Fractions
Exercise 2A

Solution 01

Answer :

We have the following:

(i) 58 and 712

By cross multiplication, we get:
5 × 12 = 60 and 7 × 8 = 56
However, 60 > 56
∴ 58>712

(ii) 59and1115
By cross multiplication, we get:
5 × 15 = 75 and 9 × 11 = 99
However, 75 < 99
∴ 59<1115

(iii) 1112and1516
By cross multiplication, we get:
11 × 16 = 176 and 12 × 15 = 180
However, 176 < 180
∴ 1112<1516

Answer :

(i) The given fractions are $\frac{3}{4}, \frac{5}{6}, \frac{7}{9}$ and $\frac{11}{12}$.

LCM of 4, 6, 9 and 12 = 36

Now, let us change each of the given fractions into an equivalent fraction with 72 as its denominator.

$\frac{3}{4} = \frac{3\times9}{4\times9} = \frac{27}{36}$

$\frac{5}{6} = \frac{5\times6}{6\times6} = \frac{30}{36}$

$\frac{7}{9} = \frac{7\times4}{9\times4} = \frac{28}{36}$

$\frac{11}{12} = \frac{11\times3}{12\times3} = \frac{33}{36}$

Clearly, $\frac{27}{36} < \frac{28}{36} < \frac{30}{36} < \frac{33}{36}$

Hence, $\frac{3}{4} < \frac{7}{9} < \frac{5}{6} < \frac{11}{12}$

∴ The given fractions in ascending order are $\frac{3}{4}, \frac{7}{9}, \frac{5}{6}$ and $\frac{11}{12}$.

(ii) The given fractions are: $\frac{4}{5}$, $\frac{7}{10}$, $\frac{11}{15}$ and $\frac{17}{20}$.

LCM of 5, 10, 15 and 20 = 60

Now, let us change each of the given fractions into an equivalent fraction with 60 as its denominator.

$\frac{4}{5} = \frac{4\times12}{5\times12} = \frac{48}{60}$

$\frac{7}{10} = \frac{7\times6}{10\times6} = \frac{42}{60}$

$\frac{11}{15} = \frac{11\times4}{15\times4} = \frac{44}{60}$

$\frac{17}{20} = \frac{17\times3}{20\times3} = \frac{51}{60}$

Clearly, $\frac{42}{60} < \frac{44}{60} < \frac{48}{60} < \frac{51}{60}$

Hence, $\frac{7}{10} < \frac{11}{15} < \frac{4}{5} < \frac{17}{20}$

∴ The given fractions in ascending order are $\frac{7}{10}$, $\frac{11}{15}$, $\frac{4}{5}$ and $\frac{17}{20}$

Solution 03

Answer :

We have the following:

(i) The given fractions are $\frac{3}{4}$, $\frac{7}{8}$, $\frac{7}{12}$ and $\frac{17}{24}$.

LCM of 4,8,12 and 24 = 24

Now, let us change each of the given fractions into an equivalent fraction with 24 as its denominator.

$\frac{3}{4} = \frac{3\times6}{4\times6} = \frac{18}{24}$

$\frac{7}{8} = \frac{7\times3}{8\times3} = \frac{21}{24}$

$\frac{7}{12} = \frac{7\times2}{12\times2} = \frac{14}{24}$

$\frac{17}{24} = \frac{17\times1}{24\times1} = \frac{17}{24}$

Clearly, $\frac{21}{24} > \frac{18}{24} > \frac{17}{24} > \frac{14}{24}$

Hence, $\frac{7}{8} > \frac{3}{4} > \frac{17}{24} > \frac{7}{12}$

∴ The given fractions in descending order are $\frac{7}{8}$, $\frac{3}{4}$, $\frac{17}{24}$ and $\frac{7}{12}$.

(ii) The given fractions are $\frac{2}{3}$, $\frac{3}{5}$, $\frac{7}{10}$ and $\frac{8}{15}$.

LCM of 3,5,10 and 15 = 30

Now, let us change each of the given fractions into an equivalent fraction with 30 as its denominator.

$\frac{2}{3} = \frac{2\times10}{3\times10} = \frac{20}{30}$

$\frac{3}{5} = \frac{3\times6}{5\times6} = \frac{18}{30}$

$\frac{7}{10} = \frac{7\times3}{10\times3} = \frac{21}{30}$

$\frac{8}{15} = \frac{8\times2}{15\times2} = \frac{16}{30}$

Clearly, $\frac{21}{30} > \frac{20}{30} > \frac{18}{30} > \frac{16}{30}$

Hence, $\frac{7}{10} > \frac{2}{3} > \frac{3}{5} > \frac{8}{15}$

∴ The given fractions in descending order are $\frac{7}{10}$, $\frac{2}{3}$, $\frac{3}{5}$ and $\frac{8}{15}$.

Solution 04

Answer :

We will compare the given fractions $\frac{2}{7}$ and $\frac{4}{5}$ in order to know who got the larger part of the apple.

We have,

By cross multiplication, we get:

2 × 5 = 10 and 4 × 7 = 28

However, 10 < 28

∴ $\frac{2}{7} < \frac{4}{5}$

Thus, Sonal got the larger part of the apple.

