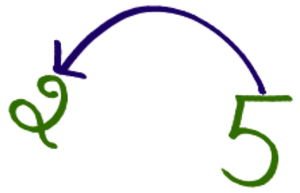
Ladder fraction

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{2}{5}}} = \cfrac{1}{1+\cfrac{1}{1+\cfrac{5}{7}}} = \cfrac{1}{1+\cfrac{7}{12}} = \cfrac{1}{\cfrac{19}{12}} = \frac{12}{19}$$



7 12 19

$= \frac{12}{19}$

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{4}{9}}}}}} = \frac{149}{92}$$

4 9 13 22 35 57 92 149

Dr Nr

$$\cfrac{1}{1-\cfrac{1}{1-\cfrac{1}{1-\cfrac{1}{1-\frac{3}{8}}}}} = \frac{-8}{-5} = \frac{8}{5}$$

$-$

3 8 5 −3 −8 −5

$$\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1-\cfrac{1}{1+\cfrac{1}{1-\cfrac{2}{7}}}}}} = \frac{19}{26}$$

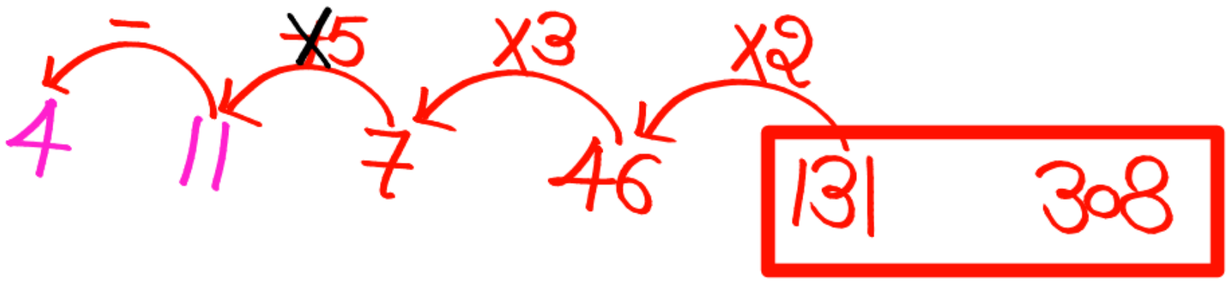
$-$

2 7 5 12 7 **19 26**

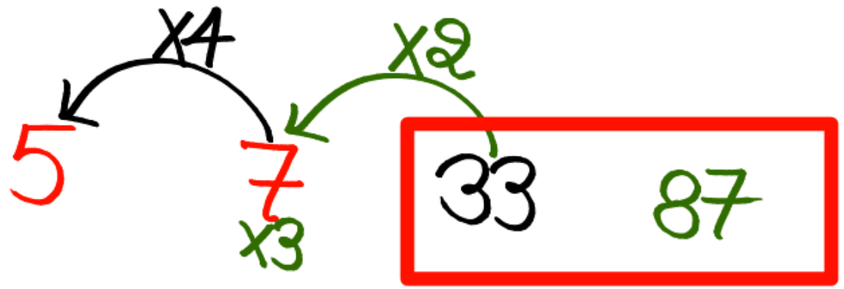
$$\frac{1}{2+\frac{1}{3+\frac{1}{4+\frac{1}{5}}}} = \frac{68}{157}$$

$1 \xleftarrow{\times 4} 5 \xleftarrow{\times 3} 21 \xleftarrow{\times 2}$ **68 157**

$$\cfrac{1}{2+\cfrac{1}{3-\cfrac{1}{5+\cfrac{1}{1-\cfrac{4}{11}}}}} = \frac{131}{308}$$



$$\frac{1}{2+\frac{3}{4+\frac{5}{7}}} = \frac{1}{2+\frac{3}{\frac{33}{7}}} = \frac{1}{2+\frac{7}{11}} = \frac{1}{\frac{29}{11}} = \frac{11}{29}$$



