Mathematics

Exercise 7.6

Question 1:

Solve:

(a) $\dfrac{2}{3} + \dfrac{1}{7}$ (b) $\dfrac{3}{10} + \dfrac{7}{15}$ (c) $\dfrac{4}{9} + \dfrac{2}{7}$ (d) $\dfrac{5}{7} + \dfrac{1}{3}$

(e) $\dfrac{2}{5} + \dfrac{1}{6}$ (f) $\dfrac{4}{5} + \dfrac{2}{3}$ (g) $\dfrac{3}{4} - \dfrac{1}{3}$ (h) $\dfrac{5}{6} - \dfrac{1}{3}$

(i) $\dfrac{2}{3} + \dfrac{3}{4} + \dfrac{1}{2}$ (j) $\dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{6}$ (k) $1\dfrac{1}{3} + 3\dfrac{2}{3}$ (l) $4\dfrac{2}{3} + 3\dfrac{1}{4}$

(m) $\dfrac{16}{5} - \dfrac{7}{5}$ (n) $\dfrac{4}{3} - \dfrac{1}{2}$

Answer 1:

(a) L.C.M. of 3 and 7 is 21

$\therefore \quad \dfrac{2}{3} + \dfrac{1}{7} = \dfrac{2 \times 7 + 1 \times 3}{21} = \dfrac{14 + 3}{21} = \dfrac{17}{21}$

(b) L.C.M. of 10 and 15 is 30

$\therefore \quad \dfrac{3}{10} + \dfrac{7}{15} = \dfrac{3 \times 3 + 7 \times 2}{30} = \dfrac{9 + 14}{30} = \dfrac{23}{30}$

(c) L.C.M. of 9 and 7 is 63

$\therefore \quad \dfrac{4}{9} + \dfrac{2}{7} = \dfrac{4 \times 7 + 2 \times 9}{63} = \dfrac{28 + 18}{63} = \dfrac{46}{63}$

(a) L.C.M. of 7 and 3 is 21

$\therefore \quad \dfrac{5}{7} + \dfrac{1}{3} = \dfrac{5 \times 3 + 7 \times 1}{21} = \dfrac{15 + 7}{21} = \dfrac{22}{21} = 1\dfrac{1}{21}$

(b) L.C.M. of 5 and 6 is 30

$\therefore \quad \dfrac{2}{5} + \dfrac{1}{6} = \dfrac{2 \times 6 + 5 \times 1}{30} = \dfrac{12 + 5}{30} = \dfrac{17}{30}$

(c) L.C.M. of 5 and 3 is 15

$\therefore \quad \dfrac{4}{5} + \dfrac{2}{3} = \dfrac{4 \times 3 + 2 \times 5}{15} = \dfrac{12 + 10}{15} = \dfrac{22}{15} = 1\dfrac{7}{15}$

(d) L.C.M. of 4 and 3 is 12

$\therefore \quad \dfrac{3}{4} - \dfrac{1}{3} = \dfrac{3 \times 3 - 4 \times 1}{12} = \dfrac{9 - 4}{12} = \dfrac{5}{12}$

(e) L.C.M. of 6 and 3 is 6

$\therefore \quad \dfrac{5}{6} - \dfrac{1}{3} = \dfrac{5 \times 1 - 2 \times 1}{6} = \dfrac{5 - 2}{6} = \dfrac{3}{6} = \dfrac{1}{2}$

(f) L.C.M. of 3, 4 and 2 is 12

$\therefore \quad \dfrac{2}{3} + \dfrac{3}{4} + \dfrac{1}{2} = \dfrac{2 \times 4 + 3 \times 3 + 1 \times 6}{12} = \dfrac{6 + 9 + 6}{12} = \dfrac{23}{12} = 1\dfrac{11}{12}$

(g) L.C.M. of 2, 3, and 6 is 6

$\therefore \quad \dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{6} = \dfrac{1 \times 3 + 1 \times 2 + 1 \times 1}{6} = \dfrac{3 + 2 + 1}{6} = \dfrac{6}{6} = 1$

(h) L.C.M. of 3 and 3 is 3

$$\therefore \quad \frac{4}{3} + \frac{11}{3} = \frac{4+11}{3} = \frac{\cancel{15}}{\cancel{3}} = 5$$

(i) L.C.M. of 3 and 4 is 12

$$\therefore \quad \frac{14}{3} + \frac{13}{4} = \frac{14 \times 4 + 13 \times 3}{12} = \frac{56+39}{12} = \frac{95}{12} = 7\frac{11}{12}$$

(j) L.C.M. of 5 and 5 is 5

$$\therefore \quad \frac{16}{5} - \frac{7}{5} = \frac{16-7}{5} = \frac{9}{5} = 1\frac{4}{5}$$

(k) L.C.M. of 3 and 2 is 6

$$\therefore \quad \frac{4}{3} - \frac{1}{2} = \frac{4 \times 2 - 1 \times 3}{6} = \frac{8-3}{6} = \frac{5}{6}$$

Question 2:

Sarika bought $\frac{2}{5}$ meter of ribbon and Lalita $\frac{3}{4}$ meter of ribbon. What is the total length of the ribbon they bought?

Answer 2:

Ribbon bought by Sarita = $\frac{2}{5}$ m and Ribbon bought by Lalita = $\frac{3}{4}$ m

Total length of ribbon = $\frac{2}{5} + \frac{3}{4}$

$$= \frac{2 \times 4 + 5 \times 3}{20} \quad [\because \text{L.C.M. of 5 and 4 is 20}]$$

$$= \frac{8+15}{20} = \frac{23}{20} = 1\frac{3}{20} \text{ m}$$

Therefore, they bought $1\frac{3}{20}$ m of ribbon.

