

7. Fractions

Exercise 7.1

1. $\frac{5}{9}$ and $\frac{1}{4}$ are proper fractions.
2. $\frac{10}{9}$, $\frac{12}{11}$ and $\frac{18}{17}$ are improper fractions.
3. (a) $2\frac{1}{2} = \frac{5}{2}$ (b) $4\frac{3}{8} = \frac{35}{8}$ (c) $5\frac{1}{2} = \frac{11}{2}$ (d) $6\frac{3}{6} = \frac{39}{6}$
 (e) $4\frac{1}{4} = \frac{17}{4}$ (f) $3\frac{1}{2} = \frac{7}{2}$ (g) $9\frac{1}{5} = \frac{46}{5}$ (h) $7\frac{2}{3} = \frac{23}{3}$
4. (a) $\frac{15}{8} = 1\frac{7}{8}$ (b) $\frac{16}{7} = 2\frac{2}{7}$ (c) $\frac{25}{6} = 4\frac{1}{6}$ (d) $\frac{67}{12} = 5\frac{7}{12}$
 (e) $\frac{63}{13} = 4\frac{11}{13}$ (f) $\frac{81}{18} = 4\frac{9}{18}$ (g) $\frac{50}{17} = 2\frac{16}{17}$ (h) $\frac{63}{8} = 7\frac{7}{8}$

Exercise 7.2

1. (a) $\frac{1}{4}$ (b) $\frac{3}{8}$ (c) $\frac{3}{4}$
2. (a) $\frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10}$ and $\frac{3}{5} = \frac{3 \times 3}{5 \times 3} = \frac{9}{15}$
 Thus, $\frac{6}{10}$ and $\frac{9}{15}$ are two equivalent fractions.
 (b) $\frac{4}{15} = \frac{4 \times 2}{15 \times 2} = \frac{8}{30}$ and $\frac{4}{15} = \frac{4 \times 3}{15 \times 3} = \frac{12}{45}$
 Thus $\frac{8}{30}$ and $\frac{12}{45}$ are two equivalent fractions.
 (c) $\frac{8}{11} = \frac{8 \times 2}{11 \times 2} = \frac{16}{22}$ and $\frac{8}{11} = \frac{8 \times 3}{11 \times 3} = \frac{24}{33}$
 Thus $\frac{16}{22}$ and $\frac{24}{33}$ are two equivalent fractions.
 (d) $\frac{7}{15} = \frac{7 \times 2}{15 \times 2} = \frac{14}{30}$ and $\frac{7}{15} = \frac{7 \times 3}{15 \times 3} = \frac{21}{45}$
 Thus, $\frac{14}{30}$ and $\frac{21}{45}$ are two equivalent fractions.
3. (a) $\frac{1}{2} = \frac{1 \times 18}{2 \times 18} = \frac{18}{36}$ (b) $\frac{2}{5} = \frac{2 \times 9}{5 \times 9} = \frac{18}{45}$
 (c) $\frac{6}{8} = \frac{6 \times 3}{8 \times 3} = \frac{18}{24}$ (d) $\frac{9}{15} = \frac{9 \times 2}{15 \times 2} = \frac{18}{30}$
4. (a) $\frac{3}{4} = \frac{3 \times 10}{4 \times 10} = \frac{30}{40}$ (b) $\frac{5}{8} = \frac{5 \times 5}{8 \times 5} = \frac{25}{40}$
 (c) $\frac{9}{10} = \frac{9 \times 4}{10 \times 4} = \frac{36}{40}$ (d) $\frac{13}{5} = \frac{13 \times 8}{5 \times 8} = \frac{104}{40}$

$$5. \quad (a) \quad \frac{8}{9} = \frac{32}{36}$$

$$(b) \quad \frac{6}{17} = \frac{36}{102}$$

$$(c) \quad \frac{13}{18} = \frac{104}{144}$$

$$(d) \quad \frac{12}{17} = \frac{84}{119}$$

Exercise 7.3

1. (a) H.C.F. of 65 and 80

$$\begin{array}{r} 65 \overline{)80} (1 \\ \underline{-65} \\ 15 \overline{)65} (4 \\ \underline{-60} \\ 5 \overline{)15} (3 \\ \underline{-15} \\ \times \end{array}$$

$$\text{H.C.F.} = 5$$

$$\therefore \frac{65}{80} = \frac{65 \div 5}{80 \div 5} = \frac{13}{16}$$

(c) H.C.F. of 26 and 46

$$\begin{array}{r} 26 \overline{)46} (1 \\ \underline{-26} \\ 20 \overline{)26} (1 \\ \underline{-20} \\ 6 \overline{)20} (3 \\ \underline{-18} \\ 2 \overline{)6} (3 \\ \underline{-6} \\ \times \end{array}$$

$$\text{H.C.F.} = 2$$

$$\therefore \frac{26}{46} = \frac{26 \div 2}{46 \div 2} = \frac{13}{23}$$

(e) H.C.F. of 32 and 50

$$\begin{array}{r} 32 \overline{)50} (1 \\ \underline{-32} \\ 18 \overline{)32} (1 \\ \underline{-18} \\ 14 \overline{)18} (1 \\ \underline{-14} \\ 4 \overline{)14} (3 \\ \underline{-12} \\ 2 \overline{)4} (2 \\ \underline{-4} \\ \times \end{array}$$

$$\text{H.C.F.} = 2$$

$$\therefore \frac{32}{50} = \frac{32 \div 2}{50 \div 2} = \frac{16}{25}$$

(b) H.C.F. of 82 and 90

$$\begin{array}{r} 82 \overline{)90} (1 \\ \underline{-82} \\ 8 \overline{)82} (10 \\ \underline{-80} \\ 2 \overline{)8} (4 \\ \underline{-8} \\ \times \end{array}$$

$$\text{H.C.F.} = 2$$

$$\therefore \frac{82}{90} = \frac{82 \div 2}{90 \div 2} = \frac{41}{45}$$

(d) H.C.F. of 18 and 90

$$\begin{array}{r} 18 \overline{)90} (5 \\ \underline{-90} \\ \times \end{array}$$

$$\text{H.C.F.} = 18$$

$$\therefore \frac{18}{90} = \frac{18 \div 18}{90 \div 18} = \frac{1}{5}$$

(f) H.C.F. of 75 and 35

$$\begin{array}{r} 35 \overline{)75} (2 \\ \underline{-70} \\ 5 \overline{)35} (7 \\ \underline{-35} \\ \times \end{array}$$

$$\text{H.C.F.} = 5$$

$$\therefore \frac{75}{35} = \frac{75 \div 5}{35 \div 5} = \frac{15}{7}$$

(g) H.C.F. of 112 and 192

$$\begin{array}{r}
 112 \overline{)192} (1 \\
 \underline{-112} \\
 80 \overline{)112} (1 \\
 \underline{-80} \\
 32 \overline{)80} (2 \\
 \underline{-64} \\
 16 \overline{)32} (2 \\
 \underline{-32} \\
 \hline
 \times
 \end{array}$$

$$\begin{aligned}
 &\text{H.C.F.} = 16 \\
 \therefore \frac{112}{192} &= \frac{112 \div 16}{192 \div 16} = \frac{7}{12}
 \end{aligned}$$

(h) H.C.F. of 55 and 100

$$\begin{array}{r}
 55 \overline{)100} (1 \\
 \underline{-55} \\
 45 \overline{)55} (1 \\
 \underline{-45} \\
 10 \overline{)45} (4 \\
 \underline{-40} \\
 5 \overline{)10} (2 \\
 \underline{-10} \\
 \hline
 \times
 \end{array}$$

$$\begin{aligned}
 &\text{H.C.F.} = 5 \\
 \therefore \frac{55}{100} &= \frac{55 \div 5}{100 \div 5} = \frac{11}{20}
 \end{aligned}$$

Exercise 7.4

1. (a) $\frac{4}{5} > \frac{2}{5}$ (b) $\frac{3}{8} < \frac{4}{8}$ (c) $\frac{5}{6} > \frac{5}{7}$
 (d) $\frac{9}{6} > \frac{6}{6}$ (e) $\frac{3}{8} < \frac{4}{7}$

L.C.M. of 8 and 7 = 56

$$\frac{3}{8} = \frac{3 \times 7}{8 \times 7} = \frac{21}{56}$$

$$\frac{4}{7} = \frac{4 \times 8}{7 \times 8} = \frac{32}{56}$$

$$\therefore \frac{32}{56} > \frac{21}{56}$$

$$\therefore \frac{4}{7} > \frac{3}{8}$$

(f) $2\frac{4}{9} - 1\frac{3}{12}$

L.C.M. of 9 and 12 = $3 \times 3 \times 2 \times 2 = 36$

Now, $2\frac{4}{9} = \frac{22}{9} = \frac{22 \times 4}{9 \times 4} = \frac{88}{36}$

and $1\frac{3}{12} = \frac{15}{12} = \frac{15 \times 3}{12 \times 3} = \frac{45}{36}$

$$\therefore \frac{88}{36} > \frac{45}{36}$$

$$\therefore 2\frac{4}{9} > 1\frac{3}{12}$$

3	9, 12
3	3, 4
2	1, 4
2	1, 2
	1, 1

4. (a) $\frac{4}{5}$ or $\frac{2}{7}$

L.C.M. of 5 and 7 = $5 \times 7 = 35$

$$\frac{4}{5} = \frac{4 \times 7}{5 \times 7} = \frac{28}{35}$$

(\because 5 and 7 are co-primes)

$$\frac{2}{7} = \frac{2 \times 5}{7 \times 5} = \frac{10}{35}$$

$$\therefore \frac{28}{35} > \frac{10}{35}$$

$$\therefore \frac{4}{5} > \frac{2}{7}$$

So, $\frac{4}{5}$ is greater.

(b) $\frac{3}{8}$ or $\frac{9}{15}$

L.C.M. of 8 and 15 = $2 \times 2 \times 2 \times 3 \times 5 = 120$ (\because 8 and 15 are co-primes)

$$\frac{3}{8} = \frac{3 \times 15}{8 \times 15} = \frac{45}{120} \qquad \frac{9}{15} = \frac{9 \times 8}{15 \times 8} = \frac{72}{120}$$

$$\therefore \frac{45}{120} < \frac{72}{120} \qquad \therefore \frac{3}{8} < \frac{9}{15}$$

So, $\frac{9}{15}$ is greater.

(c) $\frac{7}{8}$ or $\frac{3}{4}$

L.C.M. of 8 and 4 = $2 \times 2 \times 2 = 8$

$$\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$$

$$\therefore \frac{7}{8} > \frac{6}{8} \qquad \therefore \frac{7}{8} > \frac{3}{4}$$

So, $\frac{7}{8}$ is greater.

2	8, 4
2	4, 2
2	2, 1
	1, 1

(d) $\frac{8}{11}$ or $\frac{3}{5}$

L.C.M. of 11 and 5 = 55 (since 11 and 5 are co-primes)

$$\frac{8}{11} = \frac{8 \times 5}{11 \times 5} = \frac{40}{55} \qquad \frac{3}{5} = \frac{3 \times 11}{5 \times 11} = \frac{33}{55}$$

$$\therefore \frac{40}{55} > \frac{33}{55} \qquad \therefore \frac{8}{11} > \frac{3}{5}$$

So, $\frac{8}{11}$ is greater.

(e) $\frac{3}{4}$ or $\frac{9}{10}$

L.C.M. of 4 and 10 = $2 \times 2 \times 5 = 20$

$$\frac{3}{4} = \frac{3 \times 5}{4 \times 5} = \frac{15}{20} \qquad \frac{9}{10} = \frac{9 \times 2}{10 \times 2} = \frac{18}{20}$$

$$\therefore \frac{15}{20} < \frac{18}{20} \qquad \therefore \frac{3}{4} < \frac{9}{10}$$

So, $\frac{9}{10}$ is greater.

2	4, 10
2	2, 5
5	1, 5
	1, 1

(f) $\frac{9}{12}$ or $\frac{8}{18}$

L.C.M. of 12 and 18 = $2 \times 2 \times 3 \times 3 = 36$

$$\frac{9}{12} = \frac{9 \times 3}{12 \times 3} = \frac{27}{36} \qquad \frac{8}{18} = \frac{8 \times 2}{18 \times 2} = \frac{16}{36}$$

$$\therefore \frac{27}{36} > \frac{16}{36} \qquad \therefore \frac{9}{12} > \frac{8}{18}$$

So, $\frac{9}{12}$ is greater.

