A.Multiple Choice Questions:

Q1.If the cost of 1 kg of almonds is ₹ 460, then the cost of $\frac{2}{5}$ kg of almonds is

(a) ₹ 92
(b) ₹ 184
(b) ₹ 230
(d) ₹ 1200

Answer:

Cost of 1 kg almonds = ₹ 460
Cost of $\frac{2}{5}$ kg = ₹ 460 × $\frac{2}{5}$ = ₹ 184

Q2. 56 of 480 is

(a) 400
(b) 576
(c) 480
(d) none of these

Answer:

$\frac{5}{6}$ of 480 = $\frac{5}{6}$ × 480 = 400 (a)

Q3. The reciprocal of $5\frac{2}{3}$ is

(a) $5\frac{3}{2}$
(b)) $3\frac{2}{5}$
(c)) $2\frac{3}{5}$
(d))$\frac{3}{17}$

Answer:

Reciprocal of $5\frac{2}{3}$ or $\frac{17}{3}$ is $\frac{3}{17}$ (d)

Q4.

$2\frac{1}{5} \div 1\frac{1}{5}$ **is equal to**

(a) 2 (b) $1\frac{1}{5}$

(c) $2\frac{1}{6}$ (d) $1\frac{5}{6}$

Answer:

$$2\frac{1}{5} \div 1\frac{1}{5} = \frac{11}{5} \div \frac{6}{5}$$

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

Q5. If 3/4 of a number is 12, then the number is

(a) 9
(b) 16
(c) 18
(d) 32

Answer:

If $\frac{3}{4}$ of a number = 12

Then number = $12 \times \frac{4}{3} = 16$ (b)

Q6. Shruti reads a novel for $1\frac{3}{4}$ hours daily, if she reads the entire novel in 6 days, then the time she takes to read the entire novel is

(a) $7\frac{1}{2}$ hours
(b) $9\frac{1}{2}$hours
(c) $10\frac{1}{2}$ hours
(d) $11\frac{1}{2}$ hours

Answer:

A novel is read per day = $1\frac{3}{4} = \frac{7}{4}$ hours

Novel is read in 6 days

Total time = $\frac{7}{4} \times 6 = \frac{21}{2} = 10\frac{1}{2}$ (c)

Q7. What fraction of an hour is 35 minutes?

Answer:

(i) 1 hour = 60 minutes

Fraction = $\frac{35}{60} = \frac{7}{12}$

Q8. What fraction is 270 gram of 3 kilograms?

Answer:

$$\frac{270\text{ g}}{3\text{ kg}} = \frac{270}{3 \times 1000} = \frac{9}{100}$$

Section B

Q9. Convert the following fractions into mixed fractions:

(i) 73/8

(ii) 94/13

Answer:

(*i*) Mixed fraction of $\frac{73}{8} = 9\frac{1}{8}$

$$\begin{array}{r} 8\overline{)73}(9 \\ \underline{72} \\ 1 \end{array}$$

(*ii*) Mixed fraction of $\frac{94}{13} = 7\frac{3}{13}$

$$\begin{array}{r} 13\overline{)94}(7 \\ \underline{91} \\ 3 \end{array}$$

Q10. Convert the following fractions into equivalent like fractions:

(*i*) $\frac{3}{4}, \frac{5}{6}, \frac{7}{8}$ (*ii*) $\frac{7}{25}, \frac{9}{10}, \frac{19}{40}$

Answer:

(*i*) $\frac{3}{4}, \frac{5}{6}, \frac{7}{8}$ (*ii*) $\frac{7}{25}, \frac{9}{10}, \frac{19}{40}$

2	4, 6, 8
2	2, 3, 4
2	1, 3, 2
3	1, 3, 1
	1, 1, 1

L.C.M. $= 2 \times 2 \times 2 \times 3 = 24$

$\frac{3}{4} = \frac{3 \times 6}{4 \times 6} = \frac{18}{24}$

$\frac{5}{6} = \frac{5 \times 4}{6 \times 4} = \frac{20}{24}$

$\frac{7}{8} = \frac{7 \times 3}{8 \times 3} = \frac{21}{24}$

Thus, the given fractions are equivalent to $\frac{18}{24}, \frac{20}{24}$ and $\frac{21}{24}$ respectively.