Question 3:

Naina was given $1\frac{1}{2}$ piece of cake and Najma was given $1\frac{1}{3}$ piece of cake. Find the total amount of cake given to both of them.

Answer 3:

Cake taken by Naina = $1\frac{1}{2}$ piece and Cake taken by Najma = $1\frac{1}{3}$ piece

Total cake taken $= 1\frac{1}{2} + 1\frac{1}{3} = \frac{3}{2} + \frac{4}{3}$

$$= \frac{3 \times 3 + 4 \times 2}{6} \quad [\because \text{L.C.M. of 2 and 3 is 6}]$$

$$= \frac{9+8}{6} = \frac{17}{6} = 2\frac{5}{6}$$

Therefore, the total consumption of cake is $2\frac{5}{6}$.
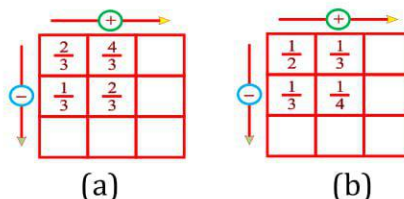
Question 4:

Fill in the boxes: (a) $\square - \dfrac{5}{8} = \dfrac{1}{4}$ (b) $\square - \dfrac{1}{5} = \dfrac{1}{2}$ (c) $\dfrac{1}{2} - \square = \dfrac{1}{6}$
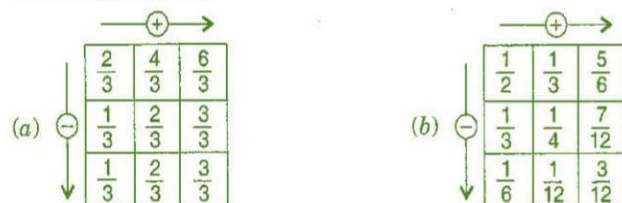
Answer 4:

(a) $\dfrac{1}{4} + \dfrac{5}{8} = \dfrac{2+5}{8} = \dfrac{7}{8}$ (b) $\dfrac{1}{2} + \dfrac{1}{5} = \dfrac{5+2}{10} = \dfrac{7}{10}$ (c) $\dfrac{1}{2} - \dfrac{1}{6} = \dfrac{3-1}{6} = \dfrac{2}{6}$

Question 5:

Complete the addition – subtraction box:

(a)   (b)

Answer 5:

(a)   (b)

Question 6:

A piece of wire $\dfrac{7}{8}$ meter long broke into two pieces. One piece was $\dfrac{1}{4}$ meter long. How long is the other piece?

Answer 6:

Total length of wire $= \dfrac{7}{8}$ meter

Length of first part $= \dfrac{1}{4}$ meter

Remaining part $= \dfrac{7}{8} - \dfrac{1}{4} = \dfrac{7 \times 1 - 2 \times 1}{8}$ [∵ L.C.M. of 8 and 4 is 8]

$= \dfrac{7-2}{8} = \dfrac{5}{8}$ meter

Therefore, the length of remaining part is $\dfrac{5}{8}$ meter.

Question 7:

Nandini house is $\dfrac{9}{10}$ km from her school. She walked some distance and then took a bus for $\dfrac{1}{2}$ km to reach the school. How far did she walk?

Answer 7:

Total distance between school and house $= \dfrac{9}{10}$ km

Distance covered by bus   = $\dfrac{1}{2}$ km

Remaining distance   = $\dfrac{9}{10} - \dfrac{1}{2} = \dfrac{9 \times 1 - 1 \times 5}{10}$ [∵ L.C.M. of 10 and 2 is 10]

     = $\dfrac{9-5}{10} = \dfrac{\cancel{4}}{\cancel{10}} = \dfrac{2}{5}$ km

Therefore, the distance covered by walking us $\dfrac{2}{5}$ km.

Question 8:

Ahsa and Samuel have bookshelves of the same size partly filled with books. Asha's shelf is $\dfrac{5}{6}th$ full and Samuel's shelf is $\dfrac{2}{5}th$ full. Whose bookshelf is more full? By what fraction?

Answer 8:

$\dfrac{5}{6}$ and $\dfrac{2}{5}$

⇒ $\dfrac{5}{6} \times \dfrac{5}{5} = \dfrac{25}{30}$ and $\dfrac{2}{5} \times \dfrac{6}{6} = \dfrac{12}{30}$ [∵ L.C.M. of 6 and 5 is 30]

∵ $\dfrac{25}{30} > \dfrac{12}{30}$

⇒ $\dfrac{5}{6} > \dfrac{2}{5}$

∴ Asha's bookshelf is more covered than Samueal.

Difference = $\dfrac{25}{30} - \dfrac{12}{30} = \dfrac{13}{30}$

Question 9:

Jaidev takes $2\dfrac{1}{5}$ minutes to walk across the school ground. Rahul takes $\dfrac{7}{4}$ minutes to do same. Who takes less time and by what fraction?

Answer 9:

Time taken by jaidev = $2\dfrac{1}{5}$ minutes = $\dfrac{11}{5}$ minutes

Time taken by Rahul = $\dfrac{7}{4}$ minutes

Difference   = $\dfrac{11}{5} - \dfrac{7}{4} = \dfrac{11 \times 4 - 7 \times 5}{20}$ [∵ L.C.M. of 5 and 4 is 20]

     = $\dfrac{44-35}{20} = \dfrac{9}{20}$ minutes

Thus, Rahul takes less time, which is $\dfrac{9}{20}$ minutes.