

Mathematics

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(Chapter - 2) (Fractions and Decimals)

(Class - VII)

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 $\frac{1}{4} = \frac{1}{4} \times \frac{1}{4} = \frac{1 \times 1}{4 \times 4} = \frac{1}{16}$
(b) $\frac{1}{4}$ of $\frac{3}{5} = \frac{1}{4} \times \frac{3}{5} = \frac{1 \times 3}{4 \times 5} = \frac{3}{20}$
(c) $\frac{1}{4}$ of $\frac{4}{3} = \frac{1}{4} \times \frac{4}{3} = \frac{1 \times 4}{4 \times 3} = \frac{1}{3}$
(ii) (a) $\frac{1}{7}$ of $\frac{2}{9} = \frac{1}{7} \times \frac{2}{9} = \frac{1 \times 2}{7 \times 9} = \frac{2}{63}$
(b) $\frac{1}{7}$ of $\frac{6}{5} = \frac{1}{7} \times \frac{6}{5} = \frac{1 \times 6}{7 \times 5} = \frac{6}{35}$
(c) $\frac{1}{7}$ of $\frac{3}{10} = \frac{1}{7} \times \frac{3}{10} = \frac{1 \times 3}{7 \times 10} = \frac{3}{70}$

Question 2:

Multiply and reduce to lowest form (if possible):

- (i) $\frac{2}{3} \times 2\frac{2}{3}$ (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) $\frac{2}{3} \times 2\frac{2}{3} = \frac{2}{3} \times \frac{8}{3} = \frac{2 \times 8}{3 \times 3} = \frac{16}{9} = 1\frac{7}{9}$
(ii) $\frac{2}{7} \times \frac{7}{9} = \frac{2 \times 7}{7 \times 9} = \frac{2}{9}$
(iii) $\frac{3}{8} \times \frac{6}{4} = \frac{3 \times 6}{8 \times 4} = \frac{3 \times 3}{8 \times 2} = \frac{9}{16}$
(iv) $\frac{9}{5} \times \frac{3}{5} = \frac{9 \times 3}{5 \times 5} = \frac{27}{25} = 1\frac{2}{25}$
(v) $\frac{1}{3} \times \frac{15}{8} = \frac{1 \times 15}{3 \times 8} = \frac{1 \times 5}{1 \times 8} = \frac{5}{8}$
(vi) $\frac{11}{2} \times \frac{3}{10} = \frac{11 \times 3}{2 \times 10} = \frac{33}{20} = 1\frac{3}{20}$
(vii) $\frac{4}{5} \times \frac{12}{7} = \frac{4 \times 12}{5 \times 7} = \frac{48}{35} = 1\frac{13}{35}$

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Question 3:

Multiply the following fractions:

$$\begin{array}{llll} \text{(i)} & \frac{2}{5} \times 5\frac{1}{4} & \text{(ii)} & 6\frac{2}{5} \times \frac{7}{9} \\ \text{(v)} & 3\frac{2}{5} \times \frac{4}{7} & \text{(vi)} & 2\frac{3}{5} \times 3 \\ \text{(iii)} & \frac{3}{2} \times 5\frac{1}{3} & \text{(vii)} & 3\frac{4}{7} \times \frac{3}{5} \\ \text{(iv)} & \frac{5}{6} \times 2\frac{3}{7} & & \end{array}$$

Answer 3:

$$\begin{array}{ll} \text{(i)} & \frac{2}{5} \times 5\frac{1}{4} = \frac{2}{5} \times \frac{21}{4} = \frac{2 \times 21}{5 \times 4} = \frac{1 \times 21}{5 \times 2} = \frac{21}{10} = 2\frac{1}{10} \\ \text{(ii)} & 6\frac{2}{5} \times \frac{7}{9} = \frac{32}{5} \times \frac{7}{9} = \frac{32 \times 7}{5 \times 9} = \frac{224}{45} = 4\frac{44}{45} \\ \text{(iii)} & \frac{3}{2} \times 5\frac{1}{3} = \frac{3}{2} \times \frac{16}{3} = \frac{48}{6} = 8 \\ \text{(iv)} & \frac{5}{6} \times 2\frac{3}{7} = \frac{5}{6} \times \frac{17}{7} = \frac{85}{42} = 2\frac{1}{42} \\ \text{(v)} & 3\frac{2}{5} \times \frac{4}{7} = \frac{17}{5} \times \frac{4}{7} = \frac{68}{35} = 1\frac{33}{35} \\ \text{(vi)} & 2\frac{3}{5} \times 3 = \frac{13}{5} \times \frac{3}{1} = \frac{13 \times 3}{5 \times 1} = \frac{39}{5} = 7\frac{4}{5} \\ \text{(vii)} & 3\frac{4}{7} \times \frac{3}{5} = \frac{25}{7} \times \frac{3}{5} = \frac{5 \times 3}{7 \times 1} = \frac{15}{7} = 2\frac{1}{7} \end{array}$$

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:

$$\begin{array}{ll} \text{(i)} & \frac{2}{7} \text{ of } \frac{3}{4} \text{ or } \frac{3}{5} \text{ of } \frac{5}{8} \\ \Rightarrow & \frac{2}{7} \times \frac{3}{4} \text{ or } \frac{3}{5} \times \frac{5}{8} \Rightarrow \frac{3}{14} \text{ or } \frac{3}{8} \Rightarrow \frac{3}{14} < \frac{3}{8} \end{array}$$

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

$$\begin{array}{ll} \text{(ii)} & \frac{1}{2} \text{ of } \frac{6}{7} \text{ or } \frac{2}{3} \text{ of } \frac{3}{7} \\ \Rightarrow & \frac{1}{2} \times \frac{6}{7} \text{ or } \frac{2}{3} \times \frac{3}{7} \Rightarrow \frac{3}{7} \text{ or } \frac{2}{7} \Rightarrow \frac{3}{7} > \frac{2}{7} \end{array}$$

Thus, $\frac{3}{7}$ 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

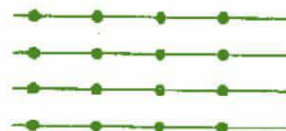
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Saili planted 4 saplings in a row,
then number of gap in saplings = 3



Therefore,

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

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

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, hours taken by her to read the entire book = $1\frac{3}{4} \times 6 = \frac{7}{4} \times 6 = \frac{21}{2} = 10\frac{1}{2}$

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

Thus, the car will cover 44 km distance.

Question 8:

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

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

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

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

Answer 8:

(a) (i) $\frac{2}{3} \times \frac{5}{10} = \frac{10}{30}$

(ii) The simplest form of $\frac{5}{10}$ is $\frac{1}{2}$.

(b) (i) $\frac{3}{5} \times \frac{8}{15} = \frac{24}{75}$

(ii) The simplest form of $\frac{8}{15}$ is $\frac{8}{15}$.