Exercise 2.3

Question 1:

Find:

(i) $\frac{1}{4}$ of (a) $\frac{1}{4}$ (b) $\frac{3}{5}$ (c) $\frac{4}{3}$

(ii) $\frac{1}{7}$ of (a) $\frac{2}{9}$ (b) $\frac{6}{5}$ (c) $\frac{3}{10}$

Answer 1:

(i) (a) $\frac{1}{4}$ of $\frac{1}{4} = \frac{1}{4}\times\frac{1}{4} = \frac{1\times1}{4\times4} = \frac{1}{16}$

(b) $\frac{1}{4}$ of $\frac{3}{5} = \frac{1}{4}\times\frac{3}{4} = \frac{1\times3}{4\times4} = \frac{3}{16}$

(c) $\frac{1}{4}$ of $\frac{4}{3} = \frac{1}{4}\times\frac{4}{3} = \frac{1\times4}{4\times3} = \frac{1}{3}$

(ii) (a) $\frac{1}{7}$ of $\frac{2}{9} = \frac{1}{7}\times\frac{2}{9} = \frac{1\times2}{7\times9} = \frac{2}{63}$

(b) $\frac{1}{7}$ of $\frac{2}{9} = \frac{1}{7}\times\frac{6}{5} = \frac{1\times6}{7\times5} = \frac{6}{35}$

(c) $\frac{1}{7}$ of $\frac{2}{9} = \frac{1}{7}\times\frac{3}{10} = \frac{1\times3}{7\times10} = \frac{3}{70}$

Question 2:

Multiply and reduce to lowest form (if possible):

(i) $\frac{2}{3}\times2\frac{2}{3}$ (ii) $\frac{2}{7}\times\frac{7}{9}$ (iii) $\frac{3}{8}\times\frac{6}{4}$ (iv) $\frac{9}{5}\times\frac{3}{5}$

(v) $\frac{1}{3}\times\frac{15}{8}$ (vi) $\frac{11}{2}\times\frac{3}{10}$ (vii) $\frac{4}{5}\times\frac{12}{7}$

Answer 2:

(i) $\frac{2}{3}\times2\frac{2}{3} = \frac{2}{3}\times\frac{8}{3} = \frac{2\times8}{3\times3} = \frac{16}{9} = 1\frac{7}{9}$

(ii) $\frac{2}{7}\times\frac{7}{9} = \frac{2\times7}{7\times9} = \frac{2}{9}$

(iii) $\frac{3}{8}\times\frac{6}{4}=\frac{3\times6}{8\times4}=\frac{3\times3}{8\times2}=\frac{9}{16}$

(iv) $\frac{9}{5}\times\frac{3}{5}=\frac{9\times3}{5\times5}=\frac{27}{25}=1\frac{2}{25}$

(v) $\frac{1}{3}\times\frac{15}{8}=\frac{1\times15}{3\times8}=\frac{1\times5}{1\times8}=\frac{5}{8}$

(vi) $\frac{11}{2}\times\frac{3}{10}=\frac{11\times3}{2\times10}=\frac{33}{20}=1\frac{3}{20}$

(vii) $\frac{4}{5}\times\frac{12}{7}=\frac{4\times12}{5\times7}=\frac{48}{35}=1\frac{13}{35}$

Question 3:

Multiply the following fractions:

(i) $\frac{2}{5}\times5\frac{1}{4}$ (ii) $6\frac{2}{5}\times\frac{7}{9}$ (iii) $\frac{3}{2}\times5\frac{1}{3}$ (iv) $\frac{5}{6}\times2\frac{3}{7}$

(v) $3\frac{2}{5}\times\frac{4}{7}$ (vi) $2\frac{3}{5}\times3$ (vii) $3\frac{4}{7}\times\frac{3}{5}$

Answer 3:

(i) $\frac{2}{5}\times5\frac{1}{4}=\frac{2}{5}\times\frac{21}{4}=\frac{2\times21}{5\times4}=\frac{1\times21}{5\times2}=\frac{21}{10}=2\frac{1}{10}$