(*ii*) $\frac{7}{25}, \frac{9}{10}, \frac{19}{40}$

First, we find L.C.M. of 25, 10 and 40

5	25, 10, 40
5	5, 2, 8
2	1, 2, 8
2	1, 1, 4
2	1, 1, 2
	1, 1, 1

$\therefore$ L.C.M. is $5 \times 5 \times 2 \times 2 \times 2 = 200$

$\therefore \frac{7}{25} = \frac{7 \times 8}{25 \times 8} = \frac{56}{200}$

$\frac{9}{10} = \frac{9 \times 20}{10 \times 20} = \frac{180}{200}$

$\frac{19}{40} = \frac{19 \times 5}{40 \times 5} = \frac{95}{200}$

Thus, the given fractions are equivalent to $\frac{56}{200}, \frac{180}{200}$ and $\frac{95}{200}$ respectively.

Q11. Arrange the given fractions in descending order:

(*i*) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$ (*ii*) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

Answer:

(*i*) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$ (*ii*) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

(*i*) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$

First, we find L.C.M. of 9, 3 and 21.

3	9, 3, 21
3	3, 1, 7
7	1, 1, 7
	1, 1, 1

$\therefore$ L.C.M. is $3 \times 3 \times 7 = 63$.

Now, write the given fractions as equivalent like fractions.

$$\frac{2}{9} = \frac{2\times7}{9\times7} = \frac{14}{63}$$

$$\frac{2}{3} = \frac{2\times21}{3\times21} = \frac{41}{63}$$

$$\frac{8}{21} = \frac{8\times3}{21\times3} = \frac{24}{63}$$

As $41 > 24 > 14$

$$\Rightarrow \frac{41}{63} > \frac{24}{63} > \frac{14}{63}$$

$$\therefore \frac{2}{3} > \frac{8}{21} > \frac{2}{9}$$

(*ii*) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

First, we find the L.C.M. of 5, 7 and 10.

5	5, 7, 10
2	1, 7, 2
7	1, 7, 1
	1, 1, 1

$\therefore$ L.C.M. is $5 \times 2 \times 7 = 70$.

Now, write the given fractions as equivalent like fractions.

$$\frac{1}{5} = \frac{1\times14}{5\times14} = \frac{14}{70}$$

$$\frac{3}{7} = \frac{3\times10}{7\times10} = \frac{30}{70}$$

$$\frac{7}{10} = \frac{7\times7}{10\times7} = \frac{49}{70}$$

As $49 > 30 > 14$

$$\Rightarrow \frac{49}{70} > \frac{30}{70} > \frac{14}{70}$$

$$\therefore \frac{7}{10} > \frac{3}{7} > \frac{1}{5}$$

Section C

Q12. Simplify the following:

(*i*) $7\frac{3}{4}-3\frac{5}{6}+\frac{7}{8}$

(*ii*) $6\frac{1}{8}-2\frac{1}{12}-5\frac{1}{10}+3\frac{7}{25}$

Answer:

(*i*) $7\frac{3}{4}-3\frac{5}{6}+\frac{7}{8}=\frac{31}{4}-\frac{23}{6}+\frac{7}{8}$

(L.C.M. of 4, 6 and 8 = 24)

$$=\frac{31\times 6-23\times 4+7\times 3}{24}$$

$$=\frac{186-92+21}{24}$$

$$=\frac{207-92}{24}=\frac{115}{24}=4\frac{19}{24}$$

(*ii*) $6\frac{1}{8}-2\frac{1}{12}-5\frac{1}{10}+3\frac{7}{25}$

$$=\frac{49}{8}-\frac{25}{12}-\frac{51}{10}+\frac{82}{25}$$

(L.C.M. of 8, 12, 10 and 25 is 600)

$$=\frac{49\times 75-25\times 50-51\times 60+82\times 24}{600}$$

$$=\frac{3675-1250-3060+1968}{600}=\frac{1333}{600}$$

$$=2\frac{133}{600}$$

Q13. Which is greater:

(*i*) $\frac{2}{7}$ of $\frac{3}{4}$ or $\frac{3}{5}$ of $\frac{5}{8}$

(*ii*) $\frac{1}{2}$ of $\frac{6}{7}$ or $\frac{2}{3}$ of $\frac{3}{7}$

Answer:

(*i*) $\frac{2}{7}$ of $\frac{3}{4}$ or $\frac{3}{5}$ of $\frac{5}{8}$

(*ii*) $\frac{1}{2}$ of $\frac{6}{7}$ or $\frac{2}{3}$ of $\frac{3}{7}$

(*i*) $\frac{2}{7}$ of $\frac{3}{4}$ or $\frac{3}{5}$ of $\frac{5}{8}$

$\Rightarrow \frac{2}{7} \times \frac{3}{4} = \frac{3}{14}$

and $\frac{3}{5}$ of $\frac{5}{8} = \frac{3}{5} \times \frac{5}{8} = \frac{3}{8}$

Now in $\frac{3}{14}, \frac{3}{8}$

L.C.M. of 14, 8 = 56

$\therefore \frac{3}{14} = \frac{3\times4}{14\times4} = \frac{12}{56}$

and $\frac{3}{8} = \frac{3\times7}{8\times7} = \frac{21}{56}$

Here, $\frac{21}{56} > \frac{12}{56}$

$\Rightarrow \frac{3}{8} > \frac{3}{14}$

$\Rightarrow \frac{3}{5}$ of $\frac{5}{8} > \frac{2}{7}$ of $\frac{3}{4}$

(*ii*) $\frac{1}{2}$ of $\frac{6}{7}$ or $\frac{2}{3}$ of $\frac{3}{7}$

$\Rightarrow \frac{1}{2}$ of $\frac{6}{7} = \frac{1}{2} \times \frac{6}{7} = \frac{3}{7}$

and $\frac{2}{3}$ of $\frac{3}{7} = \frac{2}{3} \times \frac{3}{7} = \frac{2}{7}$

$\therefore \frac{3}{7} > \frac{2}{7}$

$\Rightarrow \frac{1}{2}$ of $\frac{6}{7} > \frac{2}{3}$ of $\frac{3}{7}$

Section D

Q14. If 1 metre of cloth costs ₹ $31\frac{3}{4}$, find the cost of $5\frac{1}{2}$ metres cloth.

Answer:

$$\text{Price of 1 m cloth} = ₹31\frac{3}{4} = ₹\frac{127}{4}$$

$$\therefore \text{ Cost of } 5\frac{1}{2} \text{ m cloth} = ₹\frac{127}{4} \times 5\frac{1}{2}$$

$$= ₹\frac{127}{4} \times \frac{11}{2} = \frac{1397}{8}$$

$$= ₹174\frac{5}{8}$$

Q15. How many pieces each $5\frac{1}{6}$ metres long can be cut from a cloth $77\frac{1}{2}$ metres long?

Answer:

Total length of cloth = $77\frac{1}{2}$ m

Length of one piece = $5\frac{1}{6}$ m

$$\therefore \text{ Total number of pieces} = 77\frac{1}{2} \div 5\frac{1}{6}$$

$$= \frac{155}{2} \div \frac{31}{6}$$

$$= \frac{155}{2} \times \frac{6}{31} = 15 \text{ piece}$$

Q16. By what number should $4\frac{7}{8}$ be multiplied to get $87\frac{3}{4}$?