$\frac{33}{87}$

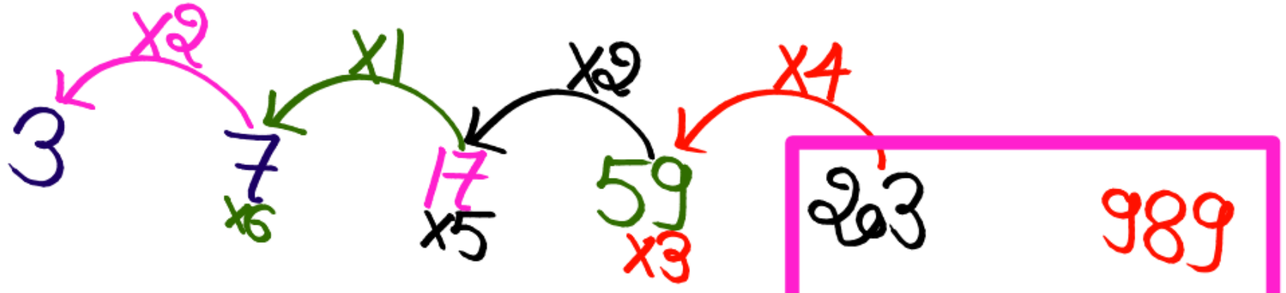
5 7

$7 \times 4 + 5 = 33$

$33 \times 2 + 7 \times 3 = 87$

Test RanKING

$$\cfrac{1}{4+\cfrac{3}{2+\cfrac{5}{1+\cfrac{6}{2+\cfrac{3}{7}}}}} = \frac{203}{989}$$



17+42

118+85

812+177

Test RanKING

134. $107 \times \cfrac{1}{2+\cfrac{3}{4+\cfrac{5}{2+\frac{1}{3}}}} = ?$

[A] 107

[B] $\frac{107}{43}$

[C] 43

[D] $\frac{43}{107}$

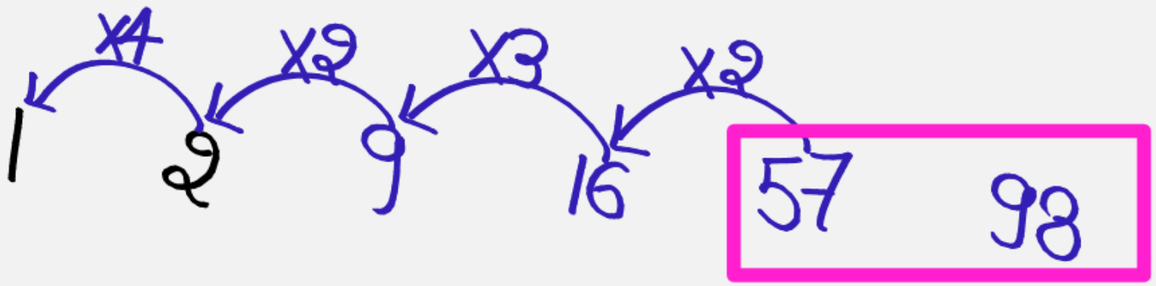
135. $\cfrac{1}{2-\cfrac{1}{3+\cfrac{1}{2-\cfrac{1}{4+\left(\frac{1}{2}\right)}}}} = ?$

[A] $\frac{16}{57}$

[B] $\frac{57}{98}$

[C] $\frac{19}{98}$

[D] $\frac{57}{16}$



136. $\cfrac{1}{2-\cfrac{1}{3-\cfrac{1}{2-\cfrac{1}{4-\frac{1}{2}}}}} = ?$

[A] $\frac{46}{29}$

[B] $\frac{29}{46}$

[C] $\frac{12}{29}$

[D] $\frac{7}{29}$

137. $\cfrac{1}{1+\cfrac{3}{1+\cfrac{4}{1+\cfrac{7}{1+\cfrac{1}{1+\frac{1}{3}}}}}} = ?$

[A] $\frac{41}{116}$

[B] $\frac{116}{25}$

[C] $\frac{116}{41}$

[D] $\frac{75}{41}$

138. *If* $x = \cfrac{1}{2+\cfrac{3}{4+\cfrac{5}{6+\cfrac{7}{8+\cfrac{9}{10}}}}}$, *then which one of the following is correct?*

यदि $x = \cfrac{1}{2+\cfrac{3}{4+\cfrac{5}{6+\cfrac{7}{8+\cfrac{9}{10}}}}}$, **तो निम्नलिखित में से कौन सा सही है?**

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

$\frac{1}{2+\text{कुछ}} = .5\downarrow$

(CDS-1 2024)

