

- (c) 4920 is divisible by 4 \because last two digits are divisible by 4
 (d) 58862 is not divisible by 4 \because last two digits are not divisible by 4
 (e) 9636 is divisible by 4 \because last two digits are divisible by 4
 (f) 7773 is not divisible by 4 \because last two digits are not divisible by 4
5. (a) 5 $\overline{912}$ is divisible by 8 \because last three digits are divisible by 8
 (b) 83 $\overline{224}$ is divisible by 8 \because last three digits are divisible by 8
 (c) 46 $\overline{246}$ is not divisible by 8 \because last three digits are not divisible by 8
 (d) 7 $\overline{732}$ is not divisible by 8 \because last three digits are not divisible by 8
6. (a) $6 + 8 + 9 + 7 + 8 = 38$ is not divisible by 9 \therefore 68978 is not divisible by 9
 (b) $6 + 9 + 8 + 7 = 30$ is not divisible by 9 \therefore 6987 is not divisible by 9
 (c) $8424 = 8 + 4 + 2 + 4 = 18$ is divisible by 9 \therefore 8424 is divisible by 9
 (d) $9405 = 9 + 4 + 0 + 5 = 18$ is divisible by 9 \therefore 9405 is divisible by 9
7. (a) 78 is not divisible by 10 \because it not have 0 at ones place
 (b) $1 + 1 + 7 = 9$ is divisible by 9 \therefore 117 is divisible by 9
 (c) $9 + 1 + 6 = 16$ is not divisible by 9 \therefore 916 is not divisible by 9
 (d) 3 $\overline{000}$ is divisible by 8 \because last three digits are divisible by 8
 (e) 6 $\overline{26}$ is not divisible by 4 \because last two digits are divisible by 4
8. (a) 365 $\overline{6}$ is divisible by 8 (b) 372 $\overline{64}$ is divisible by 8
 (c) 637 $\overline{44}$ is divisible by 8 (d) 83 $\overline{52}$ is divisible by 8

Exercise 6.4

1. (a)

| | |
|---|----|
| 2 | 42 |
| 3 | 21 |
| 7 | 7 |
| | 1 |

| | |
|---|----|
| 2 | 84 |
| 2 | 42 |
| 3 | 21 |
| 7 | 7 |
| | 1 |
- (b)

| | |
|---|----|
| 2 | 36 |
| 2 | 18 |
| 3 | 9 |
| 3 | 3 |
| | 1 |

| | |
|---|----|
| 3 | 63 |
| 3 | 21 |
| 7 | 7 |
| | 1 |

Prime factors of 42 = $2 \times 3 \times 7$

Prime factors of 84 = $2 \times 2 \times 3 \times 7$

HCF = $2 \times 3 \times 7 = 42$

Prime factors of 36 = $2 \times 2 \times 3 \times 3$

Prime factors of 63 = $3 \times 3 \times 7$

HCF = $3 \times 3 = 9$

- (c)

| | |
|---|----|
| 2 | 12 |
| 2 | 6 |
| | 3 |
| | 1 |

| | |
|---|----|
| 2 | 18 |
| 3 | 9 |
| 3 | 3 |
| | 1 |

| | |
|---|----|
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
| | 1 |
- (d)

| | |
|---|----|
| 2 | 22 |
| 2 | 11 |
| | 1 |

| | |
|----|----|
| 2 | 66 |
| 3 | 33 |
| 11 | 11 |
| | 1 |

| | |
|----|-----|
| 11 | 121 |
| 11 | 11 |
| | 1 |

Prime factors of 12 = $2 \times 2 \times 3$

Prime factors of 18 = $2 \times 3 \times 3$

Prime factors of 22 = 2×11

Prime factors of 66 = $2 \times 3 \times 11$

Prime factors of $27 = 3 \times 3 \times 3$

HCF = 3

(e)

| | | | | | |
|---|----|----|----|----|----|
| 5 | 25 | 5 | 65 | 5 | 95 |
| 5 | 5 | 13 | 13 | 19 | 19 |
| | 1 | | 1 | | 1 |

Prime factors of $25 = 5 \times 5$

Prime factors of $65 = 5 \times 13$

Prime factors of $95 = 5 \times 19$

HCF = 5

(g)

| | | | |
|---|----|---|----|
| 5 | 25 | 2 | 90 |
| 5 | 5 | 3 | 45 |
| | 1 | 3 | 15 |
| | | | 5 |

Prime factors of $25 = 5 \times 5$

Prime factors of $90 = 2 \times 3 \times 3 \times 5$

HCF of 25 and 90 = 5

(i)

| | | | | | |
|---|----|---|----|---|-----|
| 1 | 64 | 2 | 80 | 2 | 120 |
| 2 | 32 | 2 | 40 | 2 | 60 |
| 2 | 16 | 2 | 20 | 2 | 30 |
| 2 | 8 | 2 | 10 | 2 | 15 |
| 2 | 4 | | 5 | | 5 |
| | 2 | | | | |

Prime factors of $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$

Prime factors of $80 = 2 \times 2 \times 2 \times 2 \times 5$

Prime factors of $120 = 2 \times 2 \times 2 \times 3 \times 5$

HCF of 64, 80, 120 = $2 \times 2 \times 2 = 8$

Prime factors of $121 = 11 \times 11$

HCF = 11

(f)

| | | | |
|---|----|---|----|
| 2 | 42 | 3 | 63 |
| 3 | 21 | 3 | 21 |
| 7 | 7 | 7 | 7 |
| | 1 | | 1 |

Prime factors of $42 = 2 \times 3 \times 7$

Prime factors of $63 = 3 \times 3 \times 7$

HCF of 42, 63 = $3 \times 7 = 21$

(h)

| | | | | | |
|---|----|---|----|----|----|
| 2 | 18 | 2 | 24 | 2 | 32 |
| 3 | 9 | 2 | 12 | 16 | 16 |
| 3 | 3 | 2 | 6 | 4 | 8 |
| | 1 | 3 | 3 | 2 | 4 |
| | | | 1 | 2 | 2 |
| | | | | | 1 |

Prime factors of $18 = 2 \times 3 \times 3$

Prime factors of $24 = 2 \times 2 \times 3 \times 3$

Prime factors of $32 = 2 \times 2 \times 2 \times 2 \times 2$

HCF of 18, 24, 32 = 2

| | | | |
|-----|---------|---------|---------|
| (j) | 2 108 | 2 136 | 2 152 |
| | 2 54 | 2 68 | 2 76 |
| | 3 27 | 2 34 | 2 38 |
| | 3 9 | 2 17 | 19 19 |
| | 3 | | 1 |

Prime factors of 108 = $2 \times 2 \times 3 \times 3 \times 3$

Prime factors of 136 = $2 \times 2 \times 2 \times 17$

Prime factors of 152 = $2 \times 2 \times 2 \times 19$

HCF of 108, 136, 152 = $2 \times 2 = 4$

2. (a)

$$\begin{array}{r}
 135 \overline{) 500} \quad (145 \\
 \underline{375} \\
 125 \overline{) 135} \quad (1 \\
 \underline{125} \\
 10 \overline{) 125} \quad (12 \\
 \underline{120} \\
 5 \overline{) 10} \quad (2 \\
 \underline{10} \\
 \times
 \end{array}$$

\therefore HCF of 135 and 500 = 5

(c)

$$\begin{array}{r}
 24 \overline{) 60} \quad (2 \\
 \underline{48} \\
 12 \overline{) 24} \quad (2 \\
 \underline{24} \\
 \times
 \end{array}$$

\therefore HCF of 24 and 60 = 12

Now

$$\begin{array}{r}
 12 \overline{) 72} \quad (2 \\
 \underline{72} \\
 0
 \end{array}$$

\therefore HCF of 24, 60, 72 = 12

(b)

$$\begin{array}{r}
 145 \overline{) 255} \quad (1 \\
 \underline{145} \\
 110 \overline{) 145} \quad (1 \\
 \underline{110} \\
 35 \overline{) 110} \quad (3 \\
 \underline{105} \\
 5 \overline{) 35} \quad (7 \\
 \underline{35} \\
 \times
 \end{array}$$

\therefore HCF of 145, 255 = 5

(d)

$$\begin{array}{r}
 105 \overline{) 715} \quad (1 \\
 \underline{630} \\
 85 \overline{) 105} \quad (1 \\
 \underline{85} \\
 20 \overline{) 85} \quad (4 \\
 \underline{80} \\
 5 \overline{) 20} \quad (4 \\
 \underline{20} \\
 \times
 \end{array}$$

HCF of 105, 715 = 5

Now HCF of 5 and 800

$$\begin{array}{r}
 5 \overline{) 800} \quad (160 \\
 \underline{5} \\
 30 \\
 \underline{30} \\
 0
 \end{array}$$