2	12, 18
2	6, 9
3	3, 9
3	1, 3
	1, 1

3. (a) Ascending order :

$$\frac{2}{7} < \frac{4}{7} < \frac{6}{7} < \frac{15}{7}$$

- (b) Ascending order :

$$\frac{1}{8} < \frac{1}{4} < \frac{1}{3} < \frac{1}{2}$$

- (c) L.C.M. of 7, 12, 8, 9 = $2 \times 2 \times 2 \times 3 \times 3 \times 7 = 504$

$$\frac{5}{7} = \frac{5 \times 72}{7 \times 72} = \frac{360}{504} \qquad \frac{8}{12} = \frac{8 \times 42}{12 \times 42} = \frac{336}{504}$$

$$\frac{11}{8} = \frac{11 \times 63}{8 \times 63} = \frac{693}{504} \qquad \frac{16}{9} = \frac{16 \times 56}{9 \times 56} = \frac{896}{504}$$

Ascending order :

$$\frac{336}{504} < \frac{360}{504} < \frac{693}{504} < \frac{896}{504}$$

$$\frac{8}{12} < \frac{5}{8} < \frac{11}{8} < \frac{16}{9}$$

- (d) L.C.M. of 20, 5, 10, 15 = $2 \times 2 \times 3 \times 5 = 60$

$$\frac{5}{20} = \frac{5 \times 3}{20 \times 3} = \frac{15}{60} \qquad \frac{3}{5} = \frac{3 \times 12}{5 \times 12} = \frac{36}{60}$$

$$\frac{11}{10} = \frac{11 \times 6}{10 \times 6} = \frac{66}{60} \qquad \frac{13}{15} = \frac{13 \times 4}{15 \times 4} = \frac{52}{60}$$

Ascending order :

$$\frac{15}{60} < \frac{36}{60} < \frac{52}{60} < \frac{66}{60}$$

$$\frac{5}{20} < \frac{3}{5} < \frac{13}{15} < \frac{11}{10}$$

4. (a) Descending order :

$$\frac{1}{5} > \frac{1}{6} > \frac{1}{8} > \frac{1}{9}$$

- (b) Descending order :

$$\frac{9}{6} > \frac{5}{6} > \frac{4}{6} > \frac{1}{6}$$

- (c) L.C.M. of 8, 12, 16, 13 = $2 \times 2 \times 2 \times 2 \times 3 \times 13 = 624$

$$\frac{3}{8} = \frac{3 \times 78}{8 \times 78} = \frac{234}{624} \qquad \frac{11}{12} = \frac{11 \times 52}{12 \times 52} = \frac{572}{624}$$

$$\frac{15}{16} = \frac{15 \times 39}{16 \times 39} = \frac{585}{624} \qquad \frac{12}{13} = \frac{12 \times 48}{13 \times 48} = \frac{576}{624}$$

Descending order :

$$\frac{585}{624} > \frac{576}{624} > \frac{572}{624} > \frac{234}{624}$$

$$\frac{15}{16} > \frac{12}{13} > \frac{11}{12} > \frac{3}{8}$$

2	7, 12, 8, 9
2	7, 6, 4, 9
2	7, 3, 2, 9
3	7, 3, 1, 9
3	7, 1, 1, 3
7	7, 1, 1, 1
	1, 1, 1, 1

2	20, 5, 10, 15
2	10, 5, 5, 15
3	5, 5, 5, 15
5	5, 5, 5, 5
	1, 1, 1, 1

2	8, 12, 16, 13
2	4, 6, 8, 13
2	2, 3, 4, 13
2	1, 3, 2, 13
3	1, 3, 1, 13
13	1, 1, 1, 13
	1, 1, 1, 1

(d) L.C.M. of 15, 12, 6, 5 = $2 \times 2 \times 3 \times 5 = 60$

$$\frac{10}{15} = \frac{10 \times 4}{15 \times 4} = \frac{40}{60} \quad \frac{3}{12} = \frac{3 \times 5}{12 \times 5} = \frac{15}{60}$$

$$\frac{1}{6} = \frac{1 \times 10}{6 \times 10} = \frac{10}{60} \quad \frac{4}{5} = \frac{4 \times 12}{5 \times 12} = \frac{48}{60}$$

Descending order :

$$\frac{48}{60} < \frac{40}{60} < \frac{15}{60} < \frac{10}{60}$$

$$\frac{4}{5} < \frac{10}{15} < \frac{3}{12} < \frac{1}{6}$$

5. Marks of Aarush = $\frac{160}{200}$

Marks of Atharva = $\frac{90}{100}$

L.C.M. of 100 and 200 = $2 \times 2 \times 2 \times 5 \times 5 = 200$

Now, $\frac{90}{100} = \frac{90 \times 2}{100 \times 2} = \frac{180}{200}$

$$\therefore \frac{160}{200} < \frac{180}{200} \quad \therefore \frac{160}{200} < \frac{90}{100}$$

So, Atharva's score is better.

6. Share of team A = $\frac{16}{20}$

Share of team B = $\frac{20}{30}$

L.C.M. of 20 and 30 = $2 \times 2 \times 3 \times 5 = 60$

$$\frac{16}{20} = \frac{16 \times 3}{20 \times 3} = \frac{48}{60} \quad \frac{20}{30} = \frac{20 \times 2}{30 \times 2} = \frac{40}{60}$$

$$\therefore \frac{48}{60} > \frac{40}{60} \quad \therefore \frac{16}{20} > \frac{20}{30}$$

So, students of team A got a larger share.

2	15, 12, 6, 5
2	15, 6, 3, 5
3	15, 3, 3, 5
5	5, 1, 1, 5
	1, 1, 1, 1

2	100, 200
2	50, 100
2	25, 50
5	25, 25
5	5, 5
	1, 1

2	20, 30
2	10, 15
3	5, 15
5	5, 5
	1, 1

Exercise 7.5

1. (a) $\frac{5}{13} + \frac{2}{13} = \frac{5+2}{13} = \frac{7}{13}$

(b) $\frac{6}{17} + \frac{3}{17} = \frac{6+3}{17} = \frac{9}{17}$

(c) L.C.M. of 6 and 5 = $6 \times 5 = 30$

(\because 6 and 5 are co-primes)

$$\frac{8}{6} = \frac{8 \times 5}{6 \times 5} = \frac{40}{30} \quad \frac{3}{5} = \frac{3 \times 6}{5 \times 6} = \frac{18}{30}$$

$$\therefore \frac{8}{6} + \frac{3}{5} = \frac{40}{30} + \frac{18}{30} = \frac{40+18}{30} = \frac{58}{30}$$

$$= \frac{29}{15} = 1\frac{14}{15}$$

(d) L.C.M. of 5 and 6 = $5 \times 2 \times 3 = 30$ (since 5 and 6 are co-primes)

$$\frac{2}{5} = \frac{2 \times 6}{5 \times 6} = \frac{12}{30} \qquad \frac{1}{6} = \frac{1 \times 5}{6 \times 5} = \frac{5}{30}$$

$$\therefore \frac{2}{5} + \frac{1}{6} = \frac{12}{30} + \frac{5}{30} = \frac{17}{30}$$

(e) L.C.M. of 7, 14 and 8 = $2 \times 2 \times 2 \times 7 = 56$

$$\begin{aligned} \frac{5}{7} + \frac{6}{14} + \frac{11}{8} &= \frac{5 \times 8 + 6 \times 4 + 11 \times 7}{56} \\ &= \frac{40 + 24 + 77}{56} \\ &= \frac{141}{56} \\ &= 2\frac{29}{56} \end{aligned}$$

(f) L.C.M. of 17 and 34 = $2 \times 17 = 34$

$$\begin{aligned} \frac{6}{17} + \frac{7}{34} + \frac{1}{17} &= \frac{6 \times 2 + 7 + 1 \times 2}{34} \\ &= \frac{21}{34} \end{aligned}$$

2	7, 14, 8
2	7, 7, 4
2	7, 7, 2
7	7, 7, 1
	1, 1, 1
2	17, 34
17	17, 17
	1, 1

2. (a) $5\frac{3}{7} + 6\frac{2}{7} = \frac{38}{7} + \frac{44}{7} = \frac{82}{7} = 11\frac{5}{7}$

(b) $3\frac{1}{7} + 4\frac{6}{7} + 3 = \frac{22}{7} + \frac{34}{7} + 3$
 $= \frac{22 + 34 + 3 \times 7}{7} = \frac{22 + 34 + 21}{7} = \frac{77}{7} = 11$

(c) $7\frac{6}{9} + 3\frac{1}{3} = \frac{69}{9} + \frac{10}{3}$
 $= \frac{69 + 10 \times 3}{9} = \frac{69 + 30}{9} = \frac{99}{9} = 11$

(d) $6\frac{3}{8} + 4\frac{1}{16} = \frac{51}{8} + \frac{65}{16}$
 $= \frac{51 \times 2 + 65}{16} = \frac{102 + 65}{16}$
 $= \frac{167}{16} = 10\frac{7}{16}$

(e) $2\frac{1}{6} + 2\frac{3}{8} = \frac{13}{6} + \frac{19}{8}$
 $= \frac{13 \times 8 + 19 \times 6}{48} = \frac{104 + 114}{48}$
 $= \frac{218}{48} = \frac{109}{24} = 4\frac{13}{24}$

(f) $1\frac{1}{2} + 1\frac{3}{4} + \frac{5}{8} = \frac{3}{2} + \frac{7}{4} + \frac{5}{8} = \frac{3 \times 4 + 7 \times 2 + 5}{8}$
 $= \frac{12 + 14 + 5}{8} = \frac{31}{8} = 3\frac{7}{8}$

Exercise 7.6

1. (a) $\frac{7}{3} - \frac{2}{3} = \frac{7-2}{3} = \frac{5}{3}$
- (c) $\frac{5}{9} - \frac{1}{9} = \frac{5-1}{9} = \frac{4}{9}$
- (e) $\frac{15}{29} - \frac{10}{29} = \frac{15-10}{29} = \frac{5}{29}$
- (b) $\frac{16}{11} - \frac{8}{11} = \frac{16-8}{11} = \frac{8}{11}$
- (d) $\frac{23}{25} - \frac{19}{25} = \frac{23-19}{25} = \frac{4}{25}$
- (f) $\frac{14}{17} - \frac{1}{17} = \frac{14-1}{17} = \frac{13}{17}$
2. (a) $\frac{5}{7} - \frac{1}{6} = \frac{5 \times 6 - 1 \times 7}{42} = \frac{30-7}{42} = \frac{23}{42}$
- (b) $\frac{7}{10} - \frac{3}{20} = \frac{7 \times 2 - 3}{20} = \frac{14-3}{20} = \frac{11}{20}$
- (c) $\frac{7}{13} - \frac{1}{8} = \frac{7 \times 8 - 1 \times 13}{104} = \frac{56-13}{104} = \frac{43}{104}$
- (d) $\frac{7}{8} - \frac{5}{9} = \frac{7 \times 9 - 5 \times 8}{72} = \frac{63-40}{72} = \frac{23}{72}$
- (e) $\frac{3}{8} - \frac{1}{6} = \frac{3 \times 6 - 1 \times 8}{48} = \frac{18-8}{48} = \frac{10}{48} = \frac{5}{24}$
- (f) $\frac{4}{7} - \frac{11}{21} = \frac{4 \times 3 - 11}{21} = \frac{12-11}{21} = \frac{1}{21}$
3. (a) $5\frac{3}{8} - 1\frac{1}{4} = \frac{43}{8} - \frac{5}{4} = \frac{43-5 \times 2}{8} = \frac{43-10}{8} = \frac{33}{8} = 4\frac{1}{8}$
- (b) $6\frac{3}{4} - 3\frac{1}{2} = \frac{27}{4} - \frac{7}{2} = \frac{27-7 \times 2}{4} = \frac{27-14}{4} = \frac{13}{4} = 3\frac{1}{4}$
- (c) $11\frac{13}{16} - 5\frac{5}{8} = \frac{189}{16} - \frac{45}{8} = \frac{189-45 \times 2}{16}$
 $= \frac{189-90}{16} = \frac{99}{16} = 6\frac{3}{16}$
- (d) $10\frac{9}{22} - 8\frac{2}{11} = \frac{229}{22} - \frac{90}{11} = \frac{229-90 \times 2}{22}$
 $= \frac{229-180}{22} = \frac{49}{22} = 2\frac{5}{22}$
- (e) $16\frac{9}{10} - 14\frac{3}{5} = \frac{169}{10} - \frac{73}{5} = \frac{169-73 \times 2}{10}$
 $= \frac{169-146}{10} = \frac{23}{10} = 2\frac{3}{10}$
- (f) $15\frac{3}{5} - 10\frac{11}{15} = \frac{78}{5} - \frac{161}{15} = \frac{78 \times 3 - 161}{15}$
 $= \frac{234-161}{15} = \frac{73}{15} = 4\frac{13}{15}$
4. (a) $\frac{1}{2} - 0 = \frac{1}{2}$
- (b) $\frac{1}{2} - \frac{1}{2} = 0$
- (c) $\frac{4}{3} + \frac{7}{11} = \frac{7}{11} + \frac{4}{3}$

Exercise 7.7

1. Length of cloth bought by Radha = $5\frac{1}{5}$ m.

Length of cloth bought by Amar = $2\frac{1}{2}$ m.

$$\begin{aligned} \text{Total length} &= 5\frac{1}{5} + 2\frac{1}{2} \\ &= \frac{26}{5} + \frac{5}{2} = \frac{26 \times 2 + 5 \times 5}{10} \\ &= \frac{52 + 25}{10} = \frac{77}{10} = 7\frac{7}{10} \text{ m.} \end{aligned}$$

L.C.M. of 5 and 2 = $5 \times 2 = 10$

So, the total length of the cloth bought by them is $7\frac{7}{10}$ m.

2. Distance covered by bus = $2\frac{2}{13}$ km = $\frac{28}{13}$ km.

Distance covered by car = $2\frac{5}{13}$ km = $\frac{31}{13}$ km.

Distance covered by rickshaw = $3\frac{4}{13}$ km = $\frac{43}{13}$ km.

$$\begin{aligned} \text{Total distance covered by Renu} &= \frac{28}{13} + \frac{31}{13} + \frac{43}{13} = \frac{28 + 31 + 43}{13} \\ &= \frac{102}{13} = 7\frac{11}{13} \text{ km.} \end{aligned}$$

Thus, Renu covered $7\frac{11}{13}$ m.

3. Length of Ist piece = $3\frac{1}{9}$ m. = $\frac{28}{9}$ m.

Length of IInd piece = $6\frac{4}{9}$ m. = $\frac{58}{9}$ m.

Length of IIIrd piece = $1\frac{7}{9}$ m. = $\frac{16}{9}$ m.

$$\text{Total length} = \frac{28}{9} + \frac{58}{9} + \frac{16}{9} = \frac{102}{9} = 11\frac{3}{9} \text{ m.}$$

So, length of the ribbon was $11\frac{3}{9}$ m. before it was divided.

4. Time spend for studying = $\frac{3}{4}$ hrs.

Time spend for playing = $\frac{5}{6}$ hrs.

$$\text{Total time spend in all} = \frac{3}{4} + \frac{5}{6}$$

L.C.M. of 4 and 6 = $2 \times 2 \times 3 = 4 \times 3 = 12$

$$\frac{3}{4} + \frac{5}{6} = \frac{3 \times 3 + 5 \times 2}{12} = \frac{9 + 10}{12} = \frac{19}{12} = 1\frac{7}{12}$$

So, he spends $1\frac{7}{12}$ hrs. in all.

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

5. Part of chocolate = $\frac{7}{10}$

Part of chocolate she gave = $\frac{2}{5}$

$$\begin{aligned} \text{Part of chocolate left} &= \frac{7}{10} - \frac{2}{5} = \frac{7-2 \times 2}{10} \\ &= \frac{7-4}{10} = \frac{3}{10} \end{aligned}$$

So, $\frac{3}{10}$ is the required part of chocolate.

6. Length of the pole = $5\frac{1}{3}$ m. = $\frac{16}{3}$ m

Length of the pole set = $1\frac{1}{4}$ m. = $\frac{5}{4}$ m.

