MATHS

BOOKS - S CHAND IIT JEE FOUNDATION

FRACTIONS AND DECIMALS

Example

1. Evaluate $8 - 8 \times \dfrac{2\frac{1}{5} - 1\frac{2}{7}}{2 - \dfrac{1}{6 - \frac{1}{6}}}$

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2. The value of $\left(1 + \dfrac{1}{2}\right)\left(1 + \dfrac{1}{3}\right)\left(1 + \dfrac{1}{4}\right) \ldots \ldots \left(1 + \dfrac{1}{150}\right)$ is

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3. If $\dfrac{2x}{1 + \dfrac{1}{1 + \frac{x}{1-x}}} = 1$, then find the value of x .

4. If we multiply a fraction by itself and divide to product by its reciprocal, the fraction thus obtained is $18\dfrac{26}{27}$. What is the origianl fraction ?

5. The fluid cortained in a bucket can fill four large bottles or seven small bottles. A full large bottle is ussed to fill an empty small bottle. What fraction of the fluid is left over in the large battle when the small one is full ?

A. $\dfrac{2}{7}$

B. $\dfrac{3}{7}$

C. $\dfrac{4}{7}$

D. $\dfrac{5}{7}$

Answer: C

6. A man has divided his total money in his will in such a way that half of it goes to his wife, $\dfrac{2}{3}$ rd of the remaining among his three sons equally and the rest among his four daughters equally, if each daughter gets Rs 20,00 how much money will each son get ?

7. Simplify $\dfrac{\left(3\frac{2}{3}\right)^2 - \left(2\frac{1}{2}\right)}{\left(4\frac{3}{4}\right)^2 - \left(3\frac{1}{3}\right)^2} + \dfrac{3\frac{2}{3} - 2\frac{1}{2}}{4\frac{3}{4} - 3\frac{1}{3}}$

8. If 1.5x=0.04y then what is the value of $\dfrac{y - x}{y + x}$?

9. Evaluate : $\dfrac{(6.4)^2 - (5.4)^2}{(8.9)^2 + (8.9 \times 2.2) + (1.1)^2}$

10. The value of $\dfrac{(0.06)^2 + (0.47)^2 + (0.079)^2}{(0.006)^2 + (0.047)^2 + (0.0079)^2}$ is (a) 0.1 (b) 10 (c) 100 (d) 1000

11. The value of $\dfrac{3.157 \times 4126 \times 3.198}{63.972 \times 2835.121}$ is closest to (a) 0.002 (b) 0.02 (c) 0.2 (d) 2

A. 0.002

B. 0.02

C. 0.2

D. 2

Answer: B

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12. Which among the following numbers is the greates ?

$0.07 + \sqrt{0.16}, \sqrt{1.44}, 1.02$

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Questions Bank

1. The value of $\dfrac{2}{3} \times \dfrac{3}{\frac{5}{6} + \frac{2}{3}\text{of } 1\frac{1}{4}}$ is :

A. $\dfrac{1}{2}$

B. $\dfrac{2}{3}$

C. 1

D. $\dfrac{6}{5}$

Answer: D

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2. $\dfrac{3\frac{1}{4} - \frac{4}{5}\text{of}\frac{5}{6}}{4\frac{1}{3} / \frac{1}{5} - \left(\frac{3}{10} + 21\frac{1}{5}\right)} - \left(1\frac{2}{3}\text{of}1\frac{1}{2}\right)$ is equal to

A. 9

B. $11\dfrac{1}{2}$

C. 13

D. $15\dfrac{1}{2}$

Answer: C

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3. The value of $\dfrac{1\frac{1}{7} - \frac{2}{3} + \dfrac{\frac{2}{5}}{1-\frac{1}{25}}}{1 - \frac{1}{7}\left[\frac{1}{3} + \dfrac{\frac{2}{5}}{1-\frac{2}{5}}\right]}$ is $\dfrac{3}{4}$ (b) $\dfrac{24}{25}$ (c) 1 (d) $1\dfrac{1}{24}$

A. $\dfrac{3}{4}$

B. $\dfrac{24}{25}$

C. 1

D. $1\dfrac{1}{24}$

Answer: D

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4. Simplify: $\dfrac{1}{1 + \dfrac{\frac{2}{3}}{1+\frac{2}{3}+\dfrac{\frac{8}{9}}{1-\frac{2}{3}}}} \cdot \dfrac{11}{13}$ (b) $\dfrac{13}{15}$ (c) $\dfrac{13}{11}$ (d) $\dfrac{15}{13}$