[A] $0<x<0.5$

[B] $x=0.5$

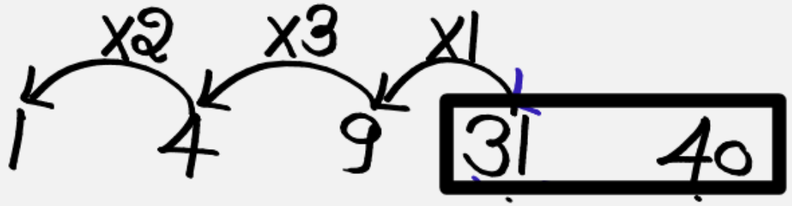
[C] $0.5<x<1.0$

[D] $x>1.0$

139. If $\left[4-\frac{5}{1+\frac{1}{3+\frac{1}{2+\frac{1}{4}}}}\right]^{th}$ part of a journey takes 10 minutes, then to complete $\frac{3}{5}$th of that journey, it will take

[A] 40 minutes
[B] 45 minutes
[C] 48 minutes
[D] 36 minutes

$= 16 \text{ min} \times \frac{3}{5}$



$4 - \frac{5}{\frac{8}{31}} = 4 - \frac{31}{8} = 1^{th}$ Journey $\rightarrow$ 10 min $\times 8$

140. *If a, b, c, d are integers such that* $\dfrac{1}{a+\dfrac{1}{b+\dfrac{1}{c+\dfrac{1}{d}}}} = \dfrac{1}{\dfrac{154}{29}}$ *then* $a + b + c + d = ?$

$5+3+4+2$

[A] 12 [B] 13

[C] 14 [D] 15

(V.V.V.V.imp)

$\dfrac{154}{29} = 5 + \left(\dfrac{9}{29}\right)$ (a = 5)

$\dfrac{29}{9} = 3 + \left(\dfrac{2}{9}\right)$ (b = 3)

$\dfrac{9}{2} = 4 + \dfrac{1}{2}$ (c = 4, d = 2)

29)154(5 a
145
9)29(3 b
27
d 2)9(4 c
8
1

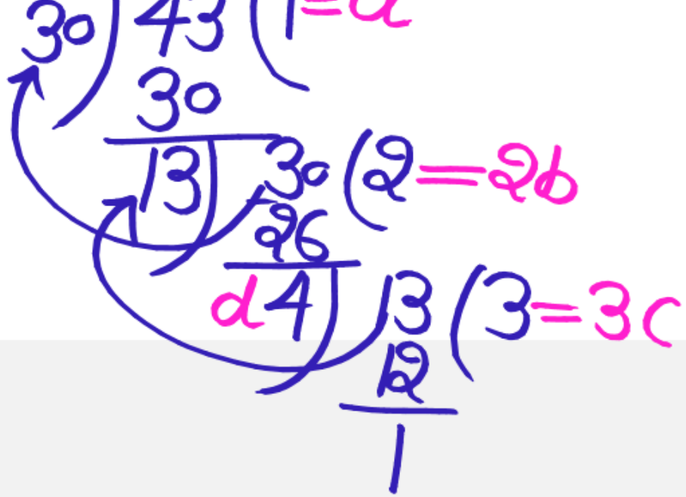
141. $If\ \cfrac{1}{a+\cfrac{1}{2b+\cfrac{1}{3c+\cfrac{1}{d}}}} = \frac{13}{43}\ then\ a + b + c + d = ?$

