OPERATIONS ON FRACTIONS

Class: VI, Mathematics

(1)

(F)

SOLUTIONS

TEACHING TASK

01. Anu eats $\rightarrow \frac{7}{16}$

Teja eats $\rightarrow \frac{1}{4} \times \frac{4}{4} = \frac{4}{16}$

Cake left $= 1 - \left(\frac{7}{16} + \frac{4}{16}\right) = \frac{5}{16}$

Ans: A

02 $\left(\frac{10}{5} \times \frac{3}{6}\right) + \left(\frac{2}{3} \times \frac{6}{2}\right) - \frac{8}{4}$ of $\frac{14}{7}$

$= \left(2 \times \frac{1}{2}\right) + (2) - 2$ of $\frac{14}{7}$

$= 1 + 2 - 2$ of $\frac{14}{7}$

$= 1 \times 2$

$= 2$

Ans: —

03 $\left[\frac{5}{4} + \left(\frac{6}{10} \times \frac{5}{4}\right) - \left(\frac{3}{4} \times \frac{4}{6}\right) + \frac{1}{2}\right]$ of $\frac{3}{4}$

$= \left[\frac{5}{4} + \frac{3}{4} - \frac{1}{2} + \frac{1}{2}\right]$ of $\frac{3}{4}$

$= [2] \times \frac{3}{4} = \frac{3}{2}$

Ans: D

04 $12\frac{1}{2} + 12\frac{1}{3} + 12\frac{1}{6}$

$= \frac{25}{2} + \frac{37}{3} + \frac{73}{6}$

$= \frac{75 + 74 + 73}{6}$

$= \frac{222}{6} = 37$

Ans: B

05- $\dfrac{2x}{1+\dfrac{1}{1+\dfrac{x}{1-x}}} = 1$

$= \dfrac{2x}{1+\dfrac{1}{\dfrac{1-x+x}{1-x}}} = 1$

$= \dfrac{2x}{1+\dfrac{1-x}{1}} = 1$

$= \dfrac{2x^2}{x+1-x} = 1$

$\Rightarrow x^2 =$

$\Rightarrow \dfrac{2x}{2-x} = 1$

$\Rightarrow 2x = 2-x$

$\Rightarrow 3x = 2$

$\Rightarrow x = \frac{2}{3}$ Ans: C

(2)

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06 $3\frac{3}{5} = \frac{18}{5} = 3.6$

$2\frac{4}{7} = \frac{18}{7} = 2.5$

$\frac{19}{6} = 3.1$

$\frac{18}{8} = 2.2$

Greatest $= 3.6 = \frac{18}{5}$

Smallest $= 2.2 = \frac{18}{8} = \frac{9}{4}$

Diffrence $= \frac{18}{5} - \frac{9}{4}$

$= \frac{27}{20}$ Ans: A

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07 $\left(\frac{2}{5} + \frac{3}{5}\right) \div \left(\frac{7}{5} - \frac{4}{10}\right)$

$= \left(\frac{5}{5}\right) \div \left(\frac{14-4}{10}\right)$

$= 1 \div \frac{10}{10} = 1 \div 1 = 1$ Ans. A

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08 $3\frac{1}{4} + \frac{1}{2} \div \frac{3}{4} - \frac{1}{2} \times 3\frac{1}{2}$

$= \frac{13}{4} + \frac{1}{2} \div \frac{3}{4} - \frac{1}{2} \times \frac{7}{2}$

$= \frac{13}{4} + \frac{1}{2} \times \frac{4}{3} - \frac{7}{4}$

$= \frac{13}{4} + \frac{2}{3} - \frac{7}{4}$

$= \frac{13}{6}$

$= 2\frac{1}{6}$

Ans: A

09 $a = 6\frac{2}{3} = \frac{20}{3}$ (3)

Area $= a^2 = \left(\frac{20}{3}\right)^2 = \frac{400}{9} = 45\ mt^2$ (approx)

Ans. B

10 $\frac{20}{3} \times x = \frac{145}{7}$

$x = \frac{\cancel{145}^{29}}{7} \times \frac{3}{\cancel{20}_{4}} = \frac{87}{28}$

Ans. D

11 $2\frac{3}{5} = \frac{13}{5}$

Total time $= \frac{13}{5} + \frac{1}{4}$

$= \frac{52+5}{20} = \frac{57}{20} = 2\frac{17}{20}$ hr

20) 57 (2
40
17

Ans: A, C

12 $\frac{\left(\frac{2}{3} + \frac{5}{6}\right)}{2} = \frac{\left(\frac{4+5}{6}\right)}{2} = \frac{9}{\frac{6}{2} \times 2} = \frac{3}{4}$