A. $\dfrac{11}{13}$

B. $\dfrac{13}{15}$

C. $\dfrac{13}{11}$

D. $\dfrac{15}{13}$

Answer: B

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5. If $\dfrac{37}{13} = 2 \div \dfrac{1}{x + \dfrac{1}{y + \frac{1}{z}}}$, where x, y, z are natural numbers, then

x, y, z are (a) 1, 2, 5 (b) 1, 5, 2 (c) 5, 2, 11 (d) 11, 2, 5

A. 1,2,5

B. 1,5,2

C. 5,2,11

D. 11,2,5

Answer: B

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6. The sum of the first 35 terms of the series

$$\frac{1}{2} + \frac{1}{3} - \frac{1}{4} - \frac{1}{2} - \frac{1}{3} + \frac{1}{4} + \frac{1}{2} + \frac{1}{3} - \frac{1}{4}$$ is $-\frac{1}{2}$ (b) $-\frac{1}{4}$ (c) $\frac{1}{4}$ (e)

None of these

A. $\frac{1}{2}$

B. $-\frac{1}{4}$

C. $\frac{1}{3}$

D. $\frac{1}{4}$

Answer: C

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7. $\frac{17}{15} \times \frac{17}{15} + \frac{2}{15} \times \frac{2}{15} - \frac{17}{15} \times \frac{4}{15}$ is equal to (a) 0 (b) 1 (c) 10 (d) 11

A. 0

B. 1

C. 10

D. 11

Answer: B

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8. $\left(4\dfrac{11}{15} + \dfrac{15}{71} \right)^{2} - \left(4\dfrac{11}{15} - \dfrac{15}{71} \right)^{2}$ is equal to

A. 1

B. 2

C. 3

D. 4

Answer: D

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9. The square root of $\dfrac{\left(3\frac{1}{4}\right)^4 - \left(4\frac{1}{3}\right)^4}{\left(3\frac{1}{4}\right)^2 - \left(4\frac{1}{3}\right)^2}$ is

A. $7\dfrac{1}{2}$

B. $5\dfrac{5}{12}$

C. $1\dfrac{1}{12}$

D. $1\dfrac{7}{12}$

Answer: B

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10. The expression $\dfrac{3}{4} + \dfrac{5}{36} + \dfrac{7}{144} + \quad + \dfrac{17}{5184} + \dfrac{19}{8100}$ is equal to (a) 0.9 (b) 0.95 (c) 0.99 (d) 1.91

A. 0.95

B. 1

C. 0.99

D. 0.98

Answer: C

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11.

$$\left[\left(1 + \frac{1}{10 + \frac{1}{10}}\right) \times \left(1 + \frac{1}{10 + \frac{1}{10}}\right) - \left(1 - \frac{1}{10 + \frac{1}{10}}\right) \times \left(1 - \frac{1}{10 + \frac{1}{10}}\right)\right]$$

simplifies to

A. $\dfrac{100}{101}$

B. $\dfrac{90}{101}$

C. $\dfrac{20}{101}$

D. $\dfrac{101}{100}$

Answer: C

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12. A student was asked to simplify the following : $\dfrac{\frac{3}{1.6} + \frac{5}{3.2}}{\frac{5}{4.8} + \frac{1}{9.6}}$

His answer was $3\dfrac{1}{5}$. Find the per cent error in the answer

A. 10 %

B. 20 %

C. $\dfrac{20}{3}$ %

D. 30 %

Answer: C

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13. In a school $\dfrac{3}{7}$ of the students are girls and the rest are boys. $\dfrac{1}{4}$ of the boys are below ten years of age and $\dfrac{5}{6}$ of the girsl are also below ten years of age. If the number of students above tne years of age is 500, find the total number of students in the school.

A. 600

B. 1000

C. 900

D. 1100

Answer: B

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14. A man first sold $\frac{2}{3}rd$ of his total quantity of rice. Again he sold $\frac{1}{2}$ of the remaining quantity. If the total remaining quantity of the stock is 150 kg. Then, what was the original stock of rice ?