Length of the pole above the ground = $\frac{16}{3} - \frac{5}{4}$

L.C.M. of 3 and 4 = $3 \times 4 = 12$

(\because 3 and 4 are co-primes)

$$\begin{aligned} \therefore \frac{16}{3} - \frac{5}{4} &= \frac{16 \times 4 - 3 \times 5}{12} \\ &= \frac{64 - 15}{12} = \frac{49}{12} = 4\frac{1}{12} \end{aligned}$$

So, the length of the pole above the ground was $4\frac{1}{12}$ m.

7. Weight of 2 books = $3\frac{1}{4}$ kg.

Weight of 1 book = $1\frac{2}{5}$ kg.

Weight of other book = $3\frac{1}{4} - 1\frac{2}{5} = \frac{13}{4} - \frac{7}{5}$

L.C.M. of 4 and 5 = $4 \times 5 = 20$

(since 4 and 5 are co-primes).

$$\begin{aligned} \therefore \frac{13}{4} - \frac{7}{5} &= \frac{13 \times 5 - 4 \times 7}{20} \\ &= \frac{65 - 28}{20} = \frac{37}{20} = 1\frac{17}{20} \end{aligned}$$

So, the weight of the other book is $1\frac{17}{20}$ kg.

8. The perimeter of a plot = $36\frac{4}{5}$ m.

length of the first side = $12\frac{7}{10}$ m.

length of the second side = $8\frac{11}{15}$ m.

length of the third side = $36\frac{4}{5} - 12\frac{7}{10} - 8\frac{11}{15}$

L.C.M. of 5, 10 and 15 = $2 \times 3 \times 5 = 30$

$$\begin{aligned}
 36\frac{4}{5} - 12\frac{7}{10} - 8\frac{11}{15} &= \frac{184}{5} - \frac{127}{10} - \frac{131}{15} \\
 &= \frac{184 \times 6 - 127 \times 3 - 131 \times 2}{30} \\
 &= \frac{1104 - 381 - 262}{30} \\
 &= \frac{1104 - 643}{30} = \frac{461}{30} = 15\frac{11}{30}
 \end{aligned}$$

2	5, 10, 15
3	5, 5, 15
5	5, 5, 5
	1, 1, 1

So, the length of the third side is $15\frac{11}{30}$ m.

Exercise 7.8

1. (a) $\frac{1}{8} \times 24 = \frac{1}{\cancel{8}^{\cancel{16}}_1} \times \cancel{24}^{\cancel{12}} = \frac{1 \times 3}{1} = 3$

(b) $\frac{1}{3} \times 50 = \frac{50}{3} = 16\frac{2}{3}$

(c) $\frac{4}{6} \times 36 = \frac{4}{\cancel{6}^{\cancel{18}}_1} \times \cancel{36}^{\cancel{6}} = \frac{4 \times 6}{1} = 24$

(d) $\frac{5}{21} \times 63 = \frac{5}{\cancel{21}^{\cancel{21}}_1} \times \cancel{63}^{\cancel{3}} = \frac{5 \times 3}{1} = 15$

(e) $\frac{3}{7} \times 42 = \frac{3}{\cancel{7}^{\cancel{14}}_1} \times \cancel{42}^{\cancel{6}} = 3 \times 6 = 18$

(f) $\frac{5}{6} \times 246 = \frac{5}{\cancel{6}^{\cancel{12}}_1} \times \cancel{246}^{\cancel{41}} = 5 \times 41 = 205$

2. (a) $\frac{3}{4}$ by $\frac{3}{8} = \frac{3}{4} \times \frac{3}{8} = \frac{9}{32}$

(b) $\frac{5}{12}$ by $\frac{3}{15} = \frac{5}{12} \times \frac{\cancel{3}^{\cancel{1}}}{\cancel{15}^{\cancel{5}}_1} = \frac{1 \times 1}{12 \times 1} = \frac{1}{12}$

(c) $\frac{11}{13}$ by $\frac{3}{7} = \frac{11}{13} \times \frac{3}{7} = \frac{33}{91}$

(d) $\frac{1}{5}$ by $\frac{1}{3} = \frac{1}{5} \times \frac{1}{3} = \frac{1}{15}$

(e) $3\frac{1}{2}$ by $\frac{3}{8} = \frac{7}{2} \times \frac{3}{8} = \frac{21}{16}$ (f)

$\frac{25}{32}$ by $\frac{16}{45} = \frac{25}{\cancel{32}^{\cancel{16}}_2} \times \frac{\cancel{16}^{\cancel{2}}}{45} = \frac{25 \times 1}{2 \times 45} = \frac{5}{9}$

3. (a) $\frac{1}{4}$ of ₹ 100 = $\frac{1}{\cancel{4}^{\cancel{20}}_1} \times \cancel{100}^{\cancel{25}} = \frac{1 \times 25}{1} = ₹ 25$

(b) $\frac{8}{13}$ of ₹ 2600 = $\frac{8}{\cancel{13}^{\cancel{13}}_1} \times \cancel{2600}^{\cancel{200}} = \frac{8 \times 200}{1} = ₹ 1600$

(c) $\frac{4}{5}$ of 300 l = $\frac{4}{\cancel{5}^{\cancel{60}}_1} \times \cancel{300}^{\cancel{60}} = \frac{4 \times 60}{1} = 240$ l

$$(d) \frac{8}{9} \text{ of } 3\frac{4}{10} \text{ kg.} = \frac{8}{9} \times \frac{34}{10} = \frac{136}{45} = 3\frac{1}{45} \text{ kg.}$$

$$(e) \frac{2}{5} \text{ of } \frac{1}{2} \text{ pizza} = \frac{2}{5} \times \frac{1}{2} = \frac{1 \times 1}{5 \times 1} = \frac{1}{5} \text{ pizza}$$

$$(f) \frac{6}{7} \text{ of ₹ } 28 = \frac{6}{7} \times 28 = \frac{6 \times 4}{1} = ₹ 24$$

$$4. (a) \frac{11}{17} \times 1 = \frac{11}{17}$$

$$(c) \frac{8}{15} \times 0 = 0$$

$$(e) 0 \times \frac{7}{17} = 0$$

$$(b) \frac{8}{9} \times \frac{1}{2} = \frac{1}{2} \times \frac{8}{9} = \frac{8}{18}$$

$$(d) \frac{9}{13} \times 1 = \frac{9}{13}$$

$$(f) \left(\frac{2}{3} \times \frac{4}{5}\right) \times \frac{1}{4} = \frac{2}{3} \times \left(\frac{4}{5} \times \frac{1}{4}\right)$$

Exercise 7.9

$$1. (a) \text{ Reciprocal of } \frac{2}{3} = \frac{3}{2}$$

$$(c) \text{ Reciprocal of } 5 = \frac{1}{5}$$

$$(e) \text{ Reciprocal of } \frac{25}{7} = \frac{7}{25}$$

$$(b) \text{ Reciprocal of } \frac{4}{7} = \frac{7}{4}$$

$$(d) \text{ Reciprocal of } 1\frac{2}{9} \left(\frac{11}{9}\right) = \frac{9}{11}$$

$$(f) \text{ Reciprocal of } 2\frac{5}{16} \left(=\frac{37}{16}\right) = \frac{16}{37}$$

$$2. (a) \frac{3}{5} \div 3 = \frac{3}{5} \times \frac{1}{3} = \frac{1 \times 1}{5 \times 1} = \frac{1}{5}$$

$$(c) 8\frac{1}{2} \div 2 = \frac{17}{2} \div 2 = \frac{17}{2} \times \frac{1}{2} = \frac{17}{4} = 4\frac{1}{4}$$

$$(d) \frac{5}{12} \div \frac{3}{4} = \frac{5}{12} \times \frac{4}{3} = \frac{5 \times 1}{3 \times 3} = \frac{5}{9}$$

$$(e) 2\frac{1}{5} \div \frac{5}{8} = \frac{11}{5} \div \frac{5}{8} = \frac{11}{5} \times \frac{8}{5} = \frac{88}{25} = 3\frac{13}{25}$$

$$(f) 11\frac{1}{4} \div \frac{10}{9} = \frac{45}{4} \div \frac{10}{9} = \frac{45}{4} \times \frac{9}{10} = \frac{81}{8} = 10\frac{1}{8}$$

$$(b) \frac{3}{2} \div 6 = \frac{3}{2} \times \frac{1}{6} = \frac{1}{4}$$

$$3. (a) \frac{2}{5} \div \frac{15}{7} = \frac{2}{5} \times \frac{7}{15} = \frac{14}{75}$$

$$(b) \frac{5}{6} \div 10 = \frac{5}{6} \times \frac{1}{10} = \frac{1 \times 1}{6 \times 2} = \frac{1}{12}$$

$$(c) \frac{7}{8} \div \frac{1}{6} = \frac{7}{8} \times \frac{6}{1} = \frac{7 \times 3}{4 \times 1} = \frac{21}{4} = 5\frac{1}{4}$$

$$(d) \quad 9\frac{1}{3} \div 1\frac{3}{5} = \frac{28}{3} \div \frac{8}{5} = \frac{28}{3} \times \frac{5}{8} = \frac{7 \times 5}{3 \times 2} = \frac{35}{6}$$

$$(e) \quad 4\frac{1}{3} \div 12\frac{2}{3} = \frac{13}{3} \div \frac{38}{3} = \frac{13}{3} \times \frac{3}{38} = \frac{13 \times 1}{1 \times 38} = \frac{13}{38}$$

$$(f) \quad 10\frac{1}{2} \div 1\frac{13}{22} = \frac{21}{2} \div \frac{35}{22} = \frac{21}{2} \times \frac{22}{35} = \frac{3 \times 11}{1 \times 5} = \frac{33}{5} = 6\frac{3}{5}$$

Exercise 7.10

1. \therefore Cost of $2\frac{7}{9}$ kg of mangoes = ₹ 400

$$\therefore \text{cost of 1 kg of mangoes} = 400 \div 2\frac{7}{9} = 400 \div \frac{25}{9} = 400 \times \frac{9}{25} = 144$$

So, the cost of 1 kg of mangoes is ₹ 144.

2. \therefore Cost of 1 table = ₹ $50\frac{3}{20}$

$$\therefore \text{Cost of 100 tables} = 50\frac{3}{20} \times 100 = \frac{1003}{20} \times \frac{5}{1} = \frac{1003 \times 5}{1} = ₹ 5015$$

3. Length of wire = $12\frac{1}{2}$ m.

No. of pieces = 10

$$\therefore \text{Length of each piece} = 12\frac{1}{2} \div 10 = \frac{25}{2} \div 10 = \frac{25}{2} \times \frac{1}{10} = \frac{5 \times 1}{2 \times 2} = \frac{5}{4} = 1\frac{1}{4} \text{ m.}$$

4. Length of a piece = $\frac{3}{4}$ m.

No. of pieces = 10

$$\text{Total length of cloth} = \frac{3}{4} \times 10 = \frac{3 \times 5}{2} = \frac{15}{2} = 7\frac{1}{2} \text{ m.}$$

MCQ's

1. (a) 2. (a) 3. (c) 4. (c).

Worksheet

1. Part of cake fell down = $\frac{1}{4}$

$$\text{Remaining part of cake} = 1 - \frac{1}{4} = \frac{3}{4}$$

2. Part of cake Gopal ate up = $\frac{1}{2} \left(\frac{3}{4} \right) = \frac{3}{8}$
3. Part of cake dog ate up = $\frac{1}{2} \left(\frac{3}{8} \right) = \frac{3}{16}$
4. Now, the part of cake left = $1 - \left(\frac{1}{4} + \frac{3}{8} + \frac{3}{16} \right)$
 $= 1 - \left(\frac{1 \times 4 + 3 \times 2 + 3}{16} \right) = 1 - \frac{4 + 6 + 3}{16}$
 $= 1 - \frac{13}{16} = \frac{1 \times 16 - 13}{16}$
 $= \frac{16 - 13}{16} = \frac{3}{16}$

8. Decimals

Exercise 8.1

1. (a) 7.4 = Seven point four.
 (b) 53.08 = Fifty-three point zero eight.
 (c) 66.78 = Sixty-six point seven eight.
 (d) 36.487 = Thirty-six point four eight seven.
 (e) 976.844 = Nine hundred seventy-six point eight four four.
 (f) 2838.6414 = Two thousand eight hundred thirty-eight point six four one four.
2. (a) Thirty-four point zero six seven = 34.067
 (b) Eighty point nine six six = 80.966
 (c) Fifty three point six two eight = 53.628
 (d) Two hundred twenty seven point one two three = 227.123
 (e) Nine hundred forty-two point six two three = 942.623
 (f) Seventy-five point three four nine = 75.349

3.