\therefore HCF of 105, 715 and 800 = 5



$$\begin{array}{r}
 \text{(e)} \quad 130 \overline{) 450} \quad (1 \\
 \underline{390} \\
 60 \overline{) 130} \quad (2 \\
 \underline{120} \\
 10 \overline{) 130} \quad (2 \\
 \underline{120} \\
 10 \overline{) 60} \quad (6 \\
 \underline{60} \\
 \times
 \end{array}$$

\therefore HCF of 130 and 450 = 10

Exercise 6.5

1. (a)

$$\begin{array}{c|c} 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}
 \quad
 \begin{array}{c|c} 5 & 35 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

Prime factors of 15 = 3×5
 Prime factors of 35 = 5×7
 LCM of 15 and 35 = $3 \times 5 \times 7$
 $= 15 \times 7$
 $= 105$

(b)

$$\begin{array}{c|c} 2 & 36 \\ \hline 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}
 \quad
 \begin{array}{c|c} 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline & 3 \end{array}$$

Prime factors of 36 = $2 \times 2 \times 3 \times 3$
 Prime factors of 24 = $2 \times 2 \times 2 \times 3$
 LCM of 36, 24 = $2 \times 2 \times 3 \times 3 \times 2$
 $= 72$

(c)

$$\begin{array}{c|c} 3 & 27 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}
 \quad
 \begin{array}{c|c} 3 & 45 \\ \hline 3 & 15 \\ \hline & 5 \end{array}$$

Prime factors of 27 = $3 \times 3 \times 3$
 Prime factors of 45 = $3 \times 3 \times 5$
 LCM of 27 and 45 = $3 \times 3 \times 3 \times 5$
 $= 135$

(d)

$$\begin{array}{c|c} 2 & 40 \\ \hline 2 & 20 \\ \hline 2 & 10 \\ \hline 5 & 5 \\ \hline & 1 \end{array}
 \quad
 \begin{array}{c|c} 2 & 90 \\ \hline 3 & 45 \\ \hline 3 & 15 \\ \hline & 5 \end{array}$$

Prime factors of 40 = $2 \times 2 \times 2 \times 5$
 Prime factors of 90 = $2 \times 3 \times 3 \times 5$
 LCM of 40, 90 = $2 \times 2 \times 2 \times 3 \times 3 \times 5$
 $= 8 \times 9 \times 5 = 360$

(e)

| | | | | | |
|---|----|---|----|---|----|
| 2 | 48 | 2 | 64 | 2 | 72 |
| 2 | 24 | 2 | 32 | 2 | 36 |
| 2 | 12 | 2 | 16 | 2 | 18 |
| 2 | 6 | 2 | 8 | 3 | 9 |
| | 3 | 2 | 4 | | 3 |
| | | | 2 | | |

Prime factors of 48 = $2 \times 2 \times 2 \times 2 \times 3$

Prime factors of 64 = $2 \times 2 \times 2 \times 2 \times 2 \times 2$

Prime factors of 72 = $2 \times 2 \times 2 \times 3 \times 3$

LCM of 48, 64, 72 = $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3$
= 64×9
= 576

(f)

| | | | | | |
|---|----|---|----|---|----|
| 2 | 12 | 2 | 24 | 2 | 60 |
| 2 | 6 | 2 | 12 | 3 | 15 |
| 3 | 3 | 2 | 6 | 5 | 5 |
| | 1 | | 3 | | 1 |

Prime factors of 12 = $2 \times 2 \times 3$

Prime factors of 24 = $2 \times 2 \times 2 \times 3$

Prime factor of 30 = $2 \times 3 \times 5$

LCM of 12, 24, 30 = $2 \times 2 \times 2 \times 3 \times 5$
= 120

2. (a)

| | |
|---|------------|
| 2 | 30, 35, 45 |
| 3 | 15, 35, 45 |
| 3 | 5, 35, 15 |
| 5 | 5, 35, 5 |
| 7 | 1, 7, 1 |
| | 1, 1, 1 |

\therefore LCM of 30, 35, 45
= $2 \times 3 \times 3 \times 5 \times 7$
= 18×35
= 630

(b)

| | |
|----|------------|
| 2 | 10, 25, 65 |
| 5 | 5, 25, 65 |
| 5 | 1, 5, 13 |
| 13 | 1, 1, 13 |
| | 1, 1, 1 |

\therefore LCM of 10, 25, 65
= $2 \times 5 \times 5 \times 13$
= 25×26
= 650



| | | |
|-----|---|---------------------|
| (c) | 2 | 36, 64, 72, 96, 120 |
| | 2 | 18, 32, 36, 48, 60 |
| | 2 | 9, 16, 18, 24, 30 |
| | 2 | 9, 8, 9, 16, 15 |
| | 2 | 9, 4, 9, 12, 15 |
| | 2 | 9, 2, 9, 3, 15 |
| | 3 | 9, 1, 3, 3, 15 |
| | 3 | 3, 1, 1, 1, 5 |
| | 5 | 1, 1, 1, 5 |
| | | 1, 1, 1, 1, 1 |

$$\begin{aligned}
 \therefore \text{LCM of } 36, 64, 72, 96, 120 &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 \\
 &= 64 \times 45 \\
 &= 2880
 \end{aligned}$$

(e)

| | |
|---|--------------------|
| 2 | 27, 45, 60, 72, 96 |
| 2 | 27, 45, 30, 36, 48 |
| 2 | 27, 45, 15, 18, 24 |
| 2 | 27, 45, 15, 9, 12 |
| 2 | 27, 45, 15, 9, 6 |
| 3 | 27, 45, 15, 3, 3 |
| 3 | 9, 15, 5, 1, 1 |
| 3 | 3, 5, 5, 1, 1 |
| 5 | 1, 5, 5, 1, 1 |
| | 1, 1, 1, 1, 1 |

$$\begin{aligned}
 \text{LCM of } 27, 45, 60, 72, 96 &= 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \\
 &= 4320
 \end{aligned}$$

| | | |
|-----|---|-----------------|
| (d) | 2 | 42, 60, 84, 108 |
| | 2 | 21, 30, 42, 54 |
| | 3 | 21, 15, 21, 27 |
| | 3 | 7, 5, 7, 9 |
| | 3 | 7, 5, 7, 3 |
| | 5 | 7, 5, 7, 1 |
| | 7 | 7, 1, 7, 1 |
| | | 1, 1, 1, 1 |

$$\begin{aligned}
 \therefore \text{LCM of } 42, 60, 84, 108 \text{ is} &= 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 7 \\
 &= 4 \times 27 \times 35 \\
 &= 3780
 \end{aligned}$$



Exercise 6.6

1. Greatest number of 6 digits is 999999
first find LCM of 8, 16, 24

| | |
|---|------------|
| 2 | 18, 16, 24 |
| 2 | 9, 8, 12 |
| 2 | 9, 4, 6 |
| 2 | 9, 2, 3 |
| 3 | 9, 1, 3 |
| 3 | 3, 1, 1 |
| | 1, 1, 1 |

\therefore LCM of 18, 16, 24 = $2 \times 2 \times 2 \times 2 \times 3 = 144$
Now,

$$\begin{array}{r}
 144 \overline{) 999999} \quad (6944 \\
 \underline{864} \\
 1359 \\
 \underline{1296} \\
 639 \\
 \underline{576} \\
 639 \\
 \underline{576} \\
 63
 \end{array}$$

\therefore required number is $999999 - 36 = 999936$
 \therefore 999936 is greatest 6-digit number divisible by 8, 16, 24.

2. First we find LCM of 10, 20, 30

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

\therefore LCM of 10, 20, 30 is $2 \times 2 \times 3 \times 5 = 60$
Greatest 3-digit number is 999



Now

$$\begin{array}{r} 60 \overline{) 999} \left(16 \\ \underline{60} \\ 399 \\ \underline{360} \\ 39 \end{array}$$

\therefore required number is $999 - 39 = 960$

\therefore 969 is greatest 3-digit number divisible by 10, 20, 30

3. First find the LCM of 18, 24, 36

| | |
|---|------------|
| 2 | 18, 24, 36 |
| 2 | 9, 12, 18 |
| 2 | 9, 6, 9 |
| 3 | 9, 3, 9 |
| 3 | 3, 1, 3 |
| | 1, 1, 1 |

\therefore LCM of 18, 24, 36 is $2 \times 2 \times 2 \times 3 \times 3$ is 72
greatest 5-digit number is 99999

$$\begin{array}{r} 72 \overline{) 99999} \left(1388 \\ \underline{72} \\ 279 \\ \underline{216} \\ 639 \\ \underline{576} \\ 639 \\ \underline{576} \\ 63 \end{array}$$

\therefore Required number is $= 99999 - 63 + 1$
 $= 99936 + 1$
 $= 99937$

\therefore 99937 is largest 5-digit number which when divided by 18, 24, 36 leaves a Remainder 1



4. First find LCM of 14, 21, 35

| | |
|---|------------|
| 2 | 14, 21, 35 |
| 3 | 7, 21, 35 |
| 5 | 7, 7, 35 |
| 7 | 7, 7, 7 |
| | 1, 1, 1 |

