

KGS



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By :- P.K Sir

SIMPLIFICATION



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01.

Simplify :

$$1 + 2 + 3 + \dots + 999 + 1000 + 999 + \dots + 2 + 1$$

(a) 999000

(b) 1000000

(c) 999999

(d) 990000



02.

Simplify :

$$\sqrt{1 + 2 + 3 + \dots + 78 + 79 + 78 + \dots + 2 + 1} = ?$$

(a) 78

(b) 6084

(c) 79

(d) 6241



03.

$$\sqrt{1 + 2 + 3 + \dots + (x - 1) + x + (x - 1) + \dots + 2 + 1} = 169$$

Find the value of x .

(a) 169

(b) 13

(c) 144

(d) 12



04.

What is the value of

$$\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{4600 + \sqrt{540 + \sqrt{1280 + \sqrt{250 + \sqrt{36}}}}}}}}}}$$

(a) 69

(b) 68

(c) 70

(d) 72



05.

The value of $\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$ is:

$\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$ का मान है:

(a) 23.62

(b) 25

(c) 26

(d) 24.12



06.

$$x = \frac{(943 + 864)^2 - (943 - 864)^2}{(1886 \times 1728)} = ?$$

(a) 1

(b) 4

(c) 79

(d) 1789



07.

$\frac{5.75 \times 5.75 \times 5.75 + 3.25 \times 3.25 \times 3.25}{57.5 \times 57.5 + 32.5 \times 32.5 - 57.5 \times 32.5}$ is equal to :

(a) 0.009

(b) 0.0009

(c) 0.9

(d) 0.09



08.

If $N = 1 + 11 + 111 + 1111 + \dots + 111111111$, then what is the sum of the digit's of N ?

यदि $N = 1 + 11 + 111 + 1111 + \dots + 111111111$ हो, तो N के अंकों का योग क्या है ?

(a) 45

(b) 18

(c) 36

(d) 5



09.

$$\sqrt{121} + \sqrt{12321} + \dots + \sqrt{1234567654321} = ?$$

(a) 1234567

(b) 1234566

(c) 1234565

(d) None



10.

$$\left(1 - \frac{1}{2^2}\right) \left(1 - \frac{1}{3^2}\right) \left(1 - \frac{1}{4^2}\right) \dots \dots \left(1 - \frac{1}{120^2}\right) = \frac{n+1}{2n} = \frac{120+1}{2 \times 120} = \frac{121}{240}$$

(a) $\frac{119}{240}$

(b) $\frac{119}{120}$

(c) $\frac{120}{240}$

(d) $\frac{121}{240}$

10.

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

(a) $\frac{119}{240}$

(b) $\frac{119}{120}$

(c) $\frac{120}{240}$

(d) $\frac{121}{240}$

$$\left(1 + \frac{1}{2}\right) \times \left(1 + \frac{1}{3}\right) \times \left(1 + \frac{1}{4}\right) \times \dots \dots \dots \times \left(1 + \frac{1}{n}\right)$$

$$\frac{3}{2} \times \frac{4}{3} \times \frac{5}{4} \times \dots \dots \dots \times \frac{(n+1)}{n} = \frac{n+1}{2}$$

$$(1 - \frac{1}{2})(1 - \frac{1}{3})(1 - \frac{1}{4})(1 - \frac{1}{5}) \times \dots \times (1 - \frac{1}{n})$$

$$\cancel{\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \dots \times \frac{n-1}{n}} = \frac{1}{n}$$

$$\left[(1 + \frac{1}{2}) \times (1 + \frac{1}{3}) \times (1 + \frac{1}{4}) \dots \times (1 + \frac{1}{n}) \right] \times \left[(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times \dots \times (1 - \frac{1}{n}) \right]$$

$$(1 - \frac{1}{2^2}) \times (1 - \frac{1}{3^2}) \times (1 - \frac{1}{4^2}) \times \dots \times (1 - \frac{1}{n^2}) = \frac{n+1}{2} \times \frac{1}{n} = \frac{n+1}{2n}$$

11.

