \\ - 4 \\ \hline 9896 - 95 \\ \hline \underline{\underline{9801}} \end{array}$$

SSC MTS 09/08/2019 (Shift-I)

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



15. Simplify : सरलीकरण:

$$\underline{999} \frac{998}{999} \times \underline{999} + 999$$

A. 999997

B. 999998

C. 99998

D. 999994

$$\begin{array}{r} 999000 \\ - 1 \\ \hline 998999 + 999 \end{array}$$

$$= \underline{\underline{999998}}$$

$$9999 \frac{9997}{9999} \times 99$$

$$\begin{array}{r} 999900 \\ - 2 \\ \hline 999898 \\ \hline \hline \end{array}$$

$$2\frac{5}{7} = 2 + \frac{5}{7}$$

$$8+8+8 = 24$$

$$8 \times 3 = 24$$

$$1+2+3+4+\dots+n$$

$$= \frac{n(n+1)}{2}$$

$$70+70=140$$

$$70 \times 2 = 140$$

16. Find the value of $999\frac{1}{7} + 999\frac{2}{7} + 999\frac{3}{7} + 999\frac{4}{7} + 999\frac{5}{7} + 999\frac{6}{7}$ का मान क्या है?

~~(a) 5997~~

(b) 5979

(c) 5994

(d) 2997

$$999 + \frac{1}{7} + 999 + \frac{2}{7} + 999 + \frac{3}{7} + 999 + \frac{4}{7} + 999 + \frac{5}{7} + 999 + \frac{6}{7}$$

$$999 \times 6 + \frac{1+2+3+4+5+6}{7}$$

$$5994 + \frac{21}{7} = 3$$

$$\textcircled{5997}$$



17. Find the value of $\underline{777}\frac{1}{5} + \underline{777}\frac{2}{5} + \underline{777}\frac{3}{5} + 777\frac{4}{5}$

$777\frac{1}{5} + 777\frac{2}{5} + 777\frac{3}{5} + 777\frac{4}{5}$ का मान ज्ञात करें।

(a) 3000

(b) 3018

(c) 3108

(d) 3110

$$777 \times 4 + \frac{1+2+3+4}{5}$$

$$3108 + \frac{10}{2} = \underline{\underline{3110}}$$

(RRB NTPC 03/03/2021)



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TYPE-IV

18. Find the value of $4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4}}}}$.

$4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4}}}}$ का मान ज्ञात कीजिए।

(a) $\frac{2}{9}$

(b) $\frac{8}{3}$

(c) $\frac{1}{4}$

(d) $\frac{1}{8}$

$2 + \frac{1}{4} = \frac{9}{4}$

$3 + \frac{4}{9} = \frac{31}{9}$

$1 + \frac{9}{31} = \frac{40}{31}$

(RRB NTPC 11/02/2021)

$4 - \frac{155}{40} = \frac{160 - 155}{40} = \frac{5}{40} = \frac{1}{8}$

$$1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{3}{5}}}}$$

$$3 \quad 5 \quad 8 \quad 13 \quad \underline{21} \quad 34$$

$$\frac{34}{21}$$

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

$$\begin{array}{ccccccc} 2 & 3 & 5 & 8 & 13 & 21 & 34 \\ \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} & \underbrace{\quad} \\ + & + & + & + & + & + & + \\ & & & & & & \end{array} \quad \underline{\underline{55}}$$

$$\begin{array}{r} 55 \\ \hline 34 \end{array}$$

19. Simplify/ सरल बनाएं

$$\frac{19}{43} + \frac{1}{2 + \frac{1}{3 + \frac{1}{1 + \frac{1}{4}}}}$$

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

$$3 + \frac{4}{5} = \frac{19}{5}$$

$$2 + \frac{5}{19} = \frac{43}{19}$$

$$\frac{19}{43} + \frac{19}{43} = \frac{38}{43}$$

(a) 1

(b) $\frac{19}{43}$

(c) $\frac{43}{19}$

(d) $\frac{38}{43}$

20. Find the value of x in the following equation.

निम्न समीकरण में x का मान ज्ञात कीजिए।

$$\left[1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{5}}} \right] \div 1\frac{6}{11} = \frac{x}{2}$$