∴ LCM of 14, 21, 35 is $2 \times 3 \times 5 \times 7 = 210$

∴ $210 + 5 = 215$ is smallest number which when divided by 14, 21, 35 leaves a remainder 5

5. Greatest number that divides 1036, 347 and 633 leaving remainder of 1, 2, 3 respectively is same as to find HCF of $1036 - 1, 347 - 2, 633 - 3$ i.e. HCF of 1035, 345 and 630

Now

$$\begin{array}{r} 345 \overline{) 1035} \quad 3 \\ \underline{1035} \\ 0 \end{array}$$

Now HCF of 345 and 630

$$\begin{array}{r} 345 \overline{) 630} \quad 1 \\ \underline{345} \\ 285 \overline{) 345} \quad 1 \\ \underline{285} \\ 60 \overline{) 285} \quad 4 \\ \underline{240} \\ 45 \overline{) 60} \quad 1 \\ \underline{45} \\ 15 \overline{) 60} \quad 4 \\ \underline{60} \\ \times \end{array}$$

∴ 15 is the largest number that divides 1036, 347, 633 leaving remainder of 1, 2, 3 respectively

6. Greatest number that divides 373, 484, 542 leaving remainder 5, 4, 6 is same as to find HCF of $373 - 5, 484 - 4, 542 - 6$ i.e. HCF of 368, 480, 536

Now HCF of 368, 480



$$\begin{array}{r}
 368 \overline{)480} \quad (1 \\
 \underline{368} \\
 112 \overline{)368} \quad (3 \\
 \underline{336} \\
 32 \overline{)112} \quad (3 \\
 \underline{96} \\
 16 \overline{)32} \quad (2 \\
 \underline{32} \\
 \times
 \end{array}$$

Now HCF of 16 and 536

$$\begin{array}{r}
 16 \overline{)536} \quad (33 \\
 \underline{48} \\
 56 \\
 \underline{48} \\
 8 \overline{)16} \quad (2 \\
 \underline{16} \\
 \times
 \end{array}$$

\therefore 8 is the largest number that divides 373, 484, 542 leaving remainder 5, 4, 6 respectively

7. First of all we find the LCM of 8, 15, 24

| | |
|---|-----------|
| 2 | 8, 15, 24 |
| 2 | 4, 15, 12 |
| 2 | 2, 15, 16 |
| 3 | 1, 15, 3 |
| 5 | 1, 5, 1 |
| | 1, 1, 1 |

\therefore LCM of 8, 15, 24 is $2 \times 2 \times 2 \times 3 \times 5 = 8 \times 15 = 120$
Smallest 5-digit number is 10000

$$\begin{array}{r}
 120 \overline{)10000} \quad (83 \\
 \underline{960} \\
 400 \\
 \underline{360} \\
 40
 \end{array}$$

\therefore $120 - 40 = 80$

Now $10000 + 80 = 10080$ is smallest 5-digit number exactly divisible by 8, 15, 24



8. Maximum length of each piece is same as to find HCF of 18 m and 24 m

$$\begin{array}{r} 18 \overline{) 24} (1 \\ \underline{18} \\ 6 \overline{) 18} (3 \\ \underline{18} \\ \times \end{array}$$

\therefore 6 m is maximum length of rope

9. Largest number of students is same as to find HCF of 108, 180

$$\begin{array}{r} 108 \overline{) 180} (1 \\ \underline{108} \\ 72 \overline{) 108} (1 \\ \underline{72} \\ 36 \overline{) 72} (2 \\ \underline{72} \\ \times \end{array}$$

\therefore 36 is largest number of students among whom 108 chocolates and 180 cookies can be equally distributed each will get $\frac{108}{36}$ chocolates and $\frac{180}{36}$ cookies

i.e. 3 chocolates and 5 cookies

10. Greatest capacity container used is same as HCF of 120, 180, 240

$$\begin{array}{r} 120 \overline{) 180} (1 \\ \underline{120} \\ 60 \overline{) 120} (2 \\ \underline{120} \\ \times \end{array}$$

Now
$$\begin{array}{r} 60 \overline{) 240} (4 \\ \underline{240} \\ 0 \end{array}$$

\therefore 60 litres is greatest capacity of container which can be used to measure oil exactly

11. First we find LCM of 12, 15, 18

| | |
|---|------------|
| 2 | 12, 15, 18 |
| 2 | 6, 15, 9 |
| 3 | 3, 15, 9 |
| 3 | 1, 5, 3 |
| 5 | 1, 5, 1 |
| | 1, 1, 1 |



$$\begin{aligned}\therefore \text{ LCM of } 12, 15, 18 &= 2 \times 2 \times 3 \times 3 \times 5 \\ &= 4 \times 45 = 180 \text{ minutes} \\ &= 3 \text{ hours}\end{aligned}$$

\therefore three bells ring after 3 hours

i.e., at 10:30 am. to 3 hours

i.e., at 1:30 pm.

Exercise 6.7

1. \therefore LCM \times HCF = Ist number \times IInd number
 $\therefore 2079 \times 27 = 189 \times$ IInd number

$$\frac{56133}{189} = \text{IInd number}$$

$$297 = \text{IInd number}$$
2. \therefore HCF \times LCM = Ist number \times IInd number
 $5 \times 280 = 35 \times$ IInd number

$$\frac{5 \times 280}{35} = \text{IInd number}$$

$$40 = \text{IInd number}$$
3. \therefore LCM \times HCF = Ist number \times IInd number
 $120 \times 3 = 15 \times$ IInd number

$$\frac{8120 \times 3}{15} = \text{IInd number}$$

$$24 = \text{IInd number}$$
4. \therefore LCM \times HCF = Ist number \times IInd number
 $180 \times 6 = 36 \times$ IInd number

$$\frac{180 \times 6}{36} = \text{IInd number}$$

$$30 = \text{IInd number}$$
5. \therefore LCM \times HCF = Ist number \times IInd number
 $1152 \times \text{HCF} = 128 \times 576$

$$\text{HCF} = \frac{128 \times 576}{1152}$$

$$\text{HCF} = 64$$
6. \therefore LCM \times HCF = Product of numbers
 $\text{LCM} \times 6 = 432$
 $\text{LCM} = 432 \div 6$
 $\text{LCM} = 72$
7. \therefore LCM \times HCF = Ist number \times IInd number
 $\text{LCM} \times \text{HCF} = 20 \times 25$
 \therefore Product of LCM and HCF = 500

Formative Assessment

1. (a) 1954 = MCMLIV (b) 1603 = MDCIII
(c) 3250 = MMMCCL (d) 2919 = MMCMXIX
2. (a) True (b) False (c) False (d) True.



$$\begin{array}{r}
 3. \text{ Total post card } \quad 67,34,127 \\
 \text{Postcard burnt} \quad - 4264068 \\
 \hline
 \text{Post card left} \quad 24,70,059
 \end{array}$$

4. (a) $51 \times 50000 = 2,55,000$

(c)

$$\begin{array}{r}
 1289 \\
 \times 465 \\
 \hline
 6445 \\
 7734 \times \\
 5156 \times \\
 \hline
 \mathbf{599385}
 \end{array}$$

$\therefore 1289 \times 465 = 599385$

(b) $10 \times 68543 = 685430$

(d)

$$\begin{array}{r}
 30000 \\
 \times 73 \\
 \hline
 90000 \\
 210000 \times \\
 \hline
 \mathbf{2190000}
 \end{array}$$

$\therefore 73 \times 30000 = 2190000$

5. Largest 4-digit number 9999
Largest 2-digit number 99

$$\begin{array}{r}
 99 \overline{) 9999} \quad (101 \\
 \underline{99} \\
 099 \\
 \underline{99} \\
 0
 \end{array}$$

$\therefore 9999 \div 99 = 101$

6. (a)

$$\begin{array}{r}
 10000 \overline{) 617892} \quad (61 \\
 \underline{60000} \\
 17892 \\
 \underline{10000} \\
 7892
 \end{array}$$

\therefore Quotient = 61
Remainder = 7892

(b)

$$\begin{array}{r}
 561 \overline{) 3039498} \quad (5418 \\
 \underline{2805} \\
 2344 \\
 \underline{2244} \\
 1009 \\
 \underline{561} \\
 4488 \\
 \underline{4488} \\
 0
 \end{array}$$

\therefore Quotient = 5418
Remainder = 0

(c)

$$\begin{array}{r}
 268 \overline{) 96212} \quad (359 \\
 \underline{804} \\
 1581 \\
 \underline{1340} \\
 2412 \\
 \underline{2412} \\
 0
 \end{array}$$

\therefore Quotient = 359
Remainder = 0

(d)

$$\begin{array}{r}
 1000 \overline{) 6784} \quad (6 \\
 \underline{6000} \\
 784
 \end{array}$$