Also $\frac{2}{5}$ and $\frac{5}{6}$

$\Rightarrow \frac{2}{5} \times \frac{6}{6}$ and $\frac{5}{6} \times \frac{5}{5}$

$= \frac{12}{30}$ and $\frac{25}{30}$

clearly $\frac{12}{30} < \frac{7}{10} \times \frac{3}{3} < \frac{25}{30}$: opt: B

Ans: A, B

13 Statement I: $\frac{8}{25} + \frac{9}{25} + \frac{10}{25} = \frac{8+9+10}{25} = \frac{27}{25}$ (True)

Statement II: Conceptual (True)

Ans. A

14 Statement I: $\frac{24}{25} \times \frac{5}{8} = \frac{3}{5}$ (False) (4)

Statement II: Conceptual (True)

Ans: D

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15 12 Chocolates = $\frac{4}{6} \times 216 = 144$ kg

$\therefore$ 1 Chocolate = $\frac{144}{12} = 12$ kg

$\therefore$ 15 Chocolates = 12×15

$= 180$ kg

$36 \times 4 = 144$

$15 \times 12 = 180$

Ans: 3

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16 $\frac{9}{2} + \frac{\frac{3}{2} \times \frac{42}{6}}{\frac{5}{3} \times \frac{6}{5}} - 1$

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

$= \frac{9+1-2}{2} = \frac{8}{2} = 4$

Ans: 4

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17 a) $9\frac{3}{4} + 7\frac{7}{6} + 3\frac{5}{12}$

$= \frac{39}{4} + \frac{49}{6} + \frac{41}{12}$

$= \frac{117+98+41}{12}$

$= \frac{256}{12} = 21\frac{1}{3}$

b) $3\frac{1}{4} - 1\frac{5}{6} + 2\frac{3}{8}$

$= \frac{13}{4} - \frac{11}{6} + \frac{19}{8}$

$= \frac{78-44+57}{24} = \frac{91}{24} = 3\frac{19}{24}$

c) $9\frac{5}{14} - 6\frac{8}{21} + \frac{25}{42}$

$= \frac{131}{14} - \frac{134}{21} + \frac{25}{42}$

$= \frac{393-268+25}{42}$

$= \frac{150}{42} = 3\frac{4}{7}$

d) $2\frac{1}{8} - \frac{7}{12} - \frac{23}{24}$

$= \frac{17}{8} - \frac{7}{12} - \frac{23}{24}$

$= \frac{51-14-23}{24}$

$= \frac{14}{24} = \frac{7}{12}$

Ans: Q, P, R, S

LEARNERS TASK

01. $\frac{\cancel{15}^{3}}{\cancel{7}} \times \frac{\cancel{28}^{4}}{\cancel{45}_{\cancel{9}}} = \frac{12}{\cancel{9}_{3}} = \frac{4}{3}$ Ans: B

02 $\frac{80}{9} \times \frac{7}{16} = \frac{x}{9}$

$\Rightarrow x = 35$ Ans: A

03 $\frac{9}{8} - x = \frac{39}{56}$

$\Rightarrow x = \frac{9}{8} - \frac{39}{56}$

$= \frac{63-39}{56} = \frac{\cancel{24}^{3}}{\cancel{56}_{7}} = \frac{3}{7}$ Ans: C

63
39
24

04 2 hours = $\frac{30}{4}$ km

4 hours = $2 \times \frac{30}{4} = 15$ km Ans: B

05 fraction of ground left = $1 - \frac{2}{3} = \frac{1}{3}$ Ans: A

06 $\frac{x}{y} \times \frac{7}{y} * \frac{y}{z} \times \frac{y}{z} = \frac{x}{z}$

Ans: C

07 $\frac{5}{3}$

Ans: C

08 $\frac{\left(\frac{16}{5}\right)}{2} = \frac{8}{5} = 1\frac{3}{5}$ Ans: D

09 $\frac{3}{8} \times 24 = 9$ lit Ans: B

10. $\frac{1}{2}+\frac{1}{x}=2$

$\Rightarrow \frac{1}{x}=2-\frac{1}{2}=\frac{3}{2} \quad \therefore x=\frac{2}{3}$

Ans: A

JEE MAINS LEVEL

01. ~~left $= 1-\left(\frac{1}{7}+\frac{2}{7}\right)=1-\frac{3}{7}=\frac{4}{7}$~~