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

(a) 84

(b) 82

(c) 81

(d) 80

$$\left(1 - \frac{1}{2^2}\right)\left(1 - \frac{1}{3^2}\right)\left(1 - \frac{1}{4^2}\right) \times \dots \times \left(1 - \frac{1}{N^2}\right) = \frac{85}{168}$$

$$N+1 = 85$$

$$N = 84$$

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

$$2N = 168$$

$$N = \frac{168}{2} = 84$$



$$\left(1 - \frac{1}{2^2}\right) \left(1 - \frac{1}{3^2}\right) \left(1 - \frac{1}{4^2}\right) \left(1 - \frac{1}{5^2}\right) \times \dots \times \left(1 - \frac{1}{x^2}\right) = \frac{35}{68}$$

$$\frac{x+1}{2x} = \frac{35}{68} \Rightarrow x = 34$$

$$x^2 = 34^2 = 1156$$

12.

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

(a) $\frac{5}{999}$

(b) $\frac{5}{3}$

(c) $\frac{1001}{999}$

~~(d)~~ $\frac{1001}{3}$

$$\left(2 - \frac{1}{3}\right) \times \left(2 - \frac{3}{5}\right) \times \left(2 - \frac{5}{7}\right) \times \dots \times \left(2 - \frac{997}{999}\right)$$

~~$$\frac{5}{3} \times \frac{7}{5} \times \frac{9}{7} \times \dots \times \frac{1001}{999}$$~~

$$\frac{1001}{3}$$

13.

If $\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{4}\right)\left(1 + \frac{1}{6}\right)\left(1 + \frac{1}{8}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{5}\right)\left(1 - \frac{1}{7}\right) = 1 + \frac{1}{x}$, then what is the value of x ?

यदि $\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{4}\right)\left(1 + \frac{1}{6}\right)\left(1 + \frac{1}{8}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{5}\right)\left(1 - \frac{1}{7}\right) = 1 + \frac{1}{x}$ हो, तो x का मान क्या है ?

(a) 6

(b) 8

(c) 5

(d) 7

$$\frac{3}{2} \times \frac{5}{4} \times \frac{7}{6} \times \frac{9}{8} \times \frac{2}{3} \times \frac{4}{5} \times \frac{6}{7} = \frac{x+1}{x}$$