(ii) $6\frac{2}{5}\times\frac{7}{9}=\frac{32}{5}\times\frac{7}{9}=\frac{32\times7}{5\times9}=\frac{224}{45}=4\frac{44}{45}$

(iii) $\frac{3}{2}\times5\frac{1}{3}=\frac{3}{2}\times\frac{16}{3}=\frac{48}{6}=8$

(iv) $\frac{5}{6}\times2\frac{3}{7}=\frac{5}{6}\times\frac{17}{7}=\frac{85}{42}=2\frac{1}{42}$

(v) $3\frac{2}{5}\times\frac{4}{7}=\frac{17}{7}\times\frac{4}{7}=\frac{68}{35}=1\frac{33}{35}$

(vi) $2\frac{3}{5}\times3=\frac{13}{5}\times\frac{3}{1}=\frac{13\times3}{5\times1}=\frac{39}{5}=7\frac{4}{5}$

(vii) $3\frac{4}{7}\times\frac{3}{5}=\frac{25}{7}\times\frac{3}{5}=\frac{5\times3}{7\times1}=\frac{15}{7}=2\frac{1}{7}$

Question 4:

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 4:

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

$\Rightarrow$ $\frac{2}{7} \times \frac{3}{4}$ or $\frac{3}{5} \times \frac{5}{8}$

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

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

Thus, $\frac{3}{5}$ of $\frac{5}{8}$ is greater.

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

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

$\Rightarrow$ $\frac{3}{7}$ or $\frac{2}{7}$

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

Thus, $\frac{1}{2}$ of $\frac{6}{7}$ is greater.

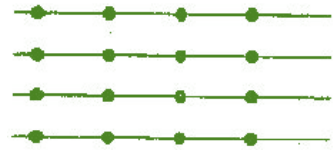
Question 5:

Saili plants 4 saplings in a row in her garden. The distance between two adjacent saplings is $\frac{3}{4}$ m. Find the distance between the first and the last sapling.

Answer 5:

The distance between two adjacent saplings = $\frac{3}{4}$ m

Saili planted 4 saplings in a row, then number of gap in saplings = 3



Therefore,

The distance between the first and the last saplings = $3 \times \frac{3}{4} = \frac{9}{4}$ m = $2\frac{1}{4}$ m

Thus the distance between the first and the last saplings is $2\frac{1}{4}$ m.

Question 6:

Lipika reads a book for $1\frac{3}{4}$ hours everyday. She reads the entire book in 6 days. How many hours in all were required by her to read the book?

Answer 6:

Time taken by Lipika to read a book = $1\frac{3}{4}$ hours.

She reads entire book in 6 days.

Now, total hours taken by her to read the entire book = $1\frac{3}{4} \times 6$

$= \frac{7}{4} \times 6 = \frac{21}{2} = 10\frac{1}{2}$ hours

Thus, 10 hours were required by her to read the book.

Question 7:

A car runs 16 km using 1 litre of petrol. How much distance will it cover using $2\frac{3}{4}$ litres of petrol?

Answer 7:

In 1 litre of pertrol, car covers the distance = 16 km

In $2\frac{3}{4}$ litres of petrol, car covers the distance = $2\frac{3}{4}$ of 16 km

$= \frac{11}{4} \times 16 = 44$ km

Thus, the car will cover 44 km distance.

Question 8:

(a) (i) Provide the number in the box $\square$, such that $\frac{2}{3}\times\square=\frac{10}{30}$.

(ii) The simplest form of the number obtained in $\square$ is _____.

(b) (i) Provide the number in the box $\square$, such that $\frac{3}{5}\times\square=\frac{24}{75}$.

(ii) The simplest form of the number obtained in $\square$ is _____.

Answer 8:

(a) (i) $\frac{2}{3}\times\boxed{\frac{5}{10}}=\frac{10}{30}$ (ii) The simplest form of $\frac{5}{10}$ is $\frac{1}{2}$.

(b) (i) $\frac{3}{5}\times\boxed{\frac{8}{15}}=\frac{24}{75}$ (ii) The simplest form of $\frac{8}{15}$ is $\frac{8}{15}$.