Now, $\frac{4}{5} - \frac{2}{7} = \frac{28-10}{35} = \frac{18}{35}$

∴ Sonal got $\frac{18}{35}$ part of the apple more than Reenu.

Solution 05

Answer :

(i) $\frac{5}{9} + \frac{3}{9} = \frac{8}{9}$

(ii) $\frac{8}{9} + \frac{7}{12}$

$= \frac{32}{36} + \frac{21}{36}$ [∵ LCM of 9 and 12 = 36]

$= \frac{32+21}{36}$

$= \frac{53}{36} = 1\frac{17}{36}$

(iii) $\frac{5}{6} + \frac{7}{8}$

$= \frac{20}{24} + \frac{21}{24}$ [∵ LCM of 6 and 8 = 24]

$= \frac{20+21}{24}$

$= \frac{41}{24} = 1\frac{17}{24}$

(iv) $\frac{7}{12} + \frac{11}{16} + \frac{9}{24}$

$\frac{28}{48} + \frac{33}{48} + \frac{18}{48}$ [∵ LCM of 12, 16 and 24 = 48]

$= \frac{28+33+18}{48}$

$= \frac{79}{48} = 1\frac{31}{48}$

(v) $3\frac{4}{5}+2\frac{3}{10}+1\frac{1}{15}$

$=\frac{19}{5}+\frac{23}{10}+\frac{16}{15}$

$=\frac{114}{30}+\frac{69}{30}+\frac{32}{30}$ [∵ LCM of 5, 10 and 15 = 30]

$=\frac{114+69+32}{30}$

$=\frac{215}{30}=7\frac{5}{30}=7\frac{1}{6}$

(vi) $8\frac{3}{4}+10\frac{2}{5}$

$=\frac{35}{4}+\frac{52}{5}$

$=\frac{175}{20}+\frac{208}{20}$ [∵ LCM of 4 and 5 = 20]

$=\frac{175+208}{20}$

$=\frac{383}{20}=19\frac{3}{20}$

Solution 06

Answer :

(i) $\frac{5}{7}-\frac{2}{7}=\frac{5-2}{7}=\frac{3}{7}$

(ii) $\frac{5}{6}-\frac{3}{4}$

$=\frac{10}{12}-\frac{9}{12}$ [∵ LCM of 6 and 4 = 12]

$=\frac{10-9}{12}$

$=\frac{1}{12}$

(iii) $3\frac{1}{5}-\frac{7}{10}$

$=\frac{16}{5}-\frac{7}{10}$

$=\frac{32}{10}-\frac{7}{10}$ [∵ LCM of 5 and 10 = 10]

$=\frac{32-7}{10}$

$=\frac{25}{10}=\frac{5}{2}=2\frac{1}{2}$

(iv) $7-4\frac{2}{3}$

$=\frac{7}{1}-\frac{14}{3}$

$=\frac{21-14}{3}$ [∵ LCM of 1 and 3 = 3]

$=\frac{7}{3}=2\frac{1}{3}$

(v) $3\frac{3}{10} - 1\frac{7}{15}$

$= \frac{33}{10} - \frac{22}{15}$

$= \frac{99-44}{30}$ [∵ LCM of 10 and 15 = 30]

$= \frac{55}{30} = \frac{11}{6} = 1\frac{5}{6}$

(vi) $2\frac{5}{9} - 1\frac{7}{15}$

$= \frac{23}{9} - \frac{22}{15}$

$= \frac{115-66}{45}$ [∵ LCM of 9 and 15 = 45]

$= \frac{49}{45} = 1\frac{4}{45}$

Solution 07

Answer :

(i) $\frac{2}{3} + \frac{5}{6} - \frac{1}{9}$

$= \frac{12+15-2}{18}$ [∵ LCM of 3, 6 and 9 = 18]

$= \frac{27-2}{18} = \frac{25}{18} = 1\frac{7}{18}$

(ii) $8 - 4\frac{1}{2} - 2\frac{1}{4}$

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

$= \frac{32-18-9}{4}$ [∵ LCM of 1, 2 and 4 = 4]

$= \frac{32-27}{4} = \frac{5}{4} = 1\frac{1}{4}$

(iii) $8\frac{5}{6} - 3\frac{3}{8} + 1\frac{7}{12}$

$= \frac{53}{6} - \frac{27}{8} + \frac{19}{12}$

$= \frac{212-81+38}{24}$ [∵ LCM of 6, 8 and 12 = 24]

$= \frac{250-81}{24} = \frac{169}{24} = 7\frac{1}{24}$

Solution 08

Answer :

Total weight of fruits bought by Aneeta = $\left(3\frac{3}{4} + 4\frac{1}{2}\right)$ kg

Now, we have:

$3\frac{3}{4} + 4\frac{1}{2} = \frac{15}{4} + \frac{9}{2}$

$= \frac{15+18}{4}$ [∵ LCM of 2 and 4 = 4]

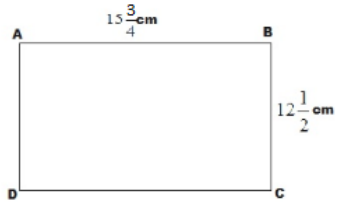
$= \frac{15+18}{4} = \frac{33}{4} = 8\frac{1}{4}$

Hence, the total weight of the fruits purchased by Aneeta is $8\frac{1}{4}$ kg.