01 left $= 1-\left(\frac{2}{3}+\frac{1}{5}\right)$

$= 1-\left(\frac{10+3}{15}\right)$

$= 1-\frac{13}{15}=\frac{2}{15}$

Ans: C

02 Ravi has $= 1-\left(\frac{1}{7}+\frac{2}{7}\right)=1-\frac{3}{7}=\frac{4}{7}$ Ans: D

03 total $= \frac{1}{8}+\frac{3}{4}$

$= \frac{1+6}{8}=\frac{7}{8}$

Ans: A

04 opt: c: $\frac{5}{8}+\frac{3}{4}$

$= \frac{5+6}{8}=\frac{13}{8}=1\frac{5}{8}$

$8\overline{)13}\,(1$
$\underline{8}$
5

Ans: C

05 $\frac{4}{10}+\frac{5}{100}+\frac{7}{1000}$

$=\frac{400+50+7}{1000}=\frac{457}{1000}$

Ans: C

06 $4\frac{1}{5}-\left[3\frac{1}{3}-\left\{2\frac{1}{2}-\left(\frac{1}{3}+\frac{1}{6}-\frac{1}{12}\right)\right\}\right]$

~~$\frac{21}{5}-\left[\frac{10}{3}-\left\{\frac{5}{2}-\left(\frac{5}{12}\right)\right\}\right]=\frac{21}{5}-\frac{10}{3}$~~

$= \frac{21}{5} - \left[\frac{10}{3} - \frac{25}{12}\right]$ (1)

$= \frac{21}{5} - \frac{5}{4} = \frac{59}{20}$

Ans: A

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07 $5\frac{1}{6} - 3\frac{4}{9} + x = \frac{7}{3} \times 4\frac{1}{6}$

$= \frac{31}{6} - \frac{31}{9} + x = \frac{7}{3} \times \frac{25}{6}$

$\Rightarrow x = \frac{175}{18} - \frac{31}{6} + \frac{31}{9} = 8$

Ans: A

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08 Manish Unread $= 1 - \frac{5}{6} = \frac{1}{6}$

Ans: B

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09. $A = 41\frac{2}{3} \times 18\frac{3}{5}$

$= \frac{125}{3} \times \frac{93}{5}$

$= 775\ m^2$

Ans: D

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10 $5\frac{2}{5}$ kg $\rightarrow$ Rs $101\frac{1}{4}$

$\frac{27}{5}$ kg $\rightarrow$ Rs $\frac{405}{4}$

$\Rightarrow$ 1 kg $\rightarrow$ $\frac{405}{4} \times \frac{5}{27} = \frac{75}{4} = 18\frac{3}{4}$

Ans: A

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11 opt: A $\frac{6}{5} \times \frac{3}{1}\frac{1}{/2} = \frac{3}{10}$ (True)

opt: D. $\frac{6}{5} - \frac{1}{4}$

$= \frac{24-5}{20} = \frac{19}{20}$ (True)

Ans: A, D

12. Statement I: $\frac{18^{6}}{15_{5}} - \frac{9}{7} = \frac{6}{5} - \frac{9}{7}$ (8)

$= \frac{\quad}{105} = \frac{42-45}{35} = \frac{-3}{35}$

(False)

Statement II: Conceptual (True) Ans: D

~~13~~. $\frac{3}{4} + \frac{5}{11} = \frac{33+20}{44} = \frac{53}{44}$

$\frac{3 \div 5}{4 \div 11} = \frac{\left(\frac{3}{5}\right)}{\left(\frac{4}{11}\right)} = \frac{3}{5} \times \frac{11}{4} = \frac{33}{20}$

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13. $\frac{3}{4} = 0.75$

$\frac{5}{11} = 0.45$

opt: A $= \frac{1}{2} = 0.5$ (True) Ans: A

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14. $\frac{t}{2} \div \frac{5}{6} = \frac{9}{5}$

$= \frac{t}{2} \times \frac{6}{5} = \frac{9}{5}$

$\Rightarrow t = 3$ Ans: 3

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15. a) $\frac{29}{4} \times \frac{23}{6} = \frac{667}{24}$ b) $\frac{18}{5} \times \frac{8}{9} = \frac{16}{5}$

c) $\frac{135}{60} \times \frac{196}{11} = \frac{855}{22}$ d) $\frac{1}{5} \times \frac{2}{1} = \frac{2}{5}$

Ans: S, R, Q, P

$\Rightarrow$ THE END $\Leftarrow$