(a) 2

(b) $\frac{1}{2}$

(c) $\frac{2}{3}$

(d) 1

$$1 + \frac{5}{6} = \frac{11}{6}$$

$$1 + \frac{6}{11} = \frac{17}{11}$$

$$\frac{17}{11} \div \frac{17}{11} = \frac{x}{2}$$

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

$$x = 2$$

(RRB NTPC CBT-2, 17/06/2022)

21. Simplify the following.
निम्नलिखित को सरल कीजिए।

$$240 \div \frac{5}{1 \div \frac{4}{1 \div \frac{5}{1 \div 3}}}$$

Handwritten notes and corrections:

- $1 \div 15 = \frac{1}{15}$
- $1 \div 60 = \frac{1}{60}$
- $1 \div 3 = \frac{1}{3}$ (circled)

- (a) $\frac{4}{5}$
(b) $\frac{5}{4}$
(c) $\frac{3}{5}$
(d) $\frac{4}{3}$

(RRB NTPC 02/03/2021)

$$240 \div 300 = \frac{240}{300} = \frac{4}{5}$$



22. $\frac{1}{2a + \frac{1}{b + \frac{1}{4c}}} = \frac{9}{26}$ find $a + b + c = ?$

$$1 + 1 + 2 = 4$$

(a) 4

(b) 9

(c) 10

(d) 11

on comparing

$$2a = 2 \quad a = 1$$

$$b = 1$$

$$4c = 8 \quad c = 2$$

$$\frac{1}{\frac{26}{9}}$$

$$\frac{1}{2 + \frac{8}{9}}$$

$$\frac{1}{2 + \frac{1}{\frac{9}{8}}}$$

$$= \frac{1}{2 + \frac{1}{1 + \frac{1}{8}}}$$

25. If $\frac{1}{x + \frac{1}{y + \frac{2}{z + \frac{1}{4}}}} = \frac{29}{79}$, where x, y and z are natural numbers

then the value $(2x + 3y - z)$ is:

यदि If $\frac{1}{x + \frac{1}{y + \frac{2}{z + \frac{1}{4}}}} = \frac{29}{79}$, जहाँ x, y और z प्राकृतिक संख्याएँ हैं, तो

$(2x + 3y - z)$ का मान है:

- (a) 1 (b) 4
(c) 0
(d) 2

$$\frac{1}{\frac{29}{79}} = 2 + \frac{21}{29}$$

$$\frac{1}{y + \frac{2}{z + \frac{1}{4}}} = \frac{1}{\frac{29}{21}} = \frac{1}{1 + \frac{8}{21}}$$

$$\frac{21}{z + \frac{1}{4}} = \frac{4}{21}$$

$$21 = 4z + 1$$

$$4z = 20$$

$$z = 5$$



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TYPE-V

24. Find the value of the following.

निम्नलिखित का मान ज्ञात कीजिए।

$$\frac{1}{5 \times 8} + \frac{1}{8 \times 11} + \frac{1}{11 \times 14} + \frac{1}{14 \times 17}$$

(a) $\frac{4}{17}$

(b) $\frac{4}{85}$

(c) $\frac{24}{85}$

(d) $\frac{2}{85}$

(RRB NTPC 15/03/2021)

$$\frac{1}{5 \times 8} = \frac{1}{3} \times \left[\frac{1}{5} - \frac{1}{8} \right]$$

$$\frac{1}{8 \times 11} = \frac{1}{3} \left[\frac{1}{8} - \frac{1}{11} \right]$$

$$\frac{1}{11 \times 14} = \frac{1}{3} \left[\frac{1}{11} - \frac{1}{14} \right]$$

$$\frac{1}{14 \times 17} = \frac{1}{3} \left[\frac{1}{14} - \frac{1}{17} \right]$$