Answer:

$$\text{Product} = 87\frac{3}{4} = \frac{351}{4}$$

$$\text{Multiplied number} = 4\frac{7}{8}$$

Now,

$$\Rightarrow 4\frac{7}{8} \times \text{Required number} = \frac{351}{4}$$

$$\therefore \text{Required number} = \frac{351}{4} \div 4\frac{7}{8}$$

$$= \frac{351}{4} \div \frac{39}{8}$$

$$= \frac{351}{4} \times \frac{8}{39} = 18$$

Section E

Q17.

$$(i)\ \left(\frac{4}{5}-\frac{1}{3}\right) \div 4\frac{1}{5} + \frac{2}{3} \text{ of } \left(5\frac{1}{6}-4\frac{3}{8}\right)$$

$$(ii)\ 1\frac{2}{3} \text{ of } \left(\frac{3}{8}-\frac{1}{12}\right)$$

$$-\left[4\frac{2}{3}-\left\{6-\left(2\frac{2}{3}-\overline{4\frac{1}{2}-3\frac{1}{3}}\right)\right\}\right]$$

Answer:

(i) $\left(\frac{4}{5}-\frac{1}{3}\right) \div 4\frac{1}{5} + \frac{2}{3} \text{ of } \left(5\frac{1}{6}-4\frac{3}{8}\right)$

$= \frac{12-5}{15} \div \frac{21}{5} + \frac{2}{3} \text{ of } \left(\frac{31}{6}-\frac{35}{8}\right)$

$\frac{124-105}{24}$

$= \frac{7}{15} \div \frac{21}{5} + \frac{2}{3} \text{ of } \frac{19}{24}$

$= \frac{7}{15} \div \frac{21}{5} + \frac{19}{36}$

$= \frac{7}{15} \times \frac{5}{21} + \frac{19}{36} = \frac{1}{9} + \frac{19}{36}$

$= \frac{4+19}{36} = \frac{23}{36}$

(ii) $1\frac{2}{3} \text{ of } \left(\frac{3}{8}-\frac{1}{12}\right)$

$-\left[4\frac{2}{3}-\left\{6-\left(2\frac{2}{3}-\overline{4\frac{1}{2}-3\frac{1}{3}}\right)\right\}\right]$

$= \frac{5}{3} \text{ of } \left(\frac{9-2}{24}\right)$

$-\left[\frac{14}{3}-\left\{6-\left(\frac{8}{3}-\overline{\frac{9}{2}-\frac{10}{3}}\right)\right\}\right]$

$= \frac{5}{3} \text{ of } \frac{7}{24} - \left[\frac{14}{3}-\left\{6-\left(\frac{8}{3}-\frac{7}{6}\right)\right\}\right]$

$= \frac{5}{3} \text{ of } \frac{7}{24} - \left[\frac{14}{3}-\left\{6-\left(\frac{16-7}{6}\right)\right\}\right]$

$$= \frac{35}{72} - \left[\frac{14}{3} - \left\{6 - \frac{9}{6}\right\}\right]$$

$$= \frac{35}{72} - \left[\frac{14}{3} - \frac{36-9}{6}\right]$$

$$= \frac{35}{72} - \left[\frac{14}{3} - \frac{27}{6}\right]$$

$$= \frac{35}{72} - \left[\frac{28-27}{6}\right]$$

$$= \frac{35}{72} - \frac{1}{6}$$

$$= \frac{35-12}{72} = \frac{23}{72}$$

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Q18.

Find the value of : $\frac{1}{4\frac{2}{7}} + \frac{1}{1\frac{11}{13}} + \frac{1}{\frac{5}{9}}$.

Answer:

$$\frac{1}{4\frac{2}{7}} + \frac{1}{1\frac{11}{13}} + \frac{1}{\frac{5}{9}}$$

$$= \frac{1}{\frac{30}{7}} + \frac{1}{\frac{24}{13}} + \frac{1}{\frac{5}{9}}$$

$$= \frac{7}{30} + \frac{13}{24} + \frac{9}{5}$$

$$= \frac{28+65+216}{120} = \frac{309}{120}$$

$$= \frac{103}{40} = 2\frac{23}{40}$$