[A] 3

[B] 4

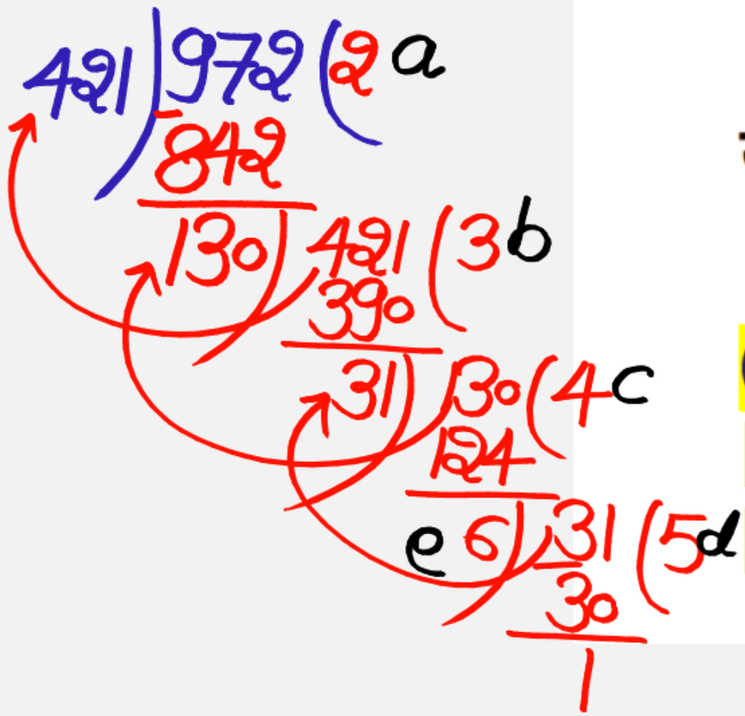
[C] 5

[D] 6



142. *If* $\cfrac{1}{a+\cfrac{1}{b+\cfrac{1}{c+\cfrac{1}{d+\frac{1}{e}}}}} = \frac{421}{972}$, *then what is the value of* $a \times b \times c \times d \times e$?

यदि $\cfrac{1}{a+\cfrac{1}{b+\cfrac{1}{c+\cfrac{1}{d+\frac{1}{e}}}}} = \frac{421}{972}$, **तो a×b×c×d×e का मान क्या है?**



$= 2 \times 3 \times 4 \times 5 \times 6$

(CDS-1 2024)

[A] 720 ✓ **[B]** 480

[C] 360 **[D]** 600

143. *If* $\frac{45}{53} = \cfrac{1}{a+\cfrac{1}{b+\cfrac{1}{c-\frac{2}{5}}}}$, *where a, b and c are positive integers, then what is the value of* $(4a - b + 3C)$?

यदि $\frac{45}{53} = \cfrac{1}{a+\cfrac{1}{b+\cfrac{1}{c-\frac{2}{5}}}}$ **है, जहां a, b और c धनात्मक पूर्णांक हैं, तो (4a – b + 3C) का मान ज्ञात कीजिए?**

$= 4 - 5 + 6$

(CGL MAINS 2020)

[A] 5 ✓

[B] 4

[C] 6

[D] 7

$$\frac{53}{45} = a + \frac{8}{45}$$

$$\frac{45}{8} = b + \frac{5}{8}$$

$$\frac{8}{5} = c - \frac{2}{5}$$

144. *If* $\cfrac{1}{x+\cfrac{1}{y+\cfrac{2}{z+\frac{1}{4}}}} = \frac{29}{79}$, *where x, y and z are natural numbers, then the value of* $(2x + 3y - z)$ *is:*

यदि $\cfrac{1}{x+\cfrac{1}{y+\cfrac{2}{z+\frac{1}{4}}}} = \frac{1}{\left(\frac{79}{29}\right)}$ है, जहां x, y और z प्राकृतिक संख्याए है, तो (2x + 3y – z) का मान ज्ञात कीजिए।

$4+3-5=2$

[A] 1
[B] 4
[C] 0
[D] 2

$$\frac{79}{29} = 2 + \left(\frac{21}{29}\right)$$

$$\frac{29}{21} = 1 + 2 \times \left(\frac{4}{21}\right)$$

$$\frac{21}{4} = 5 + \frac{1}{4}$$

#

$$\left(1+\frac{1}{2}\right)\cdot\left(1+\frac{1}{3}\right)\cdot\left(1+\frac{1}{4}\right)\cdots\cdots\left(1+\frac{1}{80}\right)=\frac{81}{2}$$

$$=\frac{3}{2}\times\frac{4}{3}\times\frac{5}{4}\times\cdots\times\frac{81}{80}$$

$$\left(1+\frac{1}{27}\right)\cdot\left(1+\frac{1}{28}\right)\cdots\cdots\times\left(1+\frac{1}{110}\right)=\frac{111}{27}=\frac{37}{9}$$

$$=\frac{28}{27}\times\frac{29}{28}\times\frac{30}{29}\times\cdots\times\frac{111}{110}$$

$$\left(1-\frac{1}{5}\right)\left(1-\frac{1}{6}\right)\left(1-\frac{1}{7}\right)\cdots\cdots\left(1-\frac{1}{75}\right)=?$$