\therefore Quotient = 6
Remainder = 784

7. (a) 1,12,300 = One lakh twelve thousand three hundred
 (b) 68,984 = Sixty eight thousand nine hundred eighty four
 (c) 19,441 = Nineteen thousand four hundred forty one
 (d) 1,56,649 = One lakh fifty six thousand six hundred forty nine
8. (a) $90,75,35,000 = 900000000 + 0 + 7000000 + 500000 + 30000 + 5000 + 0 + 0 + 0$
 (b) $24,51,34,123 = 200000000 + 40000000 + 5000000 + 100000 + 30000 + 4000 + 100 + 20 + 3$
 (c) $76,78,645 = 7000000 + 600000 + 70000 + 8000 + 600 + 40 + 5$
 (d) $2,45,763 = 200000 + 40000 + 5000 + 700 + 60 + 3$
9. (a)

$$\begin{array}{r}
 675 \overline{) 1550} \quad (2 \\
 \underline{1350} \\
 200 \overline{) 675} \quad (3 \\
 \underline{600} \\
 75 \overline{) 200} \quad (2 \\
 \underline{150} \\
 50 \overline{) 75} \quad (1 \\
 \underline{45} \\
 25 \overline{) 50} \quad (2 \\
 \underline{50} \\
 \hline
 \times
 \end{array}$$

\therefore HCF of 675 and 1550 = 25

(b)

$$\begin{array}{r}
 649 \overline{) 913} \quad (1 \\
 \underline{649} \\
 264 \overline{) 649} \quad (2 \\
 \underline{528} \\
 121 \overline{) 264} \quad (2 \\
 \underline{242} \\
 22 \overline{) 121} \quad (5 \\
 \underline{110} \\
 11 \overline{) 22} \quad (2 \\
 \underline{22} \\
 \hline
 \times
 \end{array}$$

\therefore HCF of 649 and 913 = 11

10. Two factors of 85 = 5, 7
 Two factors of 60 = 2, 3
 Two factors of 72 = 2, 3
 Two factors of 18 = 2, 3



7. Fractions

Exercise 7.1

1. (a) $\frac{1}{4} = \frac{2}{8} = \frac{3}{12} = \frac{4}{16} = \frac{5}{20} = \frac{6}{24}$ (b) $\frac{1}{5} = \frac{2}{10} = \frac{3}{15} = \frac{4}{20} = \frac{5}{25} = \frac{6}{30}$
 (c) $\frac{1}{8} = \frac{2}{16} = \frac{3}{24} = \frac{4}{32} = \frac{5}{40} = \frac{6}{48}$ (d) $\frac{1}{9} = \frac{2}{18} = \frac{3}{27} = \frac{4}{36} = \frac{5}{45} = \frac{6}{54}$

2. (a) $\frac{11}{14} > \frac{9}{14}$

(b) $\frac{15}{55}, \frac{3}{11}$

$$15 \times 11, 3 \times 55$$

$$165 = 165$$

$$\therefore \frac{15}{55} = \frac{3}{11}$$

(c) $\frac{5}{9}, \frac{5}{12}$

$$5 \times 12, 5 \times 9$$

$$60 > 45$$

$$\therefore \frac{5}{9} > \frac{5}{12}$$

(d) $\frac{12}{35}, \frac{10}{15}$

$$12 \times 15, 35 \times 10$$

$$180 < 350$$

$$\therefore \frac{12}{35} < \frac{10}{15}$$

(e) $\frac{31}{45} = \frac{31}{45}$

(f) $\frac{16}{48}, \frac{15}{45}$

$$16 \times 45, 15 \times 48$$

$$720 = 720$$

$$\therefore \frac{16}{48} = \frac{15}{45}$$

3. (a) $\frac{18}{10} = 1\frac{8}{10}$ $10 \overline{)18} \left(1 \frac{8}{10} \right)$ (b) $\frac{37}{6} = 6\frac{1}{6}$ $6 \overline{)37} \left(6 \frac{1}{6} \right)$ (c) $\frac{26}{5} = 5\frac{1}{5}$ $5 \overline{)26} \left(5 \frac{1}{5} \right)$

(d) $\frac{11}{7} = 1\frac{4}{7}$ $7 \overline{)11} \left(1 \frac{4}{7} \right)$ (e) $\frac{27}{2} = 13\frac{1}{2}$ $2 \overline{)27} \left(13 \frac{1}{2} \right)$ (f) $\frac{49}{8} = 6\frac{1}{8}$ $8 \overline{)49} \left(6 \frac{1}{8} \right)$

4. (a) $\frac{3}{5}, \frac{5}{20}, \frac{2}{10}$

$$\text{LCM of } 5, 20, 10 = 20$$

$$\therefore \frac{3 \times 4}{5 \times 4}, \frac{5 \times 1}{20 \times 1}, \frac{2 \times 2}{10 \times 2}$$

$$\frac{12}{20}, \frac{5}{20}, \frac{4}{20}$$

(b) $\frac{2}{5}, \frac{2}{10}, \frac{6}{20}$

$$\text{LCM of } 5, 10, 20 = 20$$

$$\therefore \frac{2 \times 4}{5 \times 4}, \frac{2 \times 2}{10 \times 2}, \frac{6 \times 1}{20 \times 1}$$

$$\frac{8}{20}, \frac{4}{20}, \frac{6}{20}$$

Ascending Order

$$\therefore \frac{4}{20}, \frac{5}{20}, \frac{12}{20}$$

$$\frac{2}{10} < \frac{5}{20} < \frac{3}{5}$$

(c) $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$

LCM of 2, 4, 8 = 8

$$\therefore \frac{1 \times 4}{2 \times 4}, \frac{1 \times 2}{4 \times 2}, \frac{1 \times 1}{8 \times 1}$$

$$\frac{4}{8}, \frac{2}{8}, \frac{1}{8}$$

\(\therefore\) Ascending order is

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

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

Ascending Order

$$\therefore \frac{4}{20} < \frac{6}{20} < \frac{8}{20}$$

$$\frac{2}{10} < \frac{6}{20} < \frac{2}{5}$$

5. (a) $\frac{3}{4}, \frac{1}{4}, \frac{1}{9}$

Descending order : $\frac{3}{4} > \frac{2}{4} > \frac{1}{4}$

(b) $\frac{1}{6}, \frac{1}{4}, \frac{1}{9}$

LCM of 6, 4, 9 = 36

$$\therefore \frac{1 \times 6}{6 \times 6}, \frac{1 \times 9}{4 \times 9}, \frac{1 \times 4}{9 \times 4}$$

$$\frac{6}{36}, \frac{9}{36}, \frac{4}{36}$$

\(\therefore\) descending order is $\frac{9}{36} > \frac{6}{36} > \frac{4}{36} \Rightarrow \frac{1}{4} > \frac{1}{6} > \frac{1}{9}$

(c) $\frac{2}{4}, \frac{5}{8}, \frac{11}{16}$

LCM of 4, 8, 16 = 16

$$\frac{2 \times 4}{4 \times 4}, \frac{5 \times 2}{8 \times 2}, \frac{11 \times 1}{16 \times 1} \Rightarrow \frac{8}{16}, \frac{10}{16}, \frac{11}{16}$$

descending order : $\frac{11}{16} > \frac{10}{16} > \frac{8}{16}$

or $\frac{11}{16} > \frac{5}{8} > \frac{2}{4}$

6. (a) $2\frac{3}{5}$
 $= \frac{2 \times 5 + 3}{5}$

(b) $4\frac{4}{9}$
 $= \frac{4 \times 9 + 4}{9}$

(c) $3\frac{1}{6}$
 $= \frac{3 \times 6 + 1}{6}$

$$\begin{array}{lll}
 & = \frac{10+3}{5} = \frac{13}{5} & & = \frac{36+4}{9} = \frac{40}{9} & & = \frac{18+1}{6} = \frac{19}{6} \\
 \text{(d)} & 5\frac{6}{7} & & \text{(e)} & 7\frac{2}{9} & & \text{(f)} & 3\frac{5}{7} \\
 & = \frac{5 \times 7 + 6}{7} & & & = \frac{7 \times 9 + 2}{9} & & & = \frac{3 \times 7 + 5}{7} \\
 & = \frac{35+6}{7} = \frac{41}{7} & & & = \frac{63+2}{9} = \frac{65}{9} & & & = \frac{21+5}{7} = \frac{26}{7}
 \end{array}$$