Whole Number Part					Decimal Part			
Number	Thou- sands	Hund- reds	Tens	Ones		Tenths	Hund- redths	Thou- sandths
(a) 16.2			1	6	.	2		
(b) 284.23		2	8	4	.	2	3	
(c) 768.003		7	6	8	.	0	0	3
(d) 384.634		3	8	4	.	6	3	4
(e) 453.847		4	5	3	.	8	4	7
(f) 2223.107	2	2	2	3	.	1	0	7

4. (a) Place value of 9 in 9.371 = $9 \times 1 = 9$
 (b) Place value of 7 in 16.792 = $7 \times \frac{1}{10} = 0.7$

(c) Place value of 4 in 316.842 = $4 \times \frac{1}{100} = 0.04$

(d) Place value of 5 in 85.393 = $5 \times 1 = 5$

(e) Place value of 9 in 450.976 = $9 \times \frac{1}{10} = 0.9$

5. (a) $9.256 = 9 + 0.2 + 0.05 + 0.006$

(b) $35.08 = 30 + 5 + 0.08$

(c) $247.108 = 200 + 40 + 7 + 0.1 + 0.008$

(d) $0.875 = 0.8 + 0.07 + 0.005$

(e) $999.639 = 900 + 90 + 9 + 0.6 + 0.03 + 0.009$

(f) $86.007 = 80 + 6 + 0.007$

6. (a) 18.16 \rightarrow (i) Six point four zero nine

(b) 6.409 \rightarrow (ii) Eighteen point one six

(c) 28.23 \rightarrow (iii) Zero point zero five

(d) 0.05 \rightarrow (iv) Twenty-eight point two three

Exercise 8.2

1. (a) $\frac{6454}{10} = 645.4$

(b) $\frac{69}{1000} = 0.069$

(c) $\frac{18}{10000} = 0.0018$

(d) $\frac{384}{10} = 38.4$

(e) $\frac{979}{1000} = 0.979$

(f) $\frac{3846}{100} = 38.46$

2. (a) $10.67 = 10 + 0.67 = 10 + \frac{67}{100} = 10\frac{67}{100} = \frac{1067}{100}$

(b) $0.459 = \frac{459}{1000}$

(c) $118.35 = 118 + 0.35 = 118 + \frac{35}{100} = 118\frac{35}{100} = \frac{11835}{100}$

(d) $2416.25 = 2416 + 0.25 = 2416 + \frac{25}{100} = 2416\frac{25}{100} = \frac{241625}{100}$

(e) $38.290 = 38 + 0.290 = 38 + \frac{290}{1000} = 38\frac{290}{1000} = \frac{38290}{1000}$

(f) $79.0087 = 79 + 0.0087 = 79 + \frac{87}{10000} = 79\frac{87}{10000} = \frac{790087}{10000}$

3. (a) $9.8 = 9.80 = 9.800$

(b) $42.5 = 42.50 = 42.500$

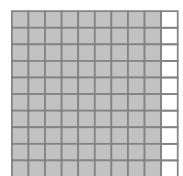
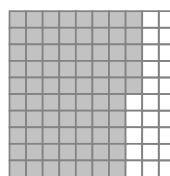
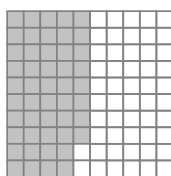
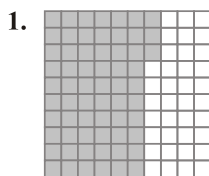
(c) $6.7 = 6.70 = 6.700$

(d) $85.7 = 85.70 = 85.700$

(e) $0.4 = 0.40 = 0.400$

(f) $5.1 = 5.10 = 5.100$

Exercise 8.3



0.63 ■ 0.48

0.75 ■ 0.90

2. (a) Like decimals are 24.710, 319.200, 38.500, and 0.943
 (b) Like decimals are 83.440, 96.300, 101.432 and 19.180
 (c) Like decimals are 90.12, 41.00, 50.00 and 62.30
 (d) Like decimals are 100.000, 500.600, 6.800 and 19.800
3. (a) 19.234 31.28 (b) 131.12 36.02
 (c) 4.546 2.946 (d) 18.687 1.3869
 (e) 13.86 22.365 (f) 23.165 14.62
4. (a) Ascending order : $10.634 < 12.623 < 16.460 < 91.200$
 (b) Ascending order : $0.0846 < 10.0080 < 18.4600 < 84.6000$
 (c) Ascending order : $0.323 < 3.230 < 6.660 < 26.620$
 (d) Ascending order : $0.254 < 2.540 < 25.400 < 254.000$
5. (a) Descending order : $9.360 > 9.236 > 9.060 > 0.096$
 (b) Descending order : $16.380 > 16.234 > 16.220 > 13.146$
 (c) Descending order : $0.534 > 0.453 > 0.354 > 0.345$
 (d) Descending order : $29.563 > 27.963 > 25.963 > 25.369$

Exercise 8.4

1. (a) $16.35 + 13.2$

$$\begin{array}{r} 16.35 \\ + 13.20 \\ \hline 29.55 \end{array}$$

(b) $12.48 + 18.287$

$$\begin{array}{r} \textcircled{1} \quad \textcircled{1} \\ 12.480 \\ + 18.287 \\ \hline 30.767 \end{array}$$

(c) $216.468 + 131.03$

$$\begin{array}{r} 216.468 \\ + 131.030 \\ \hline 347.498 \end{array}$$

(d) $325.81 + 89.07 + 0.78$

$$\begin{array}{r} \textcircled{1} \textcircled{1} \textcircled{1} \quad \textcircled{1} \\ 325.810 \\ + 89.097 \\ + 0.780 \\ \hline 415.687 \end{array}$$

(e) $331.331 + 33.31 + 3.1 + 0.001$

$$\begin{array}{r} 331.331 \\ 33.310 \\ 3.100 \\ + 0.001 \\ \hline 367.742 \end{array}$$

(f) $53.6 + 96.87 + 89.74 + 0.1$

$$\begin{array}{r} \textcircled{1} \textcircled{2} \quad \textcircled{1} \\ 53.600 \\ 96.870 \\ 89.740 \\ + 0.100 \\ \hline 159.544 \end{array}$$

2. (a) 0.55 from 2.7

$$\begin{array}{r} \overset{6}{10} \\ 2.70 \\ - 0.55 \\ \hline 2.15 \end{array}$$

(b) 38.4 from 63.72

$$\begin{array}{r} \overset{5}{13} \\ 63.72 \\ - 38.40 \\ \hline 25.32 \end{array}$$

(c) 0.58 from 2.015

$$\begin{array}{r} \overset{9}{11} \\ 2.015 \\ - 0.580 \\ \hline 1.435 \end{array}$$

(d) 0.3817 from 4.01

$$\begin{array}{r} \overset{9}{10} \overset{9}{10} \\ 4.0100 \\ - 0.3817 \\ \hline 3.6283 \end{array}$$

(e) 3.637 from 33.6

$$\begin{array}{r}
 12 \quad 15 \quad 9 \\
 2 \cancel{2} \quad \cancel{3} \cancel{10} \quad 10 \\
 \cancel{3} \cancel{3} \quad \cancel{6} \cancel{0} \quad \cancel{0} \\
 - 3 \quad 6 \quad 3 \quad 7 \\
 \hline
 29 \quad 9 \quad 6 \quad 3
 \end{array}$$

(f) 386.713 from 500

$$\begin{array}{r}
 9 \quad 9 \quad 9 \quad 9 \\
 4 \cancel{10} \cancel{10} \quad \cancel{10} \cancel{10} \quad 10 \\
 \cancel{3} \cancel{0} \cancel{0} \quad \cancel{0} \cancel{0} \cancel{0} \\
 - 3 \quad 8 \quad 6 \quad 7 \quad 1 \quad 3 \\
 \hline
 1 \quad 1 \quad 3 \quad 2 \quad 8 \quad 7
 \end{array}$$

3.

$$\begin{array}{r}
 9 \quad 9 \\
 5 \cancel{10} \quad \cancel{10} \quad 10 \\
 \cancel{6} \cancel{0} \quad \cancel{0} \quad \cancel{0} \\
 - 2 \quad 5 \quad 5 \quad 6 \\
 \hline
 3 \quad 4 \quad 4 \quad 4
 \end{array}$$

So, 34.44 should be subtracted from 60 to get 25.56.

4.

$$\begin{array}{r}
 \textcircled{1} \quad \textcircled{1} \\
 6 \quad 7 \quad 5 \quad 7 \quad 0 \\
 + 9 \quad 3 \quad 0 \quad 5 \quad 5 \\
 \hline
 1 \quad 6 \quad 0 \quad 6 \quad 2 \quad 5
 \end{array}$$

So, the sum of 67.57 and 93.055 is 160.625.

Exercise 8.5

- Cost of first watch = ₹ 136.75
Cost of second watch = ₹ 134.60

$$\begin{array}{r}
 \textcircled{1} \quad \textcircled{1} \\
 \text{The total amount he spent} = 1 \quad 3 \quad 6 \quad 7 \quad 5 \\
 + 1 \quad 3 \quad 4 \quad 6 \quad 0 \\
 \hline
 \text{₹ } 2 \quad 7 \quad 1 \quad 3 \quad 5
 \end{array}$$

So, Shubham spent ₹ 271.35 on these two watches.

- Total distance = 236.5 km
The distance he covered = 127.8 km

$$\begin{array}{r}
 \cancel{1} \\
 \cancel{2} \quad \cancel{3} \quad \cancel{10} \\
 \text{The distance left} = 2 \quad 3 \quad 6 \quad 5 \\
 - 1 \quad 2 \quad 7 \quad 8 \\
 \hline
 1 \quad 0 \quad 8 \quad 7 \quad \text{km}
 \end{array}$$

So, he has to cover 108.7 km. to complete the journey.

- Height measured on tuesday = 75.5 cm.
Height grew on thursday = 23.8

$$\begin{array}{r}
 \textcircled{1} \\
 \text{Total height on thursday} = 7 \quad 5 \quad 5 \\
 + 2 \quad 3 \quad 8 \\
 \hline
 9 \quad 9 \quad 3 \quad \text{cm}
 \end{array}$$

So, total height was 99.3 cm. on thursday.

- Distance covered on monday = 123.8 km.
Distance covered on tuesday = 189.9 km.
Distance covered on wednesday = 99.76 km.

$$\begin{array}{r}
 \textcircled{2} \quad \textcircled{2} \quad \textcircled{2} \\
 \text{Total distance covered} = 1 \quad 2 \quad 3 \quad 8 \quad 0 \\
 1 \quad 8 \quad 9 \quad 9 \quad 0 \\
 + 9 \quad 9 \quad 7 \quad 6 \\
 \hline
 4 \quad 1 \quad 3 \quad 4 \quad 6 \quad \text{km}
 \end{array}$$

So, he drove 413.46 km. all together.

5. Total distance = 200 m.
 Time taken by Suman = 102.1 sec
 Time taken by Rinku = 98.5 sec.
 Rinku is faster than Suman.
 Difference between these time periods = $102.1 - 98.5 = 3.6$ sec.
 So, Rinku is faster than Suman by 3.6 sec.

Exercise 8.6

1. (a)
$$\begin{array}{r} \textcircled{2} \\ 6.5 \\ \times 5 \\ \hline 32.5 \end{array}$$

(b)
$$\begin{array}{r} \textcircled{1} \\ 5.21 \\ \times 19 \\ \hline 4689 \\ 521 \times \\ \hline 98.99 \end{array}$$

(c)
$$\begin{array}{r} 11.1 \\ \times 9.2 \\ \hline 222 \\ 999 \times \\ \hline 102.12 \end{array}$$

(d)
$$\begin{array}{r} \textcircled{3}\textcircled{2} \\ 18.61 \\ \times 1.4 \\ \hline 7444 \\ 1861 \times \\ \hline 26.054 \end{array}$$

(e)
$$\begin{array}{r} \textcircled{1} \quad \textcircled{1} \\ \textcircled{6} \quad \textcircled{4} \\ 10.75 \\ \times 0.29 \\ \hline 9675 \\ 2150 \times \\ \hline 3.1175 \end{array}$$

(f)
$$\begin{array}{r} \textcircled{4}\textcircled{4} \\ 0.478 \\ \times 0.6 \\ \hline 0.2868 \end{array}$$

2. (a)
$$\begin{array}{r} 16.25 \\ \times 10 \\ \hline 162.50 \end{array}$$

(b)
$$\begin{array}{r} 13.836 \\ \times 100 \\ \hline 1383.600 \end{array}$$

(c)
$$\begin{array}{r} 28.6251 \\ \times 1000 \\ \hline 28625.1000 \end{array}$$

(d)
$$\begin{array}{r} 6234.5 \\ \times 10 \\ \hline 62345.0 \end{array}$$

(e)
$$\begin{array}{r} 300.50 \\ \times 100 \\ \hline 30050.00 \end{array}$$

(f)
$$\begin{array}{r} 4.909 \\ \times 1000 \\ \hline 4909.000 \end{array}$$

3.
$$\begin{array}{r} \textcircled{2}\textcircled{3} \quad \textcircled{1}\textcircled{2}\textcircled{1} \\ \textcircled{4}\textcircled{6} \quad \textcircled{2}\textcircled{3}\textcircled{2} \\ 16.9354 \\ \times 4.70 \\ \hline 000000 \\ 1185478 \times \\ 677416 \times \times \\ \hline 79.596380 \end{array}$$

So, the product of 16.9354 and 4.70 is 79.596380.

Exercise 8.7

1. (a) $20.4 \div 3$

$$\begin{array}{r} 3 \overline{)20.4} (6.8 \\ \underline{-18} \\ 24 \\ \underline{-24} \\ \times \end{array}$$

$\therefore 20.4 \div 3 = 6.8$

$$\begin{aligned} \text{(b)} \quad 4.235 \div 2.5 &= \frac{4.235}{2.5} \\ &= \frac{4.235 \times 10}{2.5 \times 10} \\ &= \frac{42.35}{25} \\ &= 1.694 \end{aligned}$$

$$\therefore 4.235 \div 2.5 = 1.694$$

$$\begin{aligned} \text{(c)} \quad 243.18 \div 6.3 &= \frac{243.18}{6.3} \\ &= \frac{243.18 \times 10}{6.3 \times 10} \\ &= \frac{2431.8}{63} \\ &= 38.6 \end{aligned}$$

$$\therefore 243.18 \div 6.3 = 38.6$$

$$\begin{aligned} \text{(d)} \quad 0.108 \div 0.09 &= \frac{0.108}{0.09} \\ &= \frac{0.108 \times 100}{0.09 \times 100} \\ &= \frac{10.8}{9} = 1.2 \end{aligned}$$

$$\therefore 0.108 \div 0.09 = 1.2$$

$$\begin{aligned} \text{(e)} \quad 10.4192 \div 3.2 &= \frac{10.4192}{3.2} \\ &= \frac{10.4192 \times 10}{3.2 \times 10} \\ &= \frac{104.192}{32} \\ &= 3.256 \end{aligned}$$

$$\therefore 10.4192 \div 3.2 = 3.256$$

$$\begin{aligned} \text{(f)} \quad 204.4 \div 0.35 &= \frac{204.4}{0.35} \\ &= \frac{204.4 \times 100}{0.35 \times 100} \\ &= \frac{20440}{35} \\ &= 584 \end{aligned}$$

$$\therefore 204.4 \div 0.35 = 584$$

2. (a) $75.75 \div 10$

$$\therefore 75.75 \div 10 = 7.575$$

$$\begin{array}{r} 25 \overline{)42.35} \quad (1.694 \\ \underline{-25} \\ 173 \\ \underline{-150} \\ 235 \\ \underline{-225} \\ 100 \\ \underline{-100} \\ \times \end{array}$$

$$\begin{array}{r} 63 \overline{)2431.8} \quad (38.6 \\ \underline{-189} \\ 541 \\ \underline{-504} \\ 378 \\ \underline{-378} \\ \times \end{array}$$

$$\begin{array}{r} 9 \overline{)10.8} \quad (1.2 \\ \underline{-9} \\ 18 \\ \underline{-18} \\ \times \end{array}$$

$$\begin{array}{r} 32 \overline{)104.192} \quad (3.256 \\ \underline{-96} \\ 81 \\ \underline{-64} \\ 179 \\ \underline{-160} \\ 192 \\ \underline{-192} \\ \times \end{array}$$

$$\begin{array}{r} 35 \overline{)20440} \quad (584 \\ \underline{-175} \\ 294 \\ \underline{-280} \\ 140 \\ \underline{-140} \\ \times \end{array}$$

$$\begin{array}{r} 10 \overline{)75.75} \quad (7.575 \\ \underline{-70} \\ 57 \\ \underline{-50} \\ 75 \\ \underline{-70} \\ 50 \\ \underline{-50} \\ \times \end{array}$$