A. 2100 kg

B. 900 kg

C. 2400 kg

D. 2000 kg

Answer: B

15. The value of $1 - \dfrac{1}{20} + \dfrac{1}{20^2} - \dfrac{1}{20^3} + \text{.......}$ till 5th term is

A. 1.05

B. 0.95238

C. 0.95239

D. 10.5

Answer: B

16. $\left(\dfrac{1}{1 \times 4} + \dfrac{1}{4 \times 7} + \dfrac{1}{7 \times 10} + \dfrac{1}{10 \times 13} + \dfrac{1}{13 \times 16} \right) = ?$

A. $\dfrac{1}{3}$

B. $\dfrac{5}{16}$

C. $\dfrac{3}{8}$

D. $\dfrac{41}{7280}$

Answer: B

17. If $\dfrac{a}{b} = \dfrac{1}{3}$, $\dfrac{b}{c} = 2$, $\dfrac{c}{d} = \dfrac{1}{2}$, $\dfrac{d}{e} = 3$ and $\dfrac{e}{f} = \dfrac{1}{4}$, then what is the value of $\dfrac{abc}{def}$? $\dfrac{1}{4}$ (b) $\dfrac{3}{4}$ (c) $\dfrac{3}{8}$ (d) $\dfrac{27}{4}$ (e) $\dfrac{27}{8}$

A. $\dfrac{3}{8}$

B. $\dfrac{27}{8}$

C. $\dfrac{3}{4}$

D. $\dfrac{27}{4}$

Answer: A

18. Evaluate : $515.15 - 15.51 - 1.51 - 5.11 - 1.11$

A. 491.91

B. 419.91

C. 499.19

D. 411.19

Answer: A

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19. Simplify : $12.28 \times 1.5 - 36 + 24$

A. 3.24

B. 3.42

C. 4.32

D. 4.23

Answer: B

20. Which of the following is equal to 1? $\dfrac{(0.11)^2}{(1.1)^2 \times 0.1}$ (b) $\dfrac{(1.1)^2}{11^2 \times (0.01)^2}$ (c) $\dfrac{(0.011)^2}{(1.1)^2 \times (0.01)^2}$ (d) $\dfrac{(0.11)^2}{11^2 \times 0.01}$

A. $\dfrac{(0.11)^2}{(1.1)^2 \times 0.1}$

B. $\dfrac{(1.1)^2}{11^2 \times (0.01)^2}$

C. $\dfrac{(0.11)^2}{1.1^2 \times 0.012}$

D. $\dfrac{(0.11)^2}{11^2 \times 0.01}$

Answer: C

21. When the number $N = 0.73\overline{545}$ is written as a fraction in its lowest terms, the denominator exceeds the numerator by

A. 199

B. 291

C. 109

D. 219

Answer: B

22. What is the value of $(7.5 \times 7.5 + 37.5 + 2.5 \times 2.5)$?

A. 30

B. 60

C. 80

D. 100

Answer: D

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23. Evalaute $0.\overline{14} + 0.\overline{19}$

A. $\dfrac{1}{2}$

B. $\dfrac{1}{3}$

C. 2

D. 10

Answer: B

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24. If $1^3 + 2^3 + \text{.......} + 9^3 = 2025$, then the approximate value of $(0.11)^3 + (0.22)^3 + \text{.....} + (0.99)^3$ is

A. 0.2695

B. 0.3695

C. 2.695

D. 3.695

Answer: C

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25. $\dfrac{5.42 \times 6 + 5.42 \times 24}{32.71 \times 32.71 - 27.29 \times 27.29} + \dfrac{6.54 \times 6.54 - 3.46 \times 3.46}{3.08 \times 5 + 3.08 \times 45}$ is

equal to

A. 0.3

B. 0.4

C. 0.7

D. 2.5

Answer: D

26. The value of $\dfrac{(67.542)^2 - (32.458)^2}{75.458 - 40.374}$ is (a) 1 (b) 10 (c) 100 (d) None of these

A. 1

B. 10

C. 100

D. 0.1

Answer: C

27. The value of $\left(\dfrac{0.1 \times 0.1 \times 0.1 + 0.02 \times 0.02 \times 0.02}{0.2 \times 0.2 \times 0.2 + 0.04 \times 0.04 \times 0.04}\right)$ is (a) 0.0125 (b) 0.125 (c) 0.25 (d) 0.5