Exercise 7.2

$$\begin{array}{ll}
 1. & \text{(a)} \quad \frac{10}{15} = \frac{10 \div 5}{15 \div 5} = \frac{2}{3} & \text{(b)} \quad \frac{40}{48} = \frac{40 \div 8}{48 \div 8} = \frac{5}{6} \\
 & \text{(c)} \quad \frac{60}{96} = \frac{60 \div 12}{96 \div 12} = \frac{5}{8} & \text{(d)} \quad \frac{51}{85} = \frac{51 \div 17}{85 \div 17} = \frac{3}{5} \\
 & \text{(e)} \quad \frac{66}{99} = \frac{66 \div 33}{99 \div 33} = \frac{2}{3} & \text{(f)} \quad \frac{49}{63} = \frac{49 \div 7}{63 \div 7} = \frac{7}{9} \\
 & \text{(g)} \quad \frac{34}{85} = \frac{34 \div 17}{85 \div 17} = \frac{2}{5} & \text{(h)} \quad \frac{7}{63} = \frac{7 \div 7}{63 \div 7} = \frac{1}{9} \\
 & \text{(i)} \quad \frac{45 \div 9}{72 \div 9} = \frac{5}{8} & \text{(j)} \quad \frac{82}{160} = \frac{82 \div 2}{160 \div 2} = \frac{41}{80} \\
 2. & \text{(a)} \quad \frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2} & \text{(b)} \quad \frac{6}{20} = \frac{6 \div 2}{20 \div 2} = \frac{3}{10} \\
 & \text{(c)} \quad \frac{24}{72} = \frac{24 \div 24}{72 \div 24} = \frac{1}{3} & \text{(d)} \quad \frac{12}{16} = \frac{12 \div 4}{16 \div 4} = \frac{3}{4} \\
 & \text{(e)} \quad \frac{20}{25} = \frac{20 \div 5}{25 \div 5} = \frac{4}{5} & \text{(f)} \quad \frac{4}{16} = \frac{4 \div 4}{16 \div 4} = \frac{1}{4} \\
 3. & \text{(a)} \quad \frac{9}{3} = 3 & \text{(b)} \quad \frac{16}{4} = 4 & \text{(c)} \quad \frac{14}{7} = 2 & \text{(d)} \quad \frac{30}{6} = 5 \\
 & \text{(e)} \quad \frac{49}{7} = 7 & \text{(f)} \quad \frac{8}{2} = 4 & \text{(g)} \quad \frac{6}{3} = 2 & \text{(h)} \quad \frac{10}{10} = 1 \\
 & \text{(i)} \quad \frac{25}{5} = 5 \\
 4. & \text{(a)} \quad 2\frac{4}{7} & \text{(b)} \quad 3\frac{7}{9} & \text{(c)} \quad 5\frac{7}{10} \\
 & = \frac{2 \times 7 + 4}{7} & = \frac{3 \times 9 + 7}{9} & = \frac{5 \times 10 + 7}{10} \\
 & = \frac{14 + 4}{7} & = \frac{27 + 7}{9} & = \frac{50 + 7}{10} \\
 & = \frac{18}{7} & = \frac{34}{9} & = \frac{57}{10}
 \end{array}$$

$$\begin{aligned}
 \text{(d)} \quad 5\frac{1}{9} &= \frac{5 \times 9 + 1}{9} \\
 &= \frac{45 + 1}{9} \\
 &= \frac{46}{9}
 \end{aligned}$$

$$\begin{aligned}
 \text{(e)} \quad 1\frac{5}{8} &= \frac{1 \times 8 + 5}{8} \\
 &= \frac{8 + 5}{8} \\
 &= \frac{13}{8}
 \end{aligned}$$

Exercise 7.3

$$1. \quad \text{(a)} \quad 7 + \frac{3}{5} = \frac{7}{1} + \frac{3}{5}$$

$$\text{LCM } 1, 5 = 5$$

$$= \frac{7 \times 5}{1 \times 5} + \frac{3 \times 1}{5 \times 1} = \frac{35}{5} + \frac{3}{5} = \frac{35 + 3}{5} = \frac{38}{5} = 7\frac{3}{5}$$

$$\text{(b)} \quad 1\frac{8}{13} + 2\frac{11}{39}$$

$$= 1 + \frac{8}{13} + 2 + \frac{11}{39} = (1 + 2) + \left(\frac{8}{13} + \frac{11}{39} \right) = 3 + \left(\frac{8 \times 3}{13 \times 3} + \frac{11}{39} \right)$$

$$= 3 + \left(\frac{24}{39} + \frac{11}{39} \right) = 3 + \left(\frac{24 + 11}{39} \right) = 3 + \frac{35}{39} = 3\frac{35}{39}$$

$$\text{(c)} \quad 9 + \frac{5}{11}$$

$$= \frac{9 \times 11}{1 \times 11} + \frac{5}{11} = \frac{99}{11} + \frac{5}{11} = \frac{99 + 5}{11} = \frac{104}{11} = 9\frac{5}{11}$$

$$\text{(d)} \quad \frac{5}{11} + \frac{3}{11}$$

$$= \frac{5 + 3}{11} = \frac{8}{11}$$

$$\text{(e)} \quad 1\frac{2}{7} + \frac{5}{14} + 1\frac{1}{21}$$

$$= 1 + \frac{2}{7} + \frac{5}{14} + 1 + \frac{1}{21}$$

$$= (1 + 1) + \left(\frac{2}{7} + \frac{5}{14} + \frac{1}{21} \right)$$

$$= 2 + \left[\frac{2 \times 6}{7 \times 6} + \frac{5 \times 3}{14 \times 3} + \frac{1 \times 2}{21 \times 2} \right]$$

$$= 2 + \left[\frac{12}{42} + \frac{15}{42} + \frac{2}{42} \right]$$

$$= 2 + \left(\frac{12 + 15 + 2}{42} \right) = 2 + \frac{29}{42} = 2\frac{29}{42}$$

$$(f) \quad \frac{4}{13} + \frac{2}{13} + \frac{5}{13} = \frac{4+2+5}{13} = \frac{11}{13}$$

$$(g) \quad \frac{3}{7} + \frac{5}{7} + \frac{4}{7} = \frac{2+5+4}{7} = \frac{11}{7} = 1\frac{4}{7}$$

$$(h) \quad 3\frac{1}{5} + 2\frac{3}{4} + 4\frac{1}{2}$$
$$= 3 + \frac{1}{5} + 2 + \frac{3}{4} + 4 + \frac{1}{2}$$
$$= (3+2+4) + \left(\frac{1}{5} + \frac{3}{4} + \frac{1}{2}\right)$$
$$= 9 + \left[\frac{1 \times 4}{5 \times 4} + \frac{3 \times 5}{4 \times 5} + \frac{1 \times 10}{2 \times 10}\right]$$
$$= 9 + \left[\frac{4}{20} + \frac{15}{20} + \frac{10}{20}\right]$$
$$= 9 + \left[\frac{4+15+10}{20}\right]$$
$$= 9 + \frac{29}{20} = 9 + 1\frac{9}{20} = 9 + 1 + \frac{9}{20} = 10 + \frac{9}{20} = 10\frac{9}{20}$$

$$(i) \quad 5\frac{1}{5} + \frac{3}{5}$$
$$= 5 + \frac{1}{5} + \frac{3}{5} = 5 + \frac{1+3}{5} = 5 + \frac{4}{5} = 5\frac{4}{5}$$

$$(j) \quad 4\frac{5}{11} = \frac{7}{11}$$
$$= 4 + \frac{5}{11} + \frac{7}{11} = 4 + \frac{5+7}{11} = 4 + \frac{12}{11}$$
$$= 4 + 1\frac{1}{11} = 4 + 1 + \frac{1}{11} = 5 + \frac{1}{11}$$
$$= 5\frac{1}{11}$$

$$(k) \quad 3\frac{2}{3} + 4\frac{3}{4} + 5\frac{2}{3}$$
$$= 3 + \frac{2}{3} + 4 + \frac{3}{4} + 5 + \frac{2}{3}$$
$$= (3+4+5) + \left(\frac{2}{3} + \frac{3}{4} + \frac{2}{3}\right)$$
$$= 12 + \left[\frac{2 \times 20}{3 \times 20} + \frac{3 \times 15}{4 \times 15} + \frac{3 \times 12}{5 \times 12}\right]$$
$$= 12 + \left[\frac{40}{60} + \frac{45}{60} + \frac{36}{60}\right]$$

$$\begin{aligned}
&= 12 + \left[\frac{40 + 45 + 36}{60} \right] \\
&= 12 + \frac{121}{60} \\
&= 12 + 6\frac{1}{60} \\
&= 12 + 2 + \frac{1}{60} = 14 + \frac{1}{60} = 14\frac{1}{60}
\end{aligned}$$

$$(l) \quad 3\frac{2}{3} + \frac{1}{3} = 3 + \frac{2}{3} + \frac{1}{3} = 3 + \frac{2+1}{3} = 3 + \frac{3}{3} = 3 + 1 = 4$$

$$(m) \quad 2\frac{3}{5} + 7 = 2 + \frac{3}{5} + 7 = (2 + 7) + \frac{3}{5} = 9 + \frac{3}{5} = 9\frac{3}{5}$$

$$\begin{aligned}
(n) \quad 2\frac{3}{4} + 1\frac{4}{5} + 1\frac{3}{5} \\
&= 2 + \frac{3}{4} + 1 + \frac{4}{5} + 1 + \frac{3}{5} \\
&= (2 + 1 + 1) + \left(\frac{3}{4} + \frac{4}{5} + \frac{3}{5} \right) \\
&= 4 + \left(\frac{3 \times 5}{4 \times 5} + \frac{4 \times 4}{5 \times 4} + \frac{3 \times 4}{5 \times 4} \right) \\
&= 4 + \left(\frac{15}{20} + \frac{16}{20} + \frac{12}{20} \right) \\
&= 4 + \left(\frac{15 + 16 + 12}{20} \right) \\
&= 4 + \frac{43}{20} = 4 + 2\frac{3}{20} = 4 + 2 + \frac{3}{20} = 6 + \frac{3}{20} = 6\frac{3}{20}
\end{aligned}$$