$$\frac{9}{8} = \frac{x+1}{x}$$

$$9x = 8x + 8$$

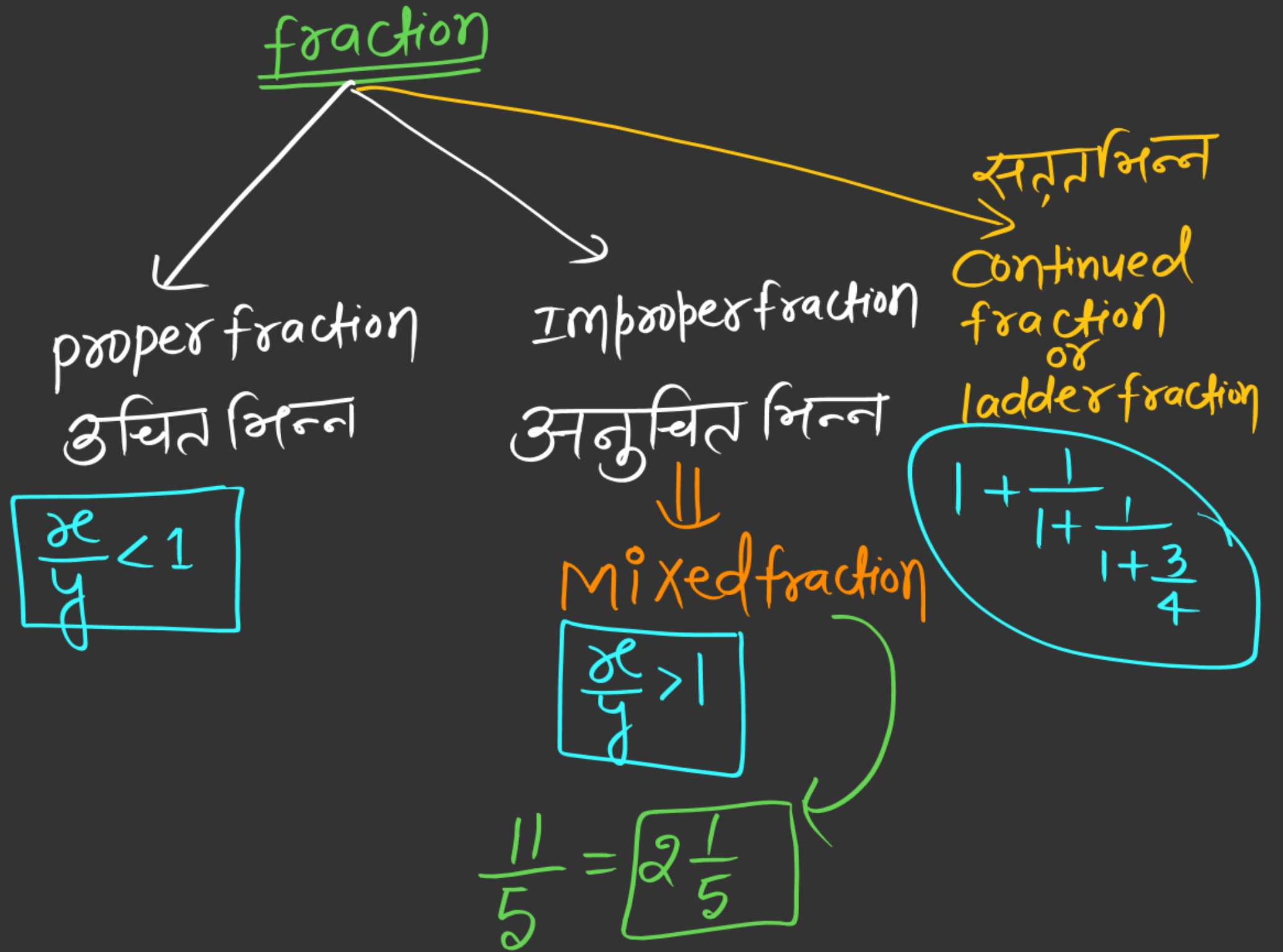
$$9x - 8x = 8$$

$$x = 8$$

fraction (भिन्न)

$x \rightarrow$ अंश
 $y \rightarrow$ हर

- (i) $\frac{7}{11} \rightarrow p$
- (ii) $\frac{11}{5} \rightarrow \text{Imp.}$
- (iii) $\frac{17}{13} \rightarrow \text{Imp.}$
- (iv) $\frac{19}{27} \rightarrow p$



$\frac{4}{5}$, $\frac{6}{7}$, $\frac{11}{12}$, $\frac{14}{15}$, $\frac{8}{7}$, $\frac{19}{20}$, $\frac{21}{22}$, $\frac{31}{32}$

एडन मिलन

$1 \frac{3}{4}$, $2 \frac{7}{9}$, $3 \frac{11}{14}$, $12 \frac{17}{29}$

$3 \times 12 = 36$ $7 \times 6 = 42$ $11 \times 4 = 44$ $17 \times 1 = 17$

$\frac{11}{14} \rightarrow$ एडन $\frac{17}{29} \rightarrow$ छोर

$1, 2, 3, 12 \xrightarrow{\text{Lcm}} 12$

$$\# \quad \frac{11}{13} \textcircled{2}, \quad \frac{19}{24} \textcircled{5}, \quad \frac{27}{35} \textcircled{8}, \quad \frac{4}{5} \textcircled{1}$$

$$\textcircled{220} \quad \textcircled{152} \quad \textcircled{135} \quad \textcircled{160}$$

$$2, 5, 8, 1 \xrightarrow{\text{LCM}} \boxed{40}$$

वडा भिन्न $\rightarrow \frac{11}{13}$

दशैय भिन्न $\rightarrow \frac{27}{35}$

$1 + \frac{1}{1 + \frac{1}{1 + \frac{4}{5}}} = \frac{9}{5}$

$1 + \frac{1}{1 + \frac{5}{9}} = \frac{14}{9}$

$1 + \frac{9}{14} = \frac{23}{14}$

II-method

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

4, 5

9 ✓

14 ✓

23 ✓

$\frac{23}{14}$ Ans.

$$1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{3}{4}}}}$$

3,4

✓
7

✓
11

✓
18

✓
29

✓
47

$$\frac{47}{29}$$

#

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

5,6

✓
11

✓
17

✓
28

✓
45

$$\frac{45}{28} \text{ Ans.}$$

$$\# \quad 1 - \frac{1}{1 - \frac{1}{1 - \frac{5}{7}}} = \frac{2}{7}$$

II-method

5, 7

$$7 - 5 = 2$$

$$2 - 7 = -5$$

$$-5 - 2 = -7$$

$$1 - \frac{1}{1 - \frac{7}{2}} = -\frac{5}{2}$$

$$1 + \frac{2}{5} = \frac{7}{5}$$

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

$$\# \quad \begin{array}{l} 1 - \frac{1}{1 - \frac{1}{1 - \frac{1}{1 - \frac{5}{8}}}} \end{array}$$