(b) $167.8 \div 10$

$$\begin{array}{r} 10 \overline{)167.8} (16.78 \\ \underline{-10} \\ 67 \\ \underline{-60} \\ 78 \\ \underline{-70} \\ 80 \\ \underline{-80} \\ \times \end{array}$$

$\therefore 167.8 \div 10 = 16.78$

(d) $180.75 \div 100$

$$\begin{array}{r} 100 \overline{)180.75} (1.8075 \\ \underline{-100} \\ 807 \\ \underline{-800} \\ 750 \\ \underline{-700} \\ 500 \\ \underline{-500} \\ \times \end{array}$$

$\therefore 180.75 \div 100 = 1.8075$

(f) $10.9 \div 10$

$$\begin{array}{r} 10 \overline{)10.9} (1.09 \\ \underline{-10} \\ 90 \\ \underline{-90} \\ \times \end{array}$$

$\therefore 10.9 \div 10 = 1.09$

(c) $6079 \div 1000$

$$\begin{array}{r} 1000 \overline{)6079} (6.079 \\ \underline{-6000} \\ 7900 \\ \underline{-7000} \\ 9000 \\ \underline{-9000} \\ \times \end{array}$$

$\therefore 6.079 \div 1000 = 6.079$

(e) $615.4 \div 1000$

$$\begin{array}{r} 1000 \overline{)615.4} (0.6154 \\ \underline{-6000} \\ 1540 \\ \underline{-1000} \\ 5400 \\ \underline{-5000} \\ 4000 \\ \underline{-4000} \\ \times \end{array}$$

$\therefore 615.4 \div 1000 = 0.6154$

Exercise 8.8

1. \therefore Cost of 1 dozen bananas = ₹ 40.50
 \therefore Cost of 1 banana = $40.50 \div 12 = ₹ 3.375$

$$\begin{array}{r} 12 \overline{)40.5} (3.375 \\ \underline{-36} \\ 45 \\ \underline{-36} \\ 90 \\ \underline{-84} \\ 60 \\ \underline{-60} \\ \times \end{array}$$

So, the cost of one banana is ₹ 3.375.

2. \therefore Weight of one bag = 1313.5 kg.
 \therefore Weight of 16 bags = 131.5×16
 $= 2104$ kg.
 So, the weight of 16 bags is 2104 kg.

$$\begin{array}{r} 131.5 \\ \times 16 \\ \hline 7890 \\ 1315 \times \\ \hline 2104.0 \end{array}$$

3. \therefore Quantity of fat in 1 litre of milk = 0.245 kg.
 \therefore Quantity of fat in 15.4 litre of milk = 0.245×15.4
 $= 3.773$ kg.
 So, there is 3.773 kg of fat in 15.4 l of milk.

$$\begin{array}{r} 0.245 \\ \times 15.4 \\ \hline 980 \\ 1225 \times \\ 245 \times \times \\ \hline 3.7730 \text{ kg} \end{array}$$

4. \therefore Cost of 12.5 kg. of rice = ₹ 291.25
 Cost of 1 kg of rice = $\frac{291.25}{12.5}$
 \therefore Cost of 3.5 kg. of rice = $\frac{291.25 \times 3.5}{12.5}$

$$\begin{array}{r} 125 \overline{)2912.5} (23.3 \\ \underline{-250} \\ 412 \\ \underline{-375} \\ 375 \\ \underline{-375} \\ \times \end{array}$$

Now, $\frac{291.25}{12.5} = \frac{291.25 \times 10}{12.5 \times 10}$
 $= \frac{2912.5}{125} = 23.3$

- \therefore $\frac{291.25}{12.5} \times 3.5 = 23.3 \times 3.5 = ₹ 81.55$
 So, the cost of 3.5 kg of rice was ₹ 81.55.

$$\begin{array}{r} 23.3 \\ \times 3.5 \\ \hline 1165 \\ 699 \times \\ \hline 81.53 \end{array}$$

5. \therefore Distance covered in 16 l of petrol = 157.6 km.
 \therefore Distance covered in 1 l of petrol = $157.6 \div 16$
 $= 9.85$ km.
 So, Bunty covered 9.85 km. in 1 l of petrol.

$$\begin{array}{r} 16 \overline{)157.6} (9.85 \\ \underline{-144} \\ 136 \\ \underline{-128} \\ 80 \\ \underline{-80} \\ \times \end{array}$$

MCQ's

1. (a) 2. (a) 3. (c) 4. (b).

Worksheet

1. $1\frac{3}{10}$ 2. $2\frac{2}{10}$ 3. $3\frac{6}{10}$ 4. $1\frac{9}{10}$ 5. $3\frac{7}{10}$ 6. $2\frac{3}{10}$ 7. $2\frac{5}{10}$ 8. $1\frac{8}{10}$ 9. $3\frac{4}{10}$

9. Simplification

Exercise 9.1

1. (a) $26 \div 2 + 7 = 13 + 7 = 20$ (b) $8 + 18 \div 3 = 8 + 6 = 14$
 (c) $5 + 9 \times 5 = 5 + 45 = 50$ (d) $28 + 12 \times 6 = 28 + 72 = 100$
 (e) $12 \times 6 \div 3 = 12 \times 2 = 24$ (f) $6 \div 3 \times 15 = 2 \times 15 = 30$
2. (a) $27 \div 3 + 5 \times 3 - 10 = 9 + 15 - 10 = 24 - 10 = 14$
 (b) $78 - 42 \div 6 + 4 = 78 - 7 + 4 = 71 + 4 = 75$
 (c) $25 \times 27 \div 9 - 55 = 25 \times 3 - 55 = 75 - 55 = 20$

- (d) $12 - 21 \div 7 + 4 \times 2 = 12 - 3 + 8 = 9 + 8 = 17$
 (e) $38 - 42 \div 21 \times 2 = 38 - 2 \times 2 = 38 - 4 = 34$
 (f) $25 \times 4 + 12 \times 5 - 130 = 100 + 60 - 130 = 160 - 130 = 30$
3. (a) $6.7 \times 8 + 2 \times 5.1 \times 2.5 = 53.6 + 25.5 = 79.1$
 (b) $9 + 8.2 + 5.8 + 3 \times 2.8 = 9 + 8.2 + 5.8 + 8.4 = 17.2 + 14.2 = 31.4$
 (c) $29.2 - 3.6 + 2.1 \times 1 + 6.8 = 29.2 - 3.6 + 2.1 + 6.8 = 25.6 + 8.9 = 34.5$
 (d) $18.7 + 14 - 5.14 = 32.7 - 5.14 = 27.56$
 (e) $35.4 - 13.3 + 2.9 \times 4.7 = 35.4 - 13.3 + 13.63 = 22.1 + 13.63 = 35.73$
 (f) $17.2 - 6.9 + 1 \times 4.1 + 2.1 = 17.2 - 6.9 + 4.1 + 2.1 = 10.3 + 6.2 = 16.5$

Exercise 9.2

1. (a) $\{97 - (15 + 2)\} \times 2 = \{97 - 17\} \times 2 = 80 \times 2 = 160$
 (b) $[90 - \{80 - (10 \times 3) \div 2\}] = [90 - \{80 - 30 \div 2\}]$
 $= [90 - \{80 - 15\}]$
 $= [90 - 65] = 25$
 (c) $(42 \times 2) \div 12 - 3 = 84 \div 12 - 3 = 7 - 3 = 4$
 (d) $(90 + 5 \times 4) \div 11 \times 5 = (90 + 20) \div 11 \times 5$
 $= 110 \div 11 \times 5 = 10 \times 5 = 50$
 (e) $25 - \{3 + (5 \times 8 - 5) \div 7\} = 25 - \{3 + (40 - 5) \div 7\}$
 $= 25 - \{3 + 35 \div 7\}$
 $= 25 - \{3 + 5\} = 25 - 8 = 17$
 (f) $100 - [7\{3 + (5 \times 9 - 3) \div 6\}] = 100 - [7\{3 + (45 - 3) \div 6\}]$
 $= 100 - [7\{3 + 42 \div 6\}]$
 $= 100 - [7\{3 + 7\}] = 100 - [7 \times 10]$
 $= 100 - 70 = 30$
 (g) $50 + [10 \times \{40 - (20 \div 5)\}] = 50 + [10 \times \{40 - 4\}] = 50 + [10 \times 36]$
 $= 50 + 360 = 410$
 (h) $3 \times 2 + 6 - 4 - (4 - 0) = 6 + 6 - 4 - 4 = 12 - 8 = 4$
 (i) $57.5 + 1 - 36.4 - 12.52 = 58.5 - 36.4 - 12.52$
 $= 22.1 - 12.52 = 9.58$
 (j) $5.9 + 18.42 + 26.8 - 50.1 = 24.32 + 26.8 - 50.1$
 $= 51.12 - 50.1 = 1.02$
 (k) $75 - 31 + (12 + 4.12) = 75 - 31 + 5.32$
 $= 44 + 5.32 = 49.32$
 (l) $(8.6 + 26 + 34.3) - 53.31 = (34.6 + 34.3) - 53.31$
 $= 68.9 - 53.31 = 15.59$
 (m) $\left\{ \left(\frac{2}{3} \times \frac{1}{4} \right) + \left(\frac{3}{4} \div \frac{9}{28} \right) \right\} = \left\{ \left(\frac{1}{3} \times \frac{1}{4} \right) + \left(\frac{1}{4} \times \frac{28}{9} \right) \right\} = \left\{ \frac{1 \times 1}{3 \times 4} + \frac{1 \times 28}{4 \times 9} \right\}$
 $= \frac{1}{6} + \frac{1 \times 7}{1 \times 3} = \frac{1}{6} + \frac{7}{3} = \frac{1 + 14}{6} = \frac{15}{6} = \frac{5}{2} = 2\frac{1}{2}$
 (n) $\left\{ \frac{2}{3} \times \left(\frac{4}{5} \div \frac{3}{5} \right) \right\} + 5 = \left\{ \frac{2}{3} \times \left(\frac{4}{5} \times \frac{5}{3} \right) \right\} + 5 = \left\{ \frac{2}{3} \times \frac{4}{1} \times \frac{1}{3} \right\} + 5$
 $= \frac{8}{9} + 5 = \frac{8 + 45}{9} = \frac{53}{9} = 5\frac{8}{9}$

MCQ's

1. (a) 2. (c) 3. (a) 4. (c).

10. Unitary Method

Exercise 10.1

1. \therefore Saving in 8 months = ₹ 48000
 \therefore Saving in 1 month = $48000 \div 8 = ₹ 6000$
 So, Ramesh saves ₹ 6,000 in a month.

2. \therefore Cost of 5 dozen bananas = ₹ 265
 \therefore Cost of 1 dozen bananas = $265 \div 5$
 = ₹ 53

So, the cost of 1 dozen bananas is ₹ 53.

3. \therefore Production of toys in 30 days = 82,440
 \therefore Production of toys in 1 day = $82,440 \div 30 = 2748$
 \therefore Production of toys in 7 days = $2748 \times 7 = 19,236$ toys

$$\begin{array}{r} 2748 \\ \times 7 \\ \hline 19236 \end{array}$$

$$\begin{array}{r} 5 \overline{)265} \quad (53 \\ -25 \\ \hline 15 \\ -15 \\ \hline \times \end{array}$$

$$\begin{array}{r} 30 \overline{)82440} \quad (2748 \\ -60 \\ \hline 224 \\ -210 \\ \hline 144 \\ -120 \\ \hline 240 \\ -240 \\ \hline \times \end{array}$$

So, the factory will produce 19236 toys in 7 days.

4. No. of bricks transported by 1 truck = 4550
 No. of bricks transported by 25 trucks = 4550×25
 = 1,13,750 bricks
 So, 1,13,750 bricks can be transported using 25 such trucks.

$$\begin{array}{r} 4550 \\ \times 25 \\ \hline 22750 \\ 91000 \\ \hline 113750 \end{array}$$

5. \therefore Distance walked in 30 days = 165 km.
 \therefore Distance walked in 1 day = $165 \div 30$

$$\therefore \text{Distance walked in 105 days} = \frac{165}{30} \times 105 = \frac{11 \times 105}{2}$$

$$= 11 \times 52.5 = 577.5 \text{ km.}$$

So, Ankur will walk 577.5 km. in 105 days.

6. \therefore Volume of water in 19 bottles = 570 l
 \therefore Volume of water in 1 bottle = $570 \div 19$
 = 30 l

So, one bottle contains 30 l of water.

$$\begin{array}{r} 19 \overline{)570} \quad (30 \\ -570 \\ \hline \times \end{array}$$

7. \therefore Cost of 18 books = ₹ 8100
 \therefore Cost of 1 book = $8100 \div 18$
 = ₹ 450
 \therefore Cost of 36 books = 450×36
 = ₹ 16,200

$$\begin{array}{r} 18 \overline{)8100} \overline{)450} \\ -72 \\ \hline 90 \\ -90 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 450 \\ \times 36 \\ \hline 2700 \\ 1350 \times \\ \hline 16200 \end{array}$$

So, the cost of 36 books is ₹ 16,200.

8. \therefore No. of bags for 5 kg. of sugar = 1
 \therefore No. of bags for 1 kg. of sugar = $1 \div 5$
 \therefore No. of bags for 235 kg. of sugar = $\frac{1}{5} \times 235$
 = $\frac{235}{5}$
 = 47 bags.

$$\begin{array}{r} 5 \overline{)235} \overline{)47} \\ -20 \\ \hline 35 \\ -35 \\ \hline \times \end{array}$$

So, 47 bags will be needed to pack 235 kg. of sugar.