$$\begin{aligned}
(o) \quad 8\frac{5}{8} + 7\frac{3}{4} \\
&= 8 + \frac{5}{8} + 7 + \frac{3}{4} \\
&= (8 + 7) + \left(\frac{5}{8} + \frac{3}{4} \right) \\
&= 15 + \left(\frac{5 \times 1}{8 \times 1} + \frac{3 \times 2}{4 \times 2} \right) \\
&= 15 + \left(\frac{5}{8} + \frac{6}{8} \right) \\
&= 15 + \left(\frac{5 + 6}{8} \right) \\
&= 15 + \frac{11}{8} = 15 + 1\frac{3}{8} = 15 + 1 + \frac{3}{8} \\
&= 16 + \frac{3}{8} = 16\frac{3}{8}
\end{aligned}$$

$$\begin{aligned}
 \text{(p)} \quad 13\frac{2}{9} + 8\frac{1}{3} &= 13 + \frac{2}{9} + 8 + \frac{1}{3} \\
 &= 13 + 8 + \frac{2}{9} + \frac{1}{3} \\
 &= 21 + \left(\frac{2}{9} + \frac{1}{3}\right) \\
 &= 21 + \left(\frac{2 \times 1}{9 \times 1} + \frac{1 \times 3}{3 \times 3}\right) \\
 &= 21 + \left(\frac{2}{9} + \frac{3}{9}\right) \\
 &= 21 + \left(\frac{2+3}{9}\right) \\
 &= 21 + \frac{5}{9} = 21\frac{5}{9}
 \end{aligned}$$

$$\begin{aligned}
 \text{(q)} \quad 2\frac{1}{6} + 1\frac{1}{14} + \frac{7}{36} &= 2 + \frac{1}{6} + 1 + \frac{1}{14} + \frac{7}{36} \\
 &= (2+1) + \left(\frac{1}{6} + \frac{1}{14} + \frac{7}{36}\right) \\
 &= 3 + \left[\frac{1 \times 42}{6 \times 42} + \frac{1 \times 18}{14 \times 18} + \frac{7 \times 7}{36 \times 7}\right] \\
 &= 3 + \left(\frac{42}{252} + \frac{18}{252} + \frac{49}{252}\right) \\
 &= 3 + \left(\frac{42+18+49}{252}\right) \\
 &= 3 + \frac{109}{252} = 3\frac{109}{252}
 \end{aligned}$$

$$\begin{aligned}
 \text{(r)} \quad 4\frac{7}{16} + 3\frac{5}{8} + 8\frac{1}{2} &= 4 + \frac{7}{16} + 3 + \frac{5}{8} + 8 + \frac{1}{2} \\
 &= (4 + 3 + 8) + \left(\frac{7}{16} + \frac{5}{8} + \frac{1}{2}\right) \\
 &= 15 + \left(\frac{7 \times 2}{16 \times 2} + \frac{5 \times 2}{8 \times 2} + \frac{1 \times 8}{2 \times 8}\right) \\
 &= 15 + \left(\frac{7}{16} + \frac{10}{16} + \frac{8}{16}\right)
 \end{aligned}$$



$$\begin{aligned}
&= 15 + \left(\frac{7+10+8}{16} \right) \\
&= 15 + \frac{25}{16} = 15 + 1\frac{9}{16} = 15 + 1 + \frac{9}{16} = 16 + \frac{9}{16} = 16\frac{9}{16} \\
\text{(s)} \quad 3\frac{7}{10} + 12\frac{3}{5} + 5\frac{9}{10} \\
&= 3 + \frac{7}{10} + 12 + \frac{3}{5} + 5 + \frac{9}{10} \\
&= (3+12+5) + \left(\frac{7}{10} + \frac{3}{5} + \frac{9}{10} \right) \\
&= 20 + \left[\frac{7 \times 1}{10 \times 1} + \frac{3 \times 2}{5 \times 2} + \frac{9 \times 1}{10 \times 1} \right] \\
&= 20 + \left[\frac{7}{10} + \frac{6}{10} + \frac{9}{10} \right] \\
&= 20 + \left[\frac{7+6+9}{10} \right] \\
&= 20 + \frac{22}{10} = 20 + 2\frac{2}{10} = 20 + 2 + \frac{2}{10} = 22 + \frac{1}{5} = 22\frac{1}{5}
\end{aligned}$$

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

$$\begin{aligned}
&= 2 + \frac{1}{2} + 1 + \frac{1}{4} + 3 + \frac{1}{4} \\
&= (2+1+3) + \left(\frac{1}{2} + \frac{1}{4} + \frac{1}{4} \right) \\
&= 6 + \left(\frac{1 \times 2}{5 \times 2} + \frac{1}{4} + \frac{1}{4} \right) \\
&= 6 + \left(\frac{2}{4} + \frac{1}{4} + \frac{1}{4} \right) \\
&= 6 + \left(\frac{2+1+1}{4} \right) \\
&= 6 + \frac{4}{4} \\
&= 6 + 1
\end{aligned}$$

total weight of fruits = 7 kg

(b) Book read in 3 days = $\frac{4}{9} + \frac{2}{9} + \frac{1}{9}$

$$= \frac{4+2+1}{9} = \frac{7}{9}$$

∴ Sameer finished $\frac{7}{9}$ -th part of book

(c) Pocket money spent by Amit = $\frac{1}{2} + \frac{1}{4}$

$$= \frac{1 \times 2}{2 \times 2} + \frac{1}{4}$$

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

∴ Amit spent $\left(\frac{3}{4}\right)^{th}$ of pocket money

(d) Total distance jogged = $4\frac{2}{3} + 5\frac{1}{3} + 3\frac{2}{3}$

$$= 4 + \frac{2}{3} + 5 + \frac{1}{3} + 3 + \frac{2}{3}$$

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

$$= 12 + \frac{2+1+2}{3}$$

$$= 12 + \frac{5}{3} = 12 + 1\frac{2}{3}$$

$$= 12 + 1 + \frac{2}{3} = 13 + \frac{2}{3}$$

∴ Shyam jogged = $13\frac{2}{3}$ km distance

(e) total cake eaten = $\frac{4}{9} + \frac{2}{9}$

$$= \frac{4+2}{9} = \frac{6}{9} = \frac{2}{3}$$

∴ they eaten $(2/3)$ rd of the cake

Exercise 7.4

1. (a) $8 - \frac{5}{9}$

$$= \frac{8 \times 9}{1 \times 9} - \frac{5}{9} = \frac{72}{9} - \frac{5}{9} = \frac{72-5}{9} = \frac{67}{9} = 7\frac{4}{9}$$

(b) $\frac{15}{32} - \frac{7}{16}$

$$= \frac{15 \times 1}{32 \times 1} - \frac{7 \times 2}{16 \times 2} = \frac{15}{32} - \frac{14}{32} = \frac{15-14}{32} = \frac{1}{32}$$

(c) $11 - 5\frac{7}{8}$

$$= 11 - \left(5 + \frac{7}{8}\right) = 11 - 5 - \frac{7}{8} = 6 - \frac{7}{8} = \frac{6 \times 8}{1 \times 8} - \frac{7}{8} = \frac{48}{8} - \frac{7}{8} = \frac{41}{8} = 5\frac{1}{8}$$

(d) $14 - 6\frac{9}{11}$

$$= 14 - \left(6 + \frac{9}{11}\right) = 14 - 6 - \frac{9}{11} = 8 - \frac{9}{11} = \frac{8 \times 11}{1 \times 11} - \frac{9}{11} = \frac{88}{11} - \frac{9}{11} = \frac{79}{11} = 7\frac{2}{11}$$

$$(e) \quad 7\frac{3}{4} - 3$$

$$= 7 + \frac{3}{4} - 3 = 7 - 3 + \frac{3}{4} = 4 + \frac{3}{4} = 4\frac{3}{4}$$

$$(f) \quad 9\frac{3}{11} - 6$$

$$= 9 + \frac{3}{11} - 6 = (9 - 6) + \frac{3}{11} = 3 + \frac{3}{11} = 3\frac{3}{11}$$

$$(g) \quad \frac{7}{9} - \frac{4}{9}$$

$$= \frac{7-4}{9} = \frac{3}{9} = \frac{1}{3}$$

$$(h) \quad \frac{15}{17} - \frac{9}{17}$$

$$= \frac{15-9}{17} = \frac{6}{17}$$

$$(i) \quad 2\frac{3}{4} - \frac{1}{4}$$

$$= 2 + \frac{3}{4} - \frac{1}{4} = 2 + \frac{3-1}{4} = 2 + \frac{2}{4} = 2 + \frac{1}{2} = 2\frac{1}{2}$$