Solution 09

Answer :

We have:



Perimeter of the rectangle ABCD = AB + BC + CD +DA

$= \left(15\frac{3}{4} + 12\frac{1}{2} + 15\frac{3}{4} + 12\frac{1}{2}\right)$ cm

$= \left(\frac{63}{4} + \frac{25}{2} + \frac{63}{4} + \frac{25}{2}\right)$ cm

$= \left(\frac{63+50+63+50}{4}\right)$ cm [∵ LCM of 2 and 4 = 4]

$= \left(\frac{226}{4}\right)$ cm $= \left(\frac{113}{2}\right)$ cm $= 56\frac{1}{2}$ cm

Hence, the perimeter of ABCD is $56\frac{1}{2}$ cm.

Solution 10

Answer :

Actual width of the picture = $7\frac{3}{5}$ cm $= \frac{38}{5}$ cm

Required width of the picture = $7\frac{3}{10}$ cm $= \frac{73}{10}$ cm

∴ Extra width = $\left(\frac{38}{5} - \frac{73}{10}\right)$ cm

$= \left(\frac{76-73}{10}\right)$ cm [∵ LCM of 5 and 10 is 10]

$= \frac{3}{10}$ cm

Hence, the width of the picture should be trimmed by $\frac{3}{10}$ cm.

Solution 11

Answer :

Required number to be added = $18 - 7\frac{3}{5}$

$= \frac{18}{1} - \frac{38}{5}$

$= \frac{90-38}{5}$ [∵ LCM of 1 and 5 = 5]

$= \frac{52}{5} = 10\frac{2}{5}$

Hence, the required number is $10\frac{2}{5}$.

Solution 12

Answer :

Required number to be added = $8\frac{2}{5} - 7\frac{4}{15}$

$= \frac{42}{5} - \frac{109}{15}$

$= \frac{126-109}{15}$ [∵ LCM of 5 and 15 = 15]

$= \frac{17}{15} = 1\frac{2}{15}$

Hence, the required number should be $1\frac{2}{15}$.

Solution 13

Answer :

Required length of other piece of wire = $\left(3\frac{3}{4}-1\frac{1}{2}\right)\text{m}$

$=\left(\frac{15}{4}-\frac{3}{2}\right)\text{m}$

$=\left(\frac{15-6}{4}\right)\text{m}$ [∵ LCM of 4 and 2 = 4]

$=\frac{9}{4}\text{m}=2\frac{1}{4}\text{m}$

Hence, the length of the other piece of wire is $2\frac{1}{4}\text{m}$.

Solution 14

Answer :

Actual duration of the film = $\left(3\frac{2}{3}-1\frac{1}{2}\right)\text{hours}$

$=\left(\frac{11}{3}-\frac{3}{2}\right)\text{hours}$

$=\left(\frac{22-9}{6}\right)\text{hours}$ [∵ LCM of 3 and 2 = 6]

$=\frac{13}{6}\text{hours}=2\frac{1}{6}\text{hours}$

Hence, the actual duration of the film was $2\frac{1}{6}\text{hours}$.

Solution 15

Answer :

First we have to compare the fractions: $\frac{2}{3}$ and $\frac{5}{9}$.
By cross multiplication, we have:
2 × 9 = 18 and 5 × 3 = 15

However, 18 > 15
$\therefore\frac{2}{3}>\frac{5}{9}$

So, $\frac{2}{3}$ is larger than $\frac{5}{9}$.
Now, $\frac{2}{3}-\frac{5}{9}$

$=\frac{6-5}{9}$ [∵ LCM of 3 and 9 = 9]
$=\frac{1}{9}$

Hence, $\frac{2}{3}$ is $\frac{1}{9}$ part more than $\frac{5}{9}$.

Solution 16

Answer :

First, we have to compare the cost of the pen and the pencil.
Cost of the pen = Rs $16\frac{3}{5} = \text{Rs } \frac{83}{5}$

Cost of the pencil = Rs $4\frac{3}{4} = \text{Rs } \frac{19}{4}$
Now, we have to compare fractions $\frac{83}{5}$ and $\frac{19}{4}$.
By cross multiplication, we get:

83 × 4 = 332 and 19 × 5 = 95

However, 332 > 95

$\therefore \frac{83}{5} > \frac{19}{4}$

So, the cost of pen is more than that of the pencil.
Now, $\text{Rs } \left(\frac{83}{5} - \frac{19}{4}\right)$

$= \text{Rs } \left(\frac{332 - 95}{20}\right)$ [∵ LCM of 4 and 5 = 20]

$= \text{Rs } \frac{237}{20} = \text{Rs } 11\frac{17}{20}$

∴ The pen costs Rs $11\frac{17}{20}$ more than the pencil.