9. \therefore Cost of 25 computer = ₹ 3,75,000
 \therefore Cost of 1 computer = $3,75,000 \div 25$
 = ₹ 15,000

$$\begin{array}{r} 25 \overline{)375000} \overline{)15000} \\ -25 \\ \hline 125 \\ -125 \\ \hline 000 \end{array}$$

So, one computer costs ₹ 15,000.

10. \therefore No. of watches manufactured in 5 days = 1785
 \therefore No. of watches manufactured in 1 day = $1785 \div 5$
 \therefore No. of watches manufactured in 2 days = $(1785 \div 5) \times 2$
 = $357 \times 2 = 714$ watches

$$\begin{array}{r} 5 \overline{)1785} \overline{)357} \\ -15 \\ \hline 28 \\ -25 \\ \hline 35 \\ -35 \\ \hline \times \end{array}$$

$$\begin{array}{r} 357 \\ \times 2 \\ \hline 714 \end{array}$$

So, 714 watches can be manufactured in 2 days.

MCQ's

1. (a) 2. (b) 3. (a).

Worksheet

For Breadroll :

- \therefore Bread roll needed for 1 person = 1
 \therefore Bread roll needed for 156 person = $1 \times 156 = 156$
- \therefore Cucumber needed in 1 roll = 5 slices
 \therefore Cucumber needed in 28 rolls = $28 \times 5 = 140$ slices
- No, he does not use more tomato than cucumber.
- \therefore Number of slices of cheese needed for 1 person = 2 slices
 \therefore Number of slices of cheese needed for 156 person = $2 \times 156 = 312$ slices
 \therefore Number of slices of cheese needed for 18 persons = $2 \times 18 = 36$ slides
 \therefore Number of slices of cheese he saved = $312 - 36 = 276$ slices

For Noodles :

- \therefore Weight of Noodles for 1 person = 100 g
 \therefore Weight of Noodles for 12 persons = $100 \times 12 = 1200$ g
- The chef uses the most of cabbage.
- \therefore 50 g of tomatoes is enough for = 1 person
 \therefore 1 g of tomatoes is enough for = $\frac{1}{50}$ person
 \therefore 150 g of tomatoes is enough for = $\frac{1}{50} \times 150 = 3$ persons
- \therefore Mushrooms needed for 1 person = 25 g
 \therefore Mushrooms needed for 4 person = $25 \times 4 = 100$ g

11. Average

Exercise 11.1

$$1. \text{ Average} = \frac{\text{Sum of the given quantities}}{\text{No. of given quantities}}$$

$$= \frac{12 + 15 + 18 + 25 + 30}{5} = \frac{100}{5} = 20$$

So, the average of 12, 15, 18, 25 and 30 is 20.

$$2. \text{ Average} = \frac{\text{Sum of the given quantities}}{\text{No. of given quantities}}$$

$$= \frac{0.3 + 0.5 + 0.7 + 0.9 + 0.12}{5} = \frac{2.52}{5} = 0.504$$

$$3. \text{ Sum of the given quantities} = 2\frac{1}{2} + 3\frac{1}{3} + \frac{2}{4} = \frac{5}{2} + \frac{10}{3} + \frac{1}{2}$$

$$= \frac{15 + 20 + 3}{6} = \frac{38}{6} = \frac{19}{3}$$

No. of given quantities = 3

$$\text{Average} = \frac{\text{Sum of the given quantities}}{\text{No. of given quantities}} = \frac{19}{3} \div 3 = \frac{19}{3} \times \frac{1}{3} = \frac{19}{9} = 2\frac{1}{9}$$

The average of $2\frac{1}{2}$, $3\frac{1}{3}$ and $\frac{2}{4}$ is $2\frac{1}{9}$.

$$4. \text{ Sum of the rainfalls} = 200 + 150 + 240 + 160 + 77 + 225 + 161 + 240 + 160$$

$$+ 85 + 205$$

$$= 1903$$

No. of years = 11

$$\text{Average annual rainfall} = \frac{\text{Sum of rainfall}}{\text{No. of years}} = \frac{1903}{11} = 173 \text{ cm.}$$

So, the average annual rainfall in the city was 173 cm.

$$5. \text{ Sum of weights} = 24 + 27 + 33 + 26 + 25 = 135$$

$$\text{No. of children} = 5$$

$$\text{Average weight} = \frac{\text{Sum of weights}}{\text{No. of children}} = \frac{135}{5} = 27 \text{ kg.}$$

So, their average weight is 27 kg.

6. Total distance = $60 + 45 + 50 + 55 + 35 = 245$
Total time = 5 hrs.

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{245}{5} = 49$$

So, the average speed of the car is 49 km/h.

7. Total marks = $45 + 56 + 79 + 95 + 48 = 323$
No. of subjects = 5

$$\text{Average marks} = \frac{\text{Total marks}}{\text{No. of subjects}} = \frac{323}{5} = 64.6$$

So, the average of her marks is 64.6

8. (a) His total saving = $1060 + 1250 + 1360 + 1610 + 1520 + 3165 + 4108 + 4114 + 5280 + 5313 + 3917 + 4005 = ₹ 36702$

- (b) No. of months in a year = 12

$$\begin{aligned} \text{His average saving} &= \frac{\text{His total saving}}{\text{No. of months in a year}} \\ &= \frac{36702}{12} = 3058.5 \end{aligned}$$

9. The average = 492

The no. of quantities = 6

$$\begin{aligned} \text{Sum of numbers} &= \text{The average} \times \text{the no. of quantities} \\ &= 492 \times 6 = 2952 \end{aligned}$$

So, their total is 2952.

10. The average = 73 runs.

No. of matches = 5

$$\begin{aligned} \text{His score} &= \text{The average} \times \text{no. of matches} \\ &= 73 \times 5 = 365 \text{ runs} \end{aligned}$$

So, he scored 365 runs altogether.

11. The average distance = 460 km.

No. of days = 7

$$\begin{aligned} \text{Total distance} &= \text{The average distance} \times \text{No. of days} \\ &= 460 \times 7 = 3220 \text{ km.} \end{aligned}$$

12. The average income = ₹ 14,600

No. of days = 7

$$\begin{aligned} \text{Actual income for first 6 days} \\ &= 12,278 + 13622 + 15500 + 13700 + 16800 + 14100 \\ &= ₹ 86,000 \end{aligned}$$

$$\begin{aligned} \text{Actual income for 7 days} &= \text{The average income} \times \text{No. of days} \\ &= 14600 \times 7 = ₹ 1,02,200 \end{aligned}$$

$$\begin{aligned} \text{The income for sunday} &= \text{Actual income for 7 days} - \text{Actual income for first 6 days} \\ &= 1,02,200 - 86,000 = ₹ 16,200 \end{aligned}$$

MCQ's

1. (c) 2. (b) 3. (c) 4. (b).

Worksheet :

Do Yourself

12. Percentage

Exercise 12.1

- | | |
|--|---|
| 1. (a) Fraction = $\frac{28}{100}$ or $\frac{7}{25}$; | Percentage = $\frac{28}{100} \times 100 = 28\%$ |
| (b) Fraction = $\frac{70}{100}$ or $\frac{7}{10}$; | Percentage = $\frac{70}{100} \times 100 = 70\%$ |
| (c) Fraction = $\frac{20}{100}$ or $\frac{1}{5}$; | Percentage = $\frac{20}{100} \times 100 = 20\%$ |
| (d) Fraction = $\frac{25}{100}$ or $\frac{1}{4}$; | Percentage = 25% |

Exercise 12.2

- | | |
|--|---|
| 1. (a) $\frac{6}{10} = \frac{6}{10} \times 100\% = 60\%$ | (b) $\frac{1}{5} = \frac{1}{5} \times 100\% = \frac{100}{5}\% = 20\%$ |
| (c) $\frac{4}{6} = \frac{4}{6} \times 100\% = \frac{200}{3}\% = 66\frac{2}{3}\%$ | |
| (d) $\frac{5}{8} = \frac{5}{8} \times 100\% = \frac{5 \times 25}{2}\% = \frac{125}{2}\% = 62\frac{1}{2}\%$ | |
| (e) $\frac{5}{12} = \frac{5}{12} \times 100\% = \frac{5 \times 25}{3}\% = \frac{125}{3}\% = 41\frac{2}{3}\%$ | |
| (f) $\frac{2}{5} = \frac{2}{5} \times 100\% = \frac{2 \times 20}{1} = 40\%$ | |
| 2. (a) $7\frac{1}{4} = \frac{29}{4} = \frac{29}{4} \times 100\% = 725\%$ | (b) $2\frac{2}{5} = \frac{12}{5} = \frac{12}{5} \times 100\% = 240\%$ |
| (c) $2\frac{13}{25} = \frac{63}{25} = \frac{63}{25} \times 100\% = 63 \times 4\% = 252\%$ | |
| (d) $1\frac{18}{20} = \frac{38}{20} = \frac{38}{20} \times 100\% = 38 \times 5\% = 190\%$ | |
| (e) $\frac{9}{50} = \frac{9}{50} \times 100\% = \frac{9 \times 2}{1} = 18\%$ | |
| (f) $9\frac{4}{25} = \frac{229}{25} = \frac{229}{25} \times 100\% = 229 \times 4\% = 916\%$ | |

3. (a) $4 = \frac{4}{1} = \frac{4 \times 100}{1 \times 100} = \frac{400}{100} = 400\%$ (b) $6 = \frac{6}{1} = \frac{6 \times 100}{1 \times 100} = \frac{600}{100} = 600\%$
- (c) $25 = \frac{25}{1} = \frac{25 \times 100}{1 \times 100} = \frac{2500}{100} = 2500\%$
- (d) $7 = \frac{7}{1} = \frac{7 \times 100}{1 \times 100} = \frac{700}{100} = 700\%$
- (e) $8 = \frac{8}{1} = \frac{8 \times 100}{1 \times 100} = \frac{800}{100} = 800\%$ (f) $16 = \frac{16}{1} = \frac{16 \times 100}{1 \times 100} = \frac{1600}{100} = 1600\%$
4. (a) $5.36 = \frac{5.36}{1} = \frac{5.36 \times 100}{1 \times 100} = \frac{536}{100} = 536\%$
- (b) $4.6 = \frac{4.6}{1} = \frac{4.6 \times 100}{1 \times 100} = \frac{460}{100} = 460\%$
- (c) $0.158 = \frac{0.158}{1} = \frac{0.158 \times 100}{1 \times 100} = \frac{15.8}{100} = 15.8$
- (d) $0.7 = \frac{0.7}{1} = \frac{0.7 \times 100}{1 \times 100} = \frac{70}{100} = 70\%$
- (e) $0.037 = \frac{0.037}{1} = \frac{0.037 \times 100}{1 \times 100} = \frac{3.7}{100} = 3.7\%$
- (f) $0.43 = \frac{0.43}{1} = \frac{0.43 \times 100}{1 \times 100} = \frac{43}{100} = 43\%$
5. (a) $75\% = \frac{75}{100} = 0.75$ (b) $31\% = \frac{31}{100} = 0.31$
- (c) $225\% = \frac{225}{100} = 2.25$ (d) $5.4\% = \frac{5.4}{100} = 0.054$
- (e) $7.1\% = \frac{7.1}{100} = 0.071$ (f) $26.3\% = \frac{26.3}{100} = 0.263$
6. (a) $63\% = \frac{63}{100}$ (b) $6.5\% = \frac{6.5 \times 10}{100 \times 10} = \frac{65}{100 \times 10} = \frac{13}{200}$
- (c) $8\% = \frac{\frac{2}{4}}{\frac{100}{50}} = \frac{2}{25}$
- (d) $1.32\% = \frac{13.2}{100} = \frac{1.32 \times 100}{100 \times 100} = \frac{132}{100 \times 100} = \frac{33}{2500}$
- (e) $7\frac{1}{2}\% = \frac{15}{2}\% = \frac{15}{2 \times 100} = \frac{3}{40}$
- (f) $0.5\% = \frac{0.5}{100} = \frac{0.5 \times 10}{100 \times 10} = \frac{5}{100 \times 10} = \frac{1}{200}$

Exercise 12.3

1. (a) $85\% \text{ of } 100 = \frac{85}{100} \text{ of } 100 = \frac{85}{\cancel{100}^1} \times \cancel{100}^1 = 85$
- (b) $60\% \text{ of } 800 = \frac{60}{\cancel{100}^1} \times \cancel{800}^8 = 480$
- (c) $70\% \text{ of } 700 = \frac{70}{100} \text{ of } 700 = \frac{70}{\cancel{100}^1} \times \cancel{700}^7 = 70 \times 7 = 490$
- (d) $90\% \text{ of } 450 = \frac{90}{100} \text{ of } 450 = \frac{\cancel{90}^9}{\cancel{100}^{10}} \times 450 = \frac{9 \times \cancel{450}^{45}}{\cancel{10}^1} = 9 \times 45 = 405$
- (e) $15\% \text{ of } 750 = \frac{15}{100} \text{ of } 750 = \frac{15}{\cancel{100}^{10}} \times \cancel{750}^{75} = \frac{\cancel{15}^3 \times 75}{\cancel{10}^2} = \frac{225}{2} = 112.5$
- (f) $65\% \text{ of } 250 = \frac{65}{100} \text{ of } 250 = \frac{65}{\cancel{100}^{10}} \times \cancel{250}^{25} = \frac{325}{2} = 162.5$
2. (a) $25\% \text{ of } 1 \text{ kg} = \frac{25}{100} \text{ of } 1 \text{ kg} = \frac{25}{\cancel{100}^{10}} \times \cancel{1000}^{10} \text{ gm} = 25 \times 10 \text{ gm} = 250 \text{ gm}$
- (b) $55\% \text{ of } 100 \text{ m} = \frac{55}{100} \text{ of } 100 \text{ m} = \frac{55}{\cancel{100}^1} \times \cancel{100}^1 \text{ m} = 55 \text{ m.}$
- (c) $40\% \text{ of } 500 \text{ l} = \frac{40}{100} \text{ of } 500 \text{ l} = \frac{40}{\cancel{100}^1} \times \cancel{500}^5 \text{ l} = 40 \times 5 \text{ l} = 200 \text{ l}$
- (d) $60 \text{ of } ₹ 1200 = \frac{60}{100} \text{ of } ₹ 1200 = \frac{60}{\cancel{100}^1} \times ₹ \cancel{1200}^{12}$
 $= ₹ 60 \times 12 = ₹ 720$
- (e) $5\frac{1}{2}\% \text{ of } 75 \text{ kg} = \frac{11}{2}\% \text{ of } 75 \text{ kg}$
 $= \frac{11}{2 \times 100} \text{ of } 75 \text{ kg} = \frac{11}{2 \times \cancel{100}^{20}} \times \cancel{75}^3 \text{ kg} = \frac{11 \times 3}{2 \times 4} \text{ kg}$
 $= \frac{33}{8} \text{ kg.} = 4.125 \text{ kg}$
- (f) $1\frac{1}{5}\% \text{ of } 200 \text{ g} = \frac{6}{5}\% \text{ of } 200 \text{ g} = \frac{6}{5 \times 100} \text{ of } 200 \text{ g}$
 $= \frac{6}{5 \times \cancel{100}^1} \times \cancel{200}^2 \text{ g} = \frac{6 \times 2}{5} \text{ g} = \frac{12}{5} \text{ g} = 2.4 \text{ g.}$