$$(j) \quad 9\frac{12}{17} - 6\frac{5}{17}$$

$$= \left(9 + \frac{12}{17}\right) - \left(6 + \frac{5}{17}\right)$$

$$= 9 + \frac{12}{17} - 6 - \frac{5}{17} = (9 - 6) + \frac{12-5}{17} = 3 + \frac{7}{17} = 3\frac{7}{17}$$

$$(k) \quad 12\frac{4}{9} - 3\frac{7}{12}$$

$$= 12 + \frac{4}{9} - \left(3 + \frac{7}{12}\right)$$

$$= 12 + \frac{4}{9} - 3 - \frac{7}{12}$$

$$= 12 - 3 + \left(\frac{4}{9} - \frac{7}{12}\right)$$

$$= 9 + \left(\frac{4 \times 4}{9 \times 4} - \frac{7 \times 3}{12 \times 3}\right)$$

$$= 9 + \left(\frac{16}{36} - \frac{21}{36}\right)$$

$$= 9 + \left(-\frac{5}{36}\right)$$

$$= \frac{9 \times 36 - 5}{36} \Rightarrow \frac{324 - 5}{36} = \frac{319}{36} = 8\frac{31}{36}$$

$$\begin{aligned}
(1) \quad & 29\frac{3}{15} + 28\frac{7}{12} - 11\frac{1}{6} \\
&= 29 + \frac{3}{15} + 28 + \frac{7}{12} - \left(11 + \frac{1}{6}\right) \\
&= (29 + 28 - 11) + \left(\frac{3}{15} + \frac{7}{12} - \frac{1}{6}\right) \\
&= (57 - 11) + \left(\frac{3 \times 4}{15 \times 4} + \frac{7 \times 5}{12 \times 5} - \frac{1 \times 10}{6 \times 10}\right) \\
&= 46 + \left(\frac{12}{60} + \frac{35}{60} - \frac{10}{60}\right) \\
&= 46 + \left(\frac{12 + 35 - 10}{60}\right) \\
&= 46 + \left(\frac{47 - 10}{60}\right) \\
&= 46 + \frac{37}{60} = 46\frac{37}{60}
\end{aligned}$$

$$\begin{aligned}
2. \quad (a) \quad & 7\frac{1}{5} - 4\frac{1}{2} \\
&= 7 + \frac{1}{5} - \left(4 + \frac{1}{2}\right) \\
&= 7 - 4 + \left(\frac{1}{5} - \frac{1}{2}\right) \\
&= 3 + \left(\frac{1 \times 2}{5 \times 2} - \frac{1 \times 5}{2 \times 5}\right) \\
&= 3 + \left(\frac{2}{10} - \frac{5}{10}\right) = 3 + \frac{2 - 5}{10} = 3 - \frac{3}{10} = \frac{3 \times 10 - 3}{10} \\
&= \frac{30 - 3}{10} = \frac{27}{10} = 2\frac{7}{10}
\end{aligned}$$

$\therefore 2\frac{7}{10}$ should be added to $4\frac{1}{2}$ to get $7\frac{1}{5}$

$$\begin{aligned}
(b) \quad & \text{Remaining length of wire} = 21\frac{3}{5} - 15\frac{1}{10} \\
&= 21 + \frac{3}{5} - \left(15 + \frac{1}{10}\right) \\
&= 21 - 15 + \frac{3}{5} - \frac{1}{10} \\
&= 6 + \left(\frac{3 \times 2}{5 \times 2} - \frac{1}{10}\right) \\
&= 6 + \left(\frac{6}{10} - \frac{1}{10}\right)
\end{aligned}$$

$$= 6 + \frac{6-1}{10} = 6 + \frac{5}{10} = 6 + \frac{1}{2}$$

Remaining length = $6\frac{1}{2}$ m of wire

$$\begin{aligned} \text{(c) Other number is } & 16 - 2\frac{3}{4} \\ & = 16 - \left(2 + \frac{3}{4}\right) \\ & = 16 - 2 - \frac{3}{4} \\ & = 14 - \frac{3}{4} = \frac{14 \times 4 - 3}{4} = \frac{56 - 3}{4} = \frac{53}{4} \end{aligned}$$

Other number is = $13\frac{1}{4}$

$$\begin{aligned} \text{(d) Cloth left} & = 9\frac{3}{6} - \left(2\frac{1}{2} + 4\frac{1}{4}\right) \\ & = 9\frac{3}{16} - \left(2 + \frac{1}{2} + 4 + \frac{1}{4}\right) \\ & = 9\frac{3}{16} - \left(6 + \frac{1}{2} + \frac{1}{4}\right) \\ & = 9\frac{3}{16} - \left(6 + \frac{1 \times 2}{2 \times 2} + \frac{1}{4}\right) \\ & = 9\frac{3}{16} - \left(6 + \frac{2}{4} + \frac{1}{4}\right) \\ & = 9 + \frac{3}{16} - \left(6 + \frac{2+1}{4}\right) \\ & = 9 + \frac{3}{16} - 6 - \frac{3}{4} \\ & = 9 - 6 + \frac{3}{16} - \frac{3 \times 4}{4 \times 4} \\ & = 3 + \frac{3}{16} - \frac{12}{16} \\ & = \left(3 + \frac{3-12}{16}\right) \\ & = 3 - \frac{9}{16} = \frac{3 \times 16 - 9}{16} \\ & = \frac{48 - 9}{16} = \frac{39}{16} = 2\frac{7}{16} \text{ m} \end{aligned}$$

$$\begin{aligned} \text{(e) Marbles not green} & = \frac{1}{3} + \frac{1}{2} \\ & = \frac{1 \times 2}{3 \times 2} + \frac{1 \times 3}{2 \times 3} = \frac{2}{6} + \frac{3}{6} = \frac{2+3}{6} = \frac{5}{6} \end{aligned}$$

$$(f) \quad \frac{1}{5}, \frac{1}{6}$$

$$\frac{1 \times 6}{6} > \frac{1 \times 5}{5}$$

\therefore Manoj ate more by $\frac{1}{5} - \frac{1}{6}$

$$\frac{1 \times 6}{5 \times 6} - \frac{1 \times 5}{6 \times 5} = \frac{6}{30} - \frac{5}{30} = \frac{6-5}{30} = \frac{1}{30}$$

$$(g) \quad \begin{aligned} \text{flour used} &= 3\frac{1}{2} + 2\frac{1}{4} = 3 + \frac{1}{2} + 2 + \frac{1}{4} \\ &= (3+2) + \frac{1}{2} + \frac{1}{4} = 5 + \left(\frac{1 \times 2}{2 \times 2} + \frac{1}{4}\right) \\ &= 5 + \left(\frac{2}{4} + \frac{1}{4}\right) = 5 + \frac{2+1}{4} \\ &= 5 + \frac{3}{4} = 5\frac{3}{4} \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{flour left} &= 15 - 5\frac{3}{4} = 15 - \left(5 + \frac{3}{4}\right) \\ &= 15 - 5 - \frac{3}{4} = 10 - \frac{3}{4} = \frac{10 \times 4 - 3}{4} = \frac{40 - 3}{4} = \frac{37}{4} \end{aligned}$$

$$\text{flour left} = 9\frac{1}{4} \text{ kg}$$

$$(h) \quad \begin{aligned} 7\frac{1}{4} - 3\frac{4}{5} &= 7 + \frac{1}{4} - \left(3 + \frac{4}{5}\right) \\ &= 7 + \frac{1}{4} - 3 - \frac{4}{5} \\ &= 7 - 3 + \frac{1}{4} - \frac{4}{5} \\ &= 4 + \frac{1 \times 5}{4 \times 5} - \frac{4 \times 4}{5 \times 4} \\ &= 4 + \frac{5}{20} - \frac{16}{20} \\ &= 4 + \frac{5-16}{20} = 4 - \frac{11}{20} \\ &= \frac{4 \times 20 - 11}{20} \\ &= \frac{80 - 11}{20} \\ &= \frac{69}{20} = 3\frac{9}{20} \end{aligned}$$

$$\begin{aligned} 17\frac{1}{2} - 9\frac{1}{3} &= 17 + \frac{1}{2} - \left(9 + \frac{1}{3}\right) \\ &= 17 + \frac{1}{2} - 9 - \frac{1}{3} \\ &= 17 - 9 + \frac{1}{2} - \frac{1}{3} \\ &= 8 + \frac{1 \times 3}{2 \times 3} - \frac{1 \times 2}{3 \times 2} \\ &= 8 + \frac{3}{6} - \frac{2}{6} \\ &= 8 + \frac{3-2}{6} \\ &= 8 + \frac{1}{6} = 8\frac{1}{6} \end{aligned}$$

$$\therefore 3\frac{9}{20} < 8\frac{1}{6}$$

$$\therefore \left(7\frac{1}{4} - 3\frac{4}{5}\right) < \left(17\frac{1}{2} - 9\frac{1}{3}\right)$$