$$=\frac{4}{5}\times\frac{5}{6}\times\frac{6}{7}\times 1\cdots\cdots\times\frac{74}{75}$$

$$=\frac{4}{75}\ \text{ans}$$

$$\left(1-\frac{1}{35^2}\right)\left(1-\frac{1}{36^2}\right)\cdots\cdots\left(1-\frac{1}{209^2}\right)=?$$

$$\left[\left(1+\frac{1}{35}\right)\left(1+\frac{1}{36}\right)\cdots\cdots\left(1+\frac{1}{209}\right)\right]\times\left[\left(1-\frac{1}{35}\right)\left(1-\frac{1}{36}\right)\cdots\cdots\left(1-\frac{1}{209}\right)\right]$$

$$= \frac{\overset{6}{\cancel{210}}}{\cancel{35}}\times\frac{34}{209}=\frac{204}{209}$$

145. $\left(1-\frac{1}{2^2}\right)\left(1-\frac{1}{3^2}\right)\left(1-\frac{1}{4^2}\right)-\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\text{-}\left(1-\frac{1}{120^2}\right)=?$

[A] $\frac{119}{240}$

[B] $\frac{119}{120}$

[C] $\frac{120}{240}$

[D] $\frac{121}{240}$ ✓

$$\left(1\pm\frac{1}{2}\right)\left(1\pm\frac{1}{3}\right)\cdots\cdots\cdots\left(1\pm\frac{1}{120}\right)$$

$$=\frac{121}{2}\times\frac{1}{120}$$

$$=\frac{121}{240}$$

146. *If* $\left(1-\frac{1}{2^2}\right)\left(1-\frac{1}{3^2}\right)\left(1-\frac{1}{4^2}\right) - - - - - - - - - - - - - \left(1-\frac{1}{N^2}\right) = \frac{85}{168}$, *then the value of N is :*

[A] 84

[B] 82

[C] 81

[D] 80

$$\left(1 \pm \frac{1}{2}\right) \times \left(1 \pm \frac{1}{3}\right) \cdots \cdots \left(1 \pm \frac{1}{N}\right)$$

$$= \frac{N+1}{2} \times \frac{1}{N}$$

$$= \frac{N+1}{2N} = \frac{85}{168}$$

$N = 84$

147. Solve the following $\left\{1-\frac{1}{37}\right\}\left\{1-\frac{2}{37}\right\}\ldots\ldots\ldots\ldots\left\{1-\frac{49}{37}\right\}\left\{1-\frac{50}{37}\right\}$ **?**

निम्नलिखित $\left\{1-\frac{1}{37}\right\}\left\{1-\frac{2}{37}\right\}\ldots\left\{1-\frac{37}{37}\right\}\ldots\left\{1-\frac{49}{37}\right\}\left\{1-\frac{50}{37}\right\}$ **को हल कीजिये?**

RRB NTPC 2021

[A] 1/111

[B] 0 ✓

[C] 3/74

[D] –19/185

148. *When simplified, the product* $\left(2-\frac{1}{3}\right)\left(2-\frac{3}{5}\right)\left(2-\frac{5}{7}\right)\ldots\left(2-\frac{997}{999}\right)$ *equals*

[A] $\frac{5}{999}$ **[B]** $\frac{5}{3}$

[C] $\frac{1001}{999}$ **[D]** $\frac{1001}{3}$

$$= \frac{5}{3} \times \frac{7}{5} \times \frac{9}{7} \times \ldots\ldots \times \frac{1001}{999}$$

149. *Find the value of* $\sqrt{(1+3+5\ldots\ldots+93)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)\ldots\ldots\left(1-\frac{1}{2209}\right)}$

[A] $\sqrt{2}$ [B] 4

[C] 2 [D] 3

$= \sqrt{47^2 \times \frac{2}{2209}}$

$= \sqrt{2}$

1–94

47 even 47 odd

(1+3+5+……93)

150. *Find the value of* $[999\frac{1}{7}+999\frac{2}{7}+999\frac{3}{7}+\cdots\ldots\ldots.999\frac{6}{7}$?

$[999\frac{1}{7}+999\frac{2}{7}+999\frac{3}{7}+\cdots\ldots\ldots.999\frac{6}{7}$ **का मान ज्ञात कीजिये?**

[A] 5994

[B] 5995

[C] 5997

[D] 5998