$$\frac{1}{3} \left[\frac{1}{5} - \cancel{\frac{1}{8}} + \cancel{\frac{1}{8}} - \cancel{\frac{1}{11}} + \cancel{\frac{1}{11}} + \cancel{\frac{1}{14}} - \frac{1}{17} \right]$$

$$\frac{1}{3} \left[\frac{1}{5} - \frac{1}{17} \right]$$

$$\frac{1}{3} \left[\frac{4}{85} \right]$$

$$= \frac{4}{85}$$

24. Find the value of the following.

निम्नलिखित का मान ज्ञात कीजिए।

$$\frac{\textcircled{1}}{\textcircled{5} \times \textcircled{8}} + \frac{\textcircled{1}}{\textcircled{8} \times \textcircled{11}} + \frac{\textcircled{1}}{\textcircled{11} \times \textcircled{14}} + \frac{\textcircled{1}}{\textcircled{14} \times \textcircled{17}}$$

(a) $\frac{4}{17}$

(b) $\frac{4}{85}$

(c) $\frac{24}{85}$

(d) $\frac{2}{85}$

formula

$$\frac{1}{\text{diff}} \times \left[\frac{1}{\text{first term}} - \frac{1}{\text{last term}} \right]$$

$$\frac{1}{3} \left[\frac{1}{5} - \cancel{\frac{1}{8}} + \cancel{\frac{1}{8}} - \cancel{\frac{1}{11}} + \cancel{\frac{1}{11}} + \cancel{\frac{1}{14}} - \frac{1}{17} \right]$$

$$\frac{1}{3} \left[\frac{1}{5} - \frac{1}{17} \right]$$

$\frac{4}{85}$

(RRB NTPC 15/03/2021)

25. What is the value of

$$\frac{1}{3 \times 7} + \frac{1}{7 \times 11} + \frac{1}{11 \times 15} + \dots + \frac{1}{899 \times 903}$$

$$\frac{1}{3 \times 7} + \frac{1}{7 \times 11} + \frac{1}{11 \times 15} + \dots + \frac{1}{899 \times 903} \text{ का मान क्या है?}$$

(a) $21/500$

(b) $18/403$

~~(c) $25/301$~~

(d) $29/31$

$$\frac{1}{\text{diff}} \left[\frac{1}{\text{1st}} - \frac{1}{\text{last}} \right]$$

$$\frac{1}{4} \left[\frac{1}{3} - \frac{1}{903} \right]$$

$$\frac{1}{4} \left[\frac{900 \times 25}{2709} \right] = \frac{25}{301}$$

SSC CGL (Tier-II) 19-02-2018

26. Which of the following statements is/are correct

निम्नलिखित में से कौन सा/से कथन सत्य है/हैं?

~~I.~~ $\frac{1}{1 \times 3} + \frac{1}{3 \times 5} + \frac{1}{5 \times 7} + \dots + \frac{1}{11 \times 13} = \frac{12}{13}$

II. $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{12 \times 13} = \frac{12}{13}$

(a) केवल I

(b) केवल II

(c) I तथा II दोनों

(d) न तो I न ही II

(I) $\frac{1}{2} \left[\frac{1}{1} - \frac{1}{13} \right]$

$\frac{1}{2} \left[\frac{12}{13} \right] = \frac{6}{13}$

(II) $\left[\frac{1}{1} - \frac{1}{13} \right]$
 $= \frac{12}{13}$

SSC CGL (Tier-II) 21-02-2018

27. Find the sum of/का योग ज्ञात करें

$$\left(1 - \frac{1}{n+1}\right) + \left(1 - \frac{2}{n+1}\right) + \left(1 - \frac{3}{n+1}\right) + \dots + \left(1 - \frac{n}{n+1}\right)$$

(a) n

(b) $\frac{1}{2}n$

(c) $(n + 1)$

(d) $\frac{1}{2}(n + 1)$



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