3. (a) $x\%$ of 500 = 100

$$\frac{x}{100} \times \frac{5}{\cancel{500}} = 100 \quad \Rightarrow \quad 5x = 100$$

$$x = \frac{20}{\cancel{100}} = \frac{20}{5} = 4 \quad \Rightarrow \quad x = 20\%$$

(b) $x\%$ of 1 l = 500 ml

$$\frac{x}{100} \text{ of } 1 \text{ l} = 500 \text{ ml} \quad \Rightarrow \quad \frac{x}{100} \times \frac{10}{\cancel{1000}} \text{ ml} = 500 \text{ ml}$$

$$x = \frac{500}{10} = 50 \quad \Rightarrow \quad x = 50\%$$

(c) $x\%$ of ₹ 2 = 10 p

$$\frac{x}{100} \text{ of ₹ } 2 = 10 \text{ p} \quad \Rightarrow \quad \frac{x}{100} \times 2 \times \frac{1}{\cancel{100}} \text{ p} = 10 \text{ p}$$

$$x = \frac{10}{2} = 5 \quad \Rightarrow \quad x = 5\%$$

(d) $x\%$ of 6 km = 150 m.

$$\frac{x}{100} \text{ of } 6 \text{ km} = 150 \text{ m.}$$

$$\frac{x}{100} \times 6 \times \frac{10}{\cancel{1000}} \text{ m} = 150 \text{ m} \quad \Rightarrow \quad x \times 6 \times 10 \text{ m} = 150 \text{ m}$$

$$x = \frac{150}{6 \times 10} = \frac{5}{2} = 2.5 \quad \Rightarrow \quad x = 2.5\%$$

(e) $x\%$ of 250 kg = $50\frac{1}{2}$ kg

$$\frac{x}{100} \text{ of } 250 = \frac{101}{2} \quad \Rightarrow \quad \frac{x}{100} \times \frac{5}{\cancel{250}} = \frac{101}{2}$$

$$x \times \frac{5}{2} = \frac{101}{2} \quad \Rightarrow \quad x = \frac{101}{5} \times \frac{2}{2} = \frac{101}{5} \times \frac{1}{1}$$

$$x = \frac{101}{5} = 20.2 \quad \Rightarrow \quad x = 20.2\%$$

(f) $x\%$ of ₹ 600 = ₹ 120

$$\frac{x}{100} \text{ of ₹ } 600 = ₹ 120$$

$$\frac{x}{100} \times 600 = 120 \quad \Rightarrow \quad x = \frac{120}{6} = 20$$

$$x = 20\%$$

4. Population of a town = 72,24,520
 Percentage of females = 40%
 Percentage of males = $100 - 40 = 60\%$
 Population of males = 60% of 7224520

$$= \frac{60}{100} \times 7224520 = 43,34,712 \text{ males}$$

So, the population of males is 43,34,712.

5. Total income = ₹ 1,56,000
 Saving = 15% of ₹ 1,56,000

$$= \frac{15}{100} \times 156000$$

$$= 15 \times 1560 = ₹ 23400$$

 Expenditure = Income – saving

$$= 156000 - 23400 = ₹ 1,32,600$$

So, he spends ₹ 1,32,600.

6. The money Mr. Gupta had = ₹ 9,600
 The money he gave = 25% of ₹ 9600

$$= \frac{25}{100} \times 9600$$

$$= 25 \times 96 = ₹ 2400$$

So, he gave ₹ 2400 to his wife.

7. No. of mangoes = 18,000
 No. of rotten mangoes = 8% of 18,000 = $\frac{8}{100} \times 18000$

$$= 8 \times 180 = 1400$$

No. of mangoes left = $18,000 - 1,400 = 16,600$

So, 16,600 mangoes were in good condition.

8. No. of students = 1,200
 No. of students failed = 12% of 1200

$$= \frac{12}{100} \times 1200 = 144$$

No. of students passed = $1200 - 144 = 1056$

So, 1056 students were passed.

9. The population of the town = 8,42,000
 Increment in population = 8% of 842000

$$= \frac{8}{100} \times 842000 = 67360$$

The population now = $842000 + 67360 = 9,09,360$

So, the population of the town is 9,09,360 now.

MCQ's

1. (b) 2. (c) 3. (a) 4. (b) 5. (c).

Worksheet

Number of families having 4 cars = 11% of 200

$$= \frac{11}{100} \times 200 = 11 \times 2 = 22$$

$$\begin{aligned} \text{Number of families having 3 cars} &= 24\% \text{ of } 200 \\ &= \frac{24}{100} \times 200 = 24 \times 2 = 48 \end{aligned}$$

$$\begin{aligned} \text{Number of families having no cars} &= 21\% \text{ of } 200 \\ &= \frac{21}{100} \times 200 = 21 \times 2 = 42 \end{aligned}$$

$$\begin{aligned} \text{Number of families having 2 cars} &= 19\% \text{ of } 200 \\ &= \frac{19}{100} \times 200 = 19 \times 2 = 38 \end{aligned}$$

$$\begin{aligned} \text{Number of families having 1 cars} &= 25\% \text{ of } 200 \\ &= \frac{25}{100} \times 200 \\ &= 25 \times 2 = 50 \end{aligned}$$

- a. Number of families having 3 and more than 3 cars = $48 + 22 = 70$
 b. Number of families having 2 cars than those that have no cars = $42 - 38 = 4$
 c. Ratio = $\frac{\text{Number of families having 1 car}}{\text{Number of families having no car}} = \frac{50}{42} = \frac{25}{21}$

So, the number of families with 1 car is $\frac{25}{21}$ times the number of families with no cars.

Formative Assessment-2

1. (c) 2. (a) 3. (a) 4. (b) 5. (a) 6. (a) 1 (b) 40 (c) 0.007 (d) one (e) decem, tenth.
 7. (a) False (b) False (c) True (d) False (e) True.

Summative Assessment-1

1. (a) 6,39,39,006
In Indian system,
 6,39,39,006 = Six crore thirty-nine lakh thirty-nine thousand six
In International system
 63,939,006 = Sixty-three million nine hundred thirty-nine thousand six.
 (b) 28,27,46,480
In Indian System,
 28,27,46,480 = Twenty-eight crore twenty-seven lakh forty-six thousand four hundred eighty.
In International system
 282,746,480 = Two hundred eighty-two million seven hundred forty-six thousand four hundred eighty.
2. (a) 730 = DCCXXX
 (b) 2,368 = MMCCCLXVIII

3. (a)

6	5	0	9	2	7	6
+	3	0	0	4	7	5
9	5	0	9	7	5	1

(b)

7	0	0	0	0	0	0	0	0	0
-	1	0	1	8	2	1	7	2	5
5	9	8	1	7	8	2	7	5	

$$\begin{array}{r}
 459307 \\
 \times 389 \\
 \hline
 4133763 \\
 3674456 \times \\
 1377921 \times \times \\
 \hline
 178670423
 \end{array}$$

$$\begin{array}{r}
 135 \overline{)63752} \overline{)472} \\
 \underline{-540} \\
 975 \\
 \underline{-945} \\
 302 \\
 \underline{-270} \\
 32
 \end{array}$$

$$\therefore 459307 \times 389 = 178670423$$

$$\text{Quotient} = 472, \text{Remainder} = 32$$

4. H.C.F. of 27, 65 and 104

3	27
3	9
3	3
	1

5	65
13	13
	1

2	104
2	52
2	26
13	13
	1

$$\begin{aligned}
 27 &= 1 \times 3 \times 3 \times 3 \\
 65 &= 1 \times 5 \times 13 \\
 104 &= 1 \times 2 \times 2 \times 2 \times 13
 \end{aligned}$$

$$\text{H.C.F. of 27, 65 and 104} = 1$$

5. Sum of $5\frac{1}{3}$ and $2\frac{2}{5} = 5\frac{1}{3} + 2\frac{2}{5} = \frac{16}{3} + \frac{12}{5} = \frac{80+36}{15} = \frac{116}{15}$

$$\begin{aligned}
 \text{Subtraction of } \frac{116}{15} \text{ from } 16\frac{9}{20} &= 16\frac{9}{20} - \frac{116}{15} = \frac{329}{20} - \frac{116}{15} \\
 &= \frac{987-464}{60} = \frac{523}{60} = 8\frac{43}{60}
 \end{aligned}$$

6. $[(3.935 + 8.065) \div 4 \times 7 + 9] = [12.000] \div 4 \times 7 + 9 = [12 \div 4 \times 7 + 9]$
 $= [3 \times 7 + 9] = [21 + 9] = 30$

7. \therefore Weight of 19 books $= 9\frac{2}{4}$ kg $= \frac{38}{4}$ kg

$$\therefore \text{Weight of 1 book} = \frac{38}{4} \div 19 = \frac{38}{4} \times \frac{1}{19} = \frac{2}{4} = \frac{1}{2} \text{ kg.}$$

8. L.C.M. of 12, 15, 17

2	12, 15, 27
2	6, 15, 27
3	3, 15, 27
3	1, 5, 9
3	1, 5, 3
5	1, 5, 1
	1, 1, 1

L.C.M. of 12, 15 and 27 = $2 \times 2 \times 3 \times 3 \times 3 \times 5 = 540$

The required smallest no. = $540 + 3 = 543$

9. Sum of marks = $76 + 82 + 62 + 95 = 315$

No. of subjects = 4

$$\text{Average marks} = \frac{\text{Sum of marks}}{\text{No. of subjects}} = \frac{315}{4} = 78.75$$

10. Total marks = 300

$$\text{Marks of Vinita} = 65\% \text{ of } 300 = \frac{65}{100} \times 300 = 195$$

13. Profit and Loss

Exercise 13.1

1. (a) C.P. = ₹ 600, S.P. = ₹ 750

∴ S.P. > C.P.

∴ There will be profit.

$$\text{Profit} = \text{S.P.} - \text{C.P.} = 750 - 600 = ₹ 150$$

(b) C.P. = ₹ 15.50, S.P. = ₹ 16.50

∴ S.P. > C.P.

∴ There will be profit.

$$\text{Profit} = \text{S.P.} - \text{C.P.} = 16.50 - 15.50 = ₹ 1$$

(c) C.P. = ₹ 500, S.P. = ₹ 475

∴ C.P. > S.P.

∴ There will be loss.

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 500 - 475 = ₹ 25$$

(d) C.P. = ₹ 128.60, S.P. = ₹ 149.50

∴ S.P. > C.P.

∴ There will be profit.

$$\text{Profit} = \text{S.P.} - \text{C.P.} = 149.50 - 128.60 = ₹ 20.90$$

(e) C.P. = ₹ 382.75, S.P. = ₹ 371.80

∴ C.P. > S.P.

∴ There will be loss.

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 382.75 - 371.80 = ₹ 10.95$$

(f) C.P. = ₹ 816.75, S.P. = ₹ 705.85

∴ C.P. > S.P.

∴ There will be loss.

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 816.75 - 705.85 = ₹ 110.90$$

2. Cost price of a laptop = ₹ 30,257

The money spent for repairing = ₹ 425

Total cost price = $30,257 + 425 = ₹ 30,682$

Selling price of a laptop = ₹ 30,500

∴ C.P. > S.P.

∴ There will be loss.

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 30682 - 30500 = ₹ 182.$$

So, his loss is of ₹ 182.

3. Cost price of 20 dozen bananas = ₹ 750
 \therefore Selling price of 1 dozen bananas = ₹ 35
 \therefore Selling price of 20 dozen bananas = $20 \times 35 = ₹ 700$
 \therefore C.P. > S.P.
 \therefore There will be loss.