A. 0.0125

B. 0.125

C. 0.25

D. 0.5

Answer: B

28. $\sqrt{(0.798)^2 + 0.404 \times 0.798 + (0.202)^2} + 1$ is equal to

A. 0

B. 2

C. 1.596

D. 0.404

Answer: B

29. Which of the followinig numbers is the least ?

$(0.5)^2$, $\sqrt{0.49}$, $\sqrt[3]{0.008}$, 0.23

A. $(0.5)^2$

B. $\sqrt{0.49}$

C. $\sqrt[3]{0.008}$

D. 0.23

Answer: C

30. The value of $\dfrac{489.\,1375 \times 0.\,0483 \times 1.\,956}{0.\,0873 \times 92.\,581 \times 99.\,749}$ is closest to (a) 0.006 (b) 0.06 (c) 0.6 (d) 6

A. 0.006

B. 0.06

C. 0.6

D. 6

Answer: B

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1. If $4\dfrac{1}{a} \times b\dfrac{2}{3} = 7$ find the values of a and b.

A. 1,5

B. 2,3

C. 3,2

D. 5,1

Answer: D

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2. Simplify : $\dfrac{4\frac{1}{7} - 2\frac{1}{4}}{3 + \frac{1}{2} + 1\frac{1}{7}} + \dfrac{1}{2 + \dfrac{1}{2 + \frac{1}{5 - \frac{1}{5}}}}$

A. 0

B. -1

C. $3\dfrac{1}{24}$

D. $\dfrac{53}{65}$

Answer: D

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3. Find the number of which when multiplied by $\dfrac{0.16 \times 0.025}{0.4 \times 0.05}$ yields the product 20 ?

A. 25

B. 100

C. 80

D. 200

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4. The value of $0.\bar{2} + 0.\bar{3} + 0.\bar{4} + 0.\bar{9} + 0.\overline{39}$ is

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5. If $8.8 - \left\{5\dfrac{1}{2} - \left(7\dfrac{1}{2} + 2.8 + x\right)\right\} \times 4.25 + (0.2)^2 = 306$ the value of x is

A. 1.75

B. 3.5

C. 7

D. 1.4

Answer: B

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6. A student was asked to simplify

$$\frac{0.6 \times 0.6 \times 0.6 + 0.5 \times 0.5 \times 0.5 + 0.1 \times 0.1 \times 0.1 - 0.09}{0.6 \times 0.6 + 0.5 \times 0.5 + 0.1 \times 0.1 - 0.41}$$

and his answer was 0.6 By what per cent was his answer wrong.

A. 25%

B. 100%

C. 50%

D. 120%

Answer: C

7. The simplest value of $\dfrac{\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{3}\right)\left(1 + \frac{1}{4}\right).... \left(1 + \frac{1}{50}\right)}{\left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)..... \left(1 - \frac{1}{50}\right)}$ is

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8. $\dfrac{(0.22)^3 + (0.11)^3 + (0.32)^3}{(0.66)^3 + (0.96)^3 + (0.33)^3} + \dfrac{(0.32)^3 + (0.45)^3 - (0.77)^3}{81(0.32)(0.45)(0.77)}$ equals

A. 1

B. $\dfrac{1}{11}$

C. 0

D. -1

Answer: C

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9. The value of

$$\left(1 - \frac{1}{3^2}\right)\left(1 - \frac{1}{4^2}\right)\left(1 - \frac{1}{5^2}\right)..\left(1 - \frac{1}{11^2}\right)\left(1 - \frac{1}{12^2}\right)$$ is $\frac{11}{20}$ (b) $\frac{13}{15}$

(c) $\frac{13}{18}$ (d) $\frac{15}{16}$ (e) None of these

A. $\frac{17}{18}$

B. $\frac{13}{18}$

C. $\frac{1}{144}$

D. $\frac{1}{9}$

Answer: B

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10. A student was asked to simplify the following :

$$\frac{7}{5 - 2\frac{2}{3}} + \frac{3 - \frac{2}{3 - 1\frac{1}{2}}}{4 - 1\frac{1}{2}} - \frac{5}{7} \times \left[\frac{7}{10} + 1\frac{1}{5} \times \frac{3\frac{1}{3} - 2\frac{1}{2}}{2\frac{5}{21} - 2}\right] + \frac{\frac{3}{1.6} + \frac{5}{3.2}}{\frac{5}{4.8} + \frac{1}{9.6}}$$

His answer was $3\frac{1}{5}$. His answer was $3\frac{1}{5}$. Find the per cent error.

A. 10 %

B. 20 %

C. 25 %

D. 50 %

Answer: B

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