5, 8

$$\begin{array}{l} \checkmark \\ 8 - 5 \\ = \textcircled{3} \end{array} \quad \begin{array}{l} \checkmark \\ 3 - 8 \\ = \textcircled{-5} \end{array} \quad \begin{array}{l} \checkmark \\ -5 - 3 \\ = \textcircled{-8} \end{array} \quad \begin{array}{l} \checkmark \\ -8 - (-5) \\ -8 + 5 \\ = \textcircled{-3} \end{array}$$

$$\frac{+3}{+8} = \textcircled{3/8}$$

()

14.

The value of $4 - \frac{5}{1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4}}}}$ is

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

(b) $\frac{1}{64}$

(c) $\frac{1}{16}$

(d) $\frac{1}{32}$



15.

If $\frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{x}}}} = \frac{5}{8}$, then what is the value of x ?

यदि $\frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{x}}}} = \frac{5}{8}$ हो, तो x का मान क्या है ?

(a) 2

(b) 3

(c) 1

(d) 4



16.

$$\frac{1}{a + \frac{1}{b + \frac{1}{c + \frac{1}{d}}}} = \frac{29}{154}, \text{ then } a + b + c + d = ?$$

(a) 12

(b) 13

(c) 14

(d) 15



17.

If $(x + 7957 \times 7965)$ is a perfect square, then find the value of x ?

(a) 1

(b) 16

(c) 9

(d) 25



18.

$$(3+1)(3^2+1)(3^4+1)(3^8+1)(3^{16}+1) = ?$$

(a) $\frac{(3^{12}-1)}{2}$

(b) $\frac{(3^{16}-1)}{2}$

(c) $\frac{(3^{64}-1)}{2}$

(d) $\frac{(3^{128}-1)}{2}$



19.

The value of $(5 + 3 \div 5 \times 5) \div (3 \div 3 \text{ of } 6)$ of $(4 \times 4 \div 4 \text{ of } 4 + 4 \div 4 \times 4)$ is :

$(5 + 3 \div 5 \times 5) \div (3 \div 3 \text{ का } 6)$ का $(4 \times 4 \div 4 \text{ का } 4 + 4 \div 4 \times 4)$ का मान है—

(a) $8\frac{1}{5}$

(b) $7\frac{1}{3}$

(c) $9\frac{3}{5}$

(d) $6\frac{2}{3}$



20.

$24 \times 2 \div 12 + 12 \div 6$ of $2 \div (15 \div 8 \times 4)$ of $(28 \div 7$ of $5)$ is :

$24 \times 2 \div 12 + 12 \div 6$ का $2 \div (15 \div 8 \times 4)$ का $(28 \div 7$ of $5)$ का मान क्या है ?

(a) $4\frac{2}{3}$

(b) $4\frac{8}{75}$

(c) $4\frac{32}{75}$

(d) $4\frac{1}{6}$



21.

The simplified value of $3 \times 6 \div 4$ of $6 - 6 \div 2 \times (4 - 6) + 4 - 2 \times 3 \div 6$ of $\frac{1}{3}$ is:

$3 \times 6 \div 4$ of $6 - 6 \div 2 \times (4 - 6) + 4 - 2 \times 3 \div 6$ का $\frac{1}{3}$ का सरलीकृत मान है :



22. The value of $\frac{7 + 8 \times 8 \div 8 \text{ of } 8 + 8 \div 8 \times 4 \text{ of } 4}{4 \div 4 \text{ of } 4 + 4 \times 4 \div 4 - 4 \div 4 \text{ of } 2}$ is :

$\frac{7 + 8 \times 8 \div 8 \text{ of } 8 + 8 \div 8 \times 4 \text{ of } 4}{4 \div 4 \text{ of } 4 + 4 \times 4 \div 4 - 4 \div 4 \text{ of } 2}$ का मान है :

(a) 4.6

(b) 8.7

(c) 7.8

(d) 6.4