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 750 - 700 = ₹ 50$$
 So, he has a loss of ₹ 50
4. Cost of car = ₹ 6,40,600
 The money spent on repairing = ₹ 20,570
 Total cost price = $640,600 + 20,570 = ₹ 6,61,170$
 Selling price of the car = ₹ 6,87,250
 \therefore S.P. > C.P.
 \therefore There will be profit.

$$\text{Profit} = \text{S.P.} - \text{C.P.} = 687250 - 661170 = ₹ 26,080$$
 So, his gain is of ₹ 26,080.
5. \therefore Cost price of 1 book = ₹ 60
 \therefore Cost price of 10 books = $60 \times 10 = ₹ 600$
 \therefore Cost price of 1 magazine = ₹ 40
 \therefore Cost price of 60 magazines = $40 \times 60 = ₹ 2400$
 Total cost price = $600 + 2400 = ₹ 3000$
 \therefore Selling price of 1 book or 1 magazines = ₹ 50
 \therefore Selling price of 10 books and 60 magazines = $10 \times 50 + 60 \times 50$

$$= 500 + 3000 = ₹ 3500$$

 \therefore S.P. > C.P.
 \therefore There will be gain.

$$\text{Gain} = \text{S.P.} - \text{C.P.} = 3500 - 3000 = ₹ 500$$

Exercise 13.2

1. (a) C.P. = ₹ 675.00, P = ₹ 12.50,

$$\text{S.P.} = \text{C.P.} + \text{P}$$

$$= 675.00 + 12.50 = ₹ 687.50$$
- (b) C.P. = ₹ 3235.25, P = ₹ 130.75

$$\text{S.P.} = \text{C.P.} + \text{P} = 3235.25 + 130.75$$

$$= ₹ 3366.00 = ₹ 3366$$
- (c) C.P. = ₹ 750.00, P = ₹ 25.00

$$\text{S.P.} = \text{C.P.} + \text{P} = 750.00 + 25.00 = ₹ 775.00 = ₹ 775$$
- (d) C.P. = ₹ 1050, L = ₹ 175

$$\text{S.P.} = \text{C.P.} - \text{L} = 1050 - 175 = ₹ 875$$
- (e) C.P. = ₹ 925.25, L = ₹ 13.75

$$\text{S.P.} = \text{C.P.} - \text{L}$$

$$= 925.25 - 13.75 = ₹ 911.50$$
- (f) C.P. = ₹ 312.70, L = ₹ 4.90

$$\text{S.P.} = \text{C.P.} - \text{L} = 312.70 - 4.9 = ₹ 307.8$$
2. (a) S.P. = ₹ 1475, L = ₹ 350

$$\text{C.P.} = \text{S.P.} + \text{Loss}$$

$$= 1475 + 350 = ₹ 1825$$
- (b) S.P. = ₹ 85.25, L = ₹ 2.75

$$\text{C.P.} = \text{S.P.} + \text{L} = 85.25 + 2.75 = ₹ 88.00 = ₹ 88$$

- (c) S.P. = ₹ 6055.00, P = ₹ 601.25
 $C.P. = S.P. - P = 6055.00 - 601.25 = ₹ 5453.75$
- (d) S.P. = ₹ 1335.65, P = ₹ 12.75
 $C.P. = S.P. - P = 1335.65 - 12.75 = ₹ 1322.9$
- (e) S.P. = ₹ 44675.00, L = ₹ 1235.00
 $C.P. = S.P. + L = 44675.00 + 1235.00 = ₹ 45910$
- (f) S.P. = ₹ 530.45, L = ₹ 15.35
 $C.P. = S.P. + L = 530.45 + 15.35 = ₹ 545.80$

3. Cost price of the wrist watch = ₹ 1550,
 Profit = ₹ 120

$$\begin{aligned} \text{Selling price of the wrist watch} &= C.P. + \text{Profit} \\ &= 1550 + 120 = ₹ 1670 \end{aligned}$$

So, the selling price of the wrist watch is ₹ 1670.

4. C.P. of the refrigerator = ₹ 9990,
 Profit = ₹ 450

$$S.P. \text{ of the refrigerator} = C.P. + \text{Profit} = 9990 + 450 = ₹ 10,440$$

So, the selling price of the refrigerator is ₹ 10,440.

5. C.P. of the mobile = ₹ 12,250,
 Loss = ₹ 200

$$S.P. \text{ of the mobile} = C.P. - \text{Loss} = 12250 - 200 = ₹ 12,050$$

So, the selling price of the mobile is ₹ 12,050.

6. S.P. of the television set = ₹ 5,625,
 Loss = ₹ 475

$$C.P. \text{ of the television set} = S.P. + \text{Loss} = 5625 + 475 = ₹ 6100$$

So, the cost price of the television is ₹ 6100.

Exercise 13.3

1. (a) C.P. = ₹ 360, S.P. = ₹ 240

$$\because C.P. > S.P.$$

\therefore There will be loss.

$$\text{Loss} = C.P. - S.P. = 360 - 240 = ₹ 120$$

$$\therefore \text{Loss \%} = \frac{\text{Loss}}{C.P.} \times 100 = \frac{120}{360} \times 100 = \frac{100}{3} = 33.33\%$$

- (b) C.P. = ₹ 3,000, S.P. = ₹ 3,600

$$\because S.P. > C.P.$$

\therefore There will be profit

$$\text{Profit} = S.P. - C.P. = 3600 - 3000 = ₹ 600$$

$$\text{Profit \%} = \frac{\text{Profit}}{C.P.} \times 100 = \frac{600}{3000} \times 100 = 20\%$$

- (c) C.P. = ₹ 250, S.P. = ₹ 300

$$\because S.P. > C.P.$$

\therefore There will be profit.

$$\text{Profit} = S.P. - C.P. = 300 - 250 = ₹ 50$$

$$\text{Profit \%} = \frac{\text{Profit}}{C.P.} \times 100 = \frac{50}{250} \times 100 = \frac{100}{5} = 20\%$$

(d) C.P. = ₹ 2250, S.P. = ₹ 1795

∴ C.P. > S.P.

∴ There will be loss.

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 2250 - 1795 = ₹ 455$$

$$\begin{aligned} \text{Loss \%} &= \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{455}{2250} \times 100 \\ &= \frac{91 \times 2}{9} = \frac{182}{9} = 20.22\% \end{aligned}$$

(e) C.P. = ₹ 3856, S.P. = ₹ 2642

∴ C.P. > S.P.

∴ There will be loss.

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 3856 - 2642 = ₹ 1214$$

$$\begin{aligned} \text{Loss \%} &= \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{1214}{3856} \times 100 \\ &= \frac{607 \times 25}{482} = \frac{15175}{482} = 31.48\% \end{aligned}$$

(f) C.P. = ₹ 675, S.P. = ₹ 900

∴ S.P. > C.P.

∴ There will be profit.

$$\text{Profit} = \text{S.P.} - \text{C.P.} = 900 - 675 = ₹ 225$$

$$\begin{aligned} \text{Profit \%} &= \frac{\text{Profit}}{\text{C.P.}} \times 100 = \frac{225}{675} \times 100 \\ &= \frac{1}{3} \times 100 = \frac{100}{3} = 33.33\% \end{aligned}$$

2. (a) C.P. = ₹ 750, Profit % = 5%

$$\text{Profit} = \frac{\text{C.P.} \times \text{P\%}}{100} = \frac{750 \times 5}{100} = \frac{750}{20} = \frac{75}{2} = ₹ 37.5$$

(b) C.P. = 1500, Profit % = 10%

$$\text{Profit} = \frac{\text{C.P.} \times \text{P\%}}{100} = \frac{1500 \times 10}{100} = 15 \times 10 = ₹ 150$$

(c) C.P. = ₹ 800, Loss % = 15%

$$\text{Loss} = \frac{\text{C.P.} \times \text{L\%}}{100} = \frac{800 \times 15}{100} = 8 \times 15 = ₹ 120$$

(d) C.P. = ₹ 10,500, Loss % = 30%

$$\text{Loss} = \frac{\text{C.P.} \times \text{L\%}}{100} = \frac{10500 \times 30}{100} = 105 \times 30 = ₹ 3150$$

(e) C.P. = ₹ 775, Profit % = 75%

$$\text{Profit} = \frac{\text{C.P.} \times \text{P\%}}{100} = \frac{775 \times 75}{100} = \frac{775 \times 3}{4} = ₹ 581.25$$

$$(f) \text{ C.P.} = ₹ 25000, \text{ Loss \%} = 12\%$$

$$\text{Loss} = \frac{\text{C.P.} \times L\%}{100} = \frac{25000 \times 12}{100} = 250 \times 12 = ₹ 3000$$

3. (a) C.P. = ₹ 400, Profit % = 2%

$$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 2}{100} \times 400$$

$$= \frac{102}{100} \times 400 = 102 \times 4 = ₹ 408$$

(b) C.P. = ₹ 750, Loss % = 5%

$$\text{S.P.} = \frac{100 - L\%}{100} \times \text{C.P.} = \frac{100 - 5}{100} \times 750$$

$$= \frac{95}{100} \times 750 = \frac{95 \times 15}{2} = ₹ 712.5$$

(c) C.P. = ₹ 200, Profit % = 10%

$$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 10}{100} \times 200$$

$$= 110 \times 2 = ₹ 220$$

(d) C.P. = ₹ 500, Loss % = 20%

$$\text{S.P.} = \frac{100 - L\%}{100} \times \text{C.P.} = \frac{100 - 20}{100} \times 500 = 80 \times 5 = ₹ 400$$

(e) C.P. = ₹ 800, Profit % = 12%

$$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 12}{100} \times 800$$

$$= 112 \times 8 = ₹ 896$$

(f) C.P. = ₹ 450, Profit % = 17%

$$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 17}{100} \times 450 = \frac{117}{100} \times 450 = ₹ 526.5$$

4. C.P. of the shirt = ₹ 6000

S.P. of the shirt = ₹ 650

$$\text{Profit} = \text{S.P.} - \text{C.P.} = 650 - 600 = ₹ 50$$

$$\text{Profit \%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 = \frac{50}{600} \times 100 = \frac{50}{6} = \frac{25}{3} = 8\frac{1}{3}\%$$

So, his profit percent is $8\frac{1}{3}\%$.

5. C.P. of the saree = ₹ 2500

S.P. of the saree = ₹ 2000

$$\text{Loss} = \text{C.P.} - \text{S.P.} = 2500 - 2000 = ₹ 500$$

$$\text{Loss \%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{500}{2500} \times 100 = \frac{500}{25} = 20\%$$

So, his loss% is 20%.

6. C.P. of a bag = ₹ 1500

Gain % = 10%

$$\text{S.P.} = \frac{100 + G\%}{100} \times \text{C.P.} = \frac{100 + 10}{100} \times 1500$$

$$= \frac{110}{100} \times 1500 = 110 \times 15 = ₹ 1650$$

So, the selling price of the bag is ₹ 1650.

7. C.P. of a pair of shoes = ₹ 800

Loss % = 10%

$$\begin{aligned} \text{S.P.} &= \frac{100 - L\%}{100} \times \text{C.P.} = \frac{100 - 10}{100} \times 800 \\ &= 90 \times 8 = ₹ 720 \end{aligned}$$

So, the selling price of the shoes is ₹ 720.

8. C.P. of a bicycle = ₹ 1250

The money spent on repairing = ₹ 250

Total C.P. = 1250 + 250 = ₹ 1500

Profit % = 5%

$$\begin{aligned} \text{S.P.} &= \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 5}{100} \times 1500 \\ &= 105 \times 15 = ₹ 1575 \end{aligned}$$

So, the selling price of the bicycle is ₹ 1,575.

9. ∴ Cost of 1 kg of ordinary rice = ₹ 20

∴ Cost of 30 kg of ordinary rice = 20 × 30 = ₹ 600

∴ Cost of 1 kg of basmati rice = ₹ 50

∴ Cost of 80 kg of basmati rice = 50 × 80 = ₹ 4000

Total cost price = 6000 + 4000 = ₹ 10,000

Weight of total mixed rice = 30 + 80 = 110 kg.

∴ S.P. of 1 kg of mixed rice = ₹ 90

∴ S.P. of 110 kg of mixed rice = 90 × 110 = ₹ 9,900

∴ C.P. > S.P.

∴ There will be loss.

$$\begin{aligned} \therefore \text{Loss} &= \text{C.P.} - \text{S.P.} \\ &= 10,000 - 9,900 = ₹ 100 \\ \text{Loss \%} &= \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{100}{10000} \times 100 = 1\% \end{aligned}$$

So, his loss % is 1%.

10. ∴ C.P. of 1 dozen balloons = ₹ 9.60

∴ C.P. of 10 dozen balloons = 10 × 9.60 = ₹ 96

10 dozen = 10 × 12 things = 120 things

∴ C.P. of 120 balloons = ₹ 96

No. of burst balloons = 6

No. of balloons rest = 120 - 6 = 114

S.P. 1 balloon = ₹ 0.70

S.P. of 114 balloons = 114 × 0.70 = ₹ 79.8

∴ C.P. (= 96) > S.P. (= 79.8)

∴ There will be loss.

$$\begin{aligned} \therefore \text{Loss} &= \text{C.P.} - \text{S.P.} = 96 - 79.8 = ₹ 16.2 \\ \text{Loss \%} &= \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{16.2}{96} \times 100 \\ &= \frac{1620}{96} = \frac{135}{8} = 16\frac{7}{8}\% \end{aligned}$$

So, his loss % is $16\frac{7}{8}\%$.

MCQ's

1. (a) 2. (a) 3. (b) 4. (a).

Worksheet

S.No.	Name of the article	C.P.	S.P.	Profit/ Loss	Profit %/ Loss %
1.	Bat	₹ 140	₹ 200	P = ₹ 60	P% = 42.85%
2.	Shirt	₹ 260	₹ 200	L = ₹ 60	L% = 23.08%
3.	Trousers	₹ 280	₹ 200	L = ₹ 80	L% = 28.577%
4.	Chair	₹ 100	₹ 200	P = ₹ 100	P% = 9.00%
5.	Shoes	₹ 220	₹ 200	L = ₹ 20	L% = 9.09%
6.	Book	₹ 150	₹ 200	P = ₹ 50	P% = 33.33%

14. Speed, Distance and Time

Exercise 14.1

1. (a) Distance = 1600 m., Time taken = 80 sec.
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{1600}{80} = 20 \text{ m/sec.}$$
- (b) Distance = 420 m., Speed = 14 m/sec.
$$\text{Time taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{420}{14} = 30 \text{ sec.}$$
- (c) Time taken = 8 hrs., Speed = 85 km/hr.
Distance = Speed \times Time taken = $85 \times 8 = 680$ km.
- (d) Distance = 325 km.
Time taken = 13 hrs.
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{325}{13} = 25 \text{ km/h.}$$
- (e) Distance = 500 km., Speed = 50 km/hr.
$$\text{Time taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{500}{50} = 10 \text{ hrs.}$$
- (f) Time taken = 12 sec., Speed = 62 m/sec.
Distance = Speed \times Time taken = $62 \times 12 = 744$ m.
2. (a) Distance (d) = 600 km., Time taken (t) = 4 hrs.
$$\text{Speed} (s) = \frac{\text{Distance} (d)}{\text{Time} (t)} = \frac{600}{4} = 150 \text{ km/h.}$$
- (b) Distance (d) = 8 km., Time taken (t) = 2 hrs.
$$\text{Speed} (s) = \frac{\text{Distance} (d)}{\text{Time} (t)} = \frac{8}{2} = 4 \text{ km/hr.}$$
- (c) Distance (d) = 225 km., Time taken (t) = 5 hrs.
$$\text{Speed} (s) = \frac{\text{Distance} (d)}{\text{Time} (t)} = \frac{225}{5} = 45 \text{ km/hr.}$$