(i) Ramesh have = $\frac{2}{3}$ Pizza

Suresh have = $\frac{1}{2}$ Pizza

$$\frac{2}{3} \quad \frac{1}{2}$$

$$2 \times 2 \quad 1 \times 3$$

$$4 > 3$$

∴ Ramesh has more Pizza

Exercise 7.5

1. (a) $\frac{2}{3}$ of 15

$$= \frac{2}{3} \times 15 = \frac{2 \times \cancel{15}^5}{\cancel{3}} = 2 \times 5 = 10$$

(b) $\frac{3}{4}$ of 12

$$= \frac{3 \times \cancel{12}^3}{\cancel{4}} = 3 \times 3 = 9$$

(c) $\frac{4}{5}$ of 10

$$= \frac{4 \times \cancel{10}^2}{\cancel{5}} = 4 \times 2 = 8$$

(d) $\frac{6}{7}$ of 21

$$= \frac{6 \times \cancel{21}^3}{\cancel{7}} = 6 \times 3 = 18$$

2. (a) $\frac{2}{5} \times \frac{1}{6} = \frac{2 \times 1}{5 \times 6} = \frac{1}{5 \times 3} = \frac{1}{15}$ (b) $\frac{3}{6} \times \frac{4}{9} = \frac{\cancel{3}^2 \times \cancel{4}}{\cancel{6} \times \cancel{9}^3} = \frac{2}{3 \times 3} = \frac{2}{9}$

(c) $\frac{6}{5} \times \frac{10}{2} = \frac{\cancel{6}^3 \times \cancel{10}^2}{\cancel{5} \times \cancel{2}} = 3 \times 2 = 6$ (d) $\frac{3}{14} \times \frac{12}{14} = \frac{3 \times \cancel{12}^6}{11 \times \cancel{14}^7} = \frac{3 \times 6}{11 \times 7} = \frac{18}{77}$

(e) $\frac{11}{5} \times \frac{5}{2} = \frac{11 \times \cancel{5}}{\cancel{5} \times 2} = \frac{11}{2} = 5\frac{1}{2}$ (f) $7 \times 5\frac{1}{5} = 7 \times \frac{26}{5} = \frac{7 \times 26}{5} = \frac{182}{5} = 36\frac{2}{5}$

(g) $15 \times 3\frac{5}{6} = 15 \times \frac{23}{6} = \frac{\cancel{15}^5 \times 23}{\cancel{6}^2} = \frac{5 \times 23}{2} = \frac{115}{2} = 57\frac{1}{2}$

(h) $12 \times 3\frac{3}{4} = 12 \times \frac{15}{4} = \frac{\cancel{12}^3 \times 15}{\cancel{4}} = 3 \times 15 = 45$

$$(i) \quad 2\frac{1}{3} \times \frac{7}{3} = \frac{7}{3} \times \frac{7}{3} = \frac{7 \times 7}{3 \times 3} = \frac{49}{9} = 5\frac{4}{9}$$

$$(j) \quad 5\frac{2}{5} \times \frac{7}{9} = \frac{27}{5} \times \frac{7}{9} = \frac{\cancel{27} \times 7}{5 \times \cancel{9}} = \frac{21}{5} = 4\frac{1}{5}$$

$$(k) \quad 4\frac{3}{5} \times \frac{1}{2} = \frac{23}{5} \times \frac{1}{2} = \frac{23 \times 1}{5 \times 2} = \frac{23}{10} = 2\frac{3}{10}$$

$$(l) \quad 10\frac{2}{3} \times \frac{7}{8} = \frac{32}{3} \times \frac{7}{8} = \frac{\cancel{32} \times 7}{3 \times \cancel{8}} = \frac{4 \times 7}{3} = \frac{28}{3} = 9\frac{1}{3}$$

$$(m) \quad 4\frac{2}{6} \times 2\frac{5}{8} = \frac{26}{6} \times \frac{21}{8} = \frac{\cancel{26} \times \cancel{21}}{\cancel{6} \times \cancel{8}} = \frac{13 \times 7}{8} = \frac{91}{8} = 11\frac{3}{8}$$

$$(n) \quad 3\frac{5}{9} \times 1\frac{3}{4} = \frac{32}{9} \times \frac{7}{4} = \frac{\cancel{32} \times 7}{9 \times \cancel{4}} = \frac{8 \times 7}{9} = \frac{56}{9} = 6\frac{2}{9}$$

$$(o) \quad 6\frac{2}{5} \times 1\frac{3}{4} = \frac{32}{5} \times \frac{7}{4} = \frac{\cancel{32} \times 7}{5 \times \cancel{4}} = \frac{8 \times 7}{5} = \frac{56}{5} = 11\frac{1}{5}$$

Exercise 7.6

$$1. \quad (a) \quad \frac{1}{2} \div 3 = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

$$(b) \quad \frac{4}{8} \div 6 = \frac{4}{8} \times \frac{1}{6} = \frac{\cancel{4} \times 1}{\cancel{8} \times 6} = \frac{1}{2 \times 6} = \frac{1}{12} = \frac{1}{6}$$

$$(c) \quad \frac{14}{57} \div \frac{14}{57} = \frac{14}{57} \times \frac{57}{14} = 1$$

$$(d) \quad 12 \div \frac{4}{5} = 12 \times \frac{5}{4} = 12 \times \frac{5}{4} = 3 \times 5 = 15$$

$$(e) \quad \frac{12}{19} \div 1 = \frac{12}{19} \times 1 = \frac{12}{19}$$

$$(f) \quad 36 \div \frac{8}{15} = 36 \times \frac{15}{8} = \frac{\cancel{36} \times 15}{\cancel{8}} = \frac{9 \times 15}{2} = \frac{135}{2} = 67\frac{1}{2}$$

$$(g) \quad 0 \div \frac{13}{27} = 0 \times \frac{27}{13} = 0$$

$$(h) \quad 5\frac{1}{10} \div 16 = \frac{51}{10} \times \frac{1}{16} = \frac{51 \times 1}{10 \times 16} = \frac{51}{160}$$

$$(i) \quad 3\frac{2}{3} \div 6 = \frac{11}{3} \div 6 = \frac{11}{3} \times \frac{1}{6} = \frac{11}{18}$$

$$(j) \quad \frac{81}{3} \div 0 = \frac{81}{13} \times \frac{1}{0} = \text{Note defined}$$

$$(k) \quad 2\frac{1}{4} \div \frac{6}{7} = \frac{9}{4} \div \frac{6}{7} = \frac{9 \times 7}{4 \times \cancel{6}^2} = \frac{3 \times 7}{4 \times 2} = \frac{21}{8} = 2\frac{5}{8}$$

$$(l) \quad 12\frac{3}{4} \div \frac{3}{12} = \frac{51}{4} \times \frac{12}{3} = \frac{51 \times \cancel{12}^3}{4 \times \cancel{3}} = 51$$

$$(m) \quad 4\frac{2}{4} \div 4\frac{3}{8} = \frac{18}{4} \div \frac{35}{8} = \frac{18}{4} \times \frac{8}{35} = \frac{18 \times \cancel{8}^2}{4 \times 35} = \frac{18 \times 2}{35} = \frac{36}{35} = 1\frac{1}{35}$$

$$(n) \quad 2\frac{4}{5} \div \frac{7}{5} = \frac{14}{5} \div \frac{7}{5} = \frac{14}{5} \times \frac{5}{7} = \frac{\cancel{14}^2 \times 5}{5 \times \cancel{7}} = 2 \times 1 = 2$$

$$(o) \quad 17\frac{3}{7} \div 4\frac{5}{14} = \frac{122}{7} \div \frac{61}{14} = \frac{122}{7} \times \frac{14}{61} = \frac{\cancel{122}^2 \times \cancel{14}^2}{7 \times \cancel{61}} = 2 \times 2 = 4$$

2. (a) Rohan spent = $\frac{5}{7}$ of ₹ 3500

$$= \frac{5 \times 3500}{7} = 5 \times 500$$

Rohan spent = ₹ 2500

(b) $\frac{3.50}{10} = \frac{350}{1000} = \frac{\cancel{35}^7}{\cancel{100}^{20}} = \frac{7}{20}$

(c) $\left(4\frac{1}{11} \times 4\frac{2}{5}\right) \div 3\frac{1}{7} = \left(\frac{45}{11} \times \frac{22}{5}\right) \div \frac{22}{7}$

$$= \frac{\cancel{45}^9 \times \cancel{22}^2}{11 \times \cancel{5}} \times \frac{7}{22}$$

$$= 9 \times 2 \times \frac{7}{\cancel{22}^{11}}$$

$$= \frac{9 \times 7}{11} = \frac{63}{11} = 5\frac{8}{11}$$

(d) $\left(\frac{3}{12} \div \frac{9}{108}\right) \div \frac{9}{14}$

$$= \left(\frac{3}{12} \times \frac{108}{9}\right) \times \frac{14}{9} = \frac{13 \times \cancel{108}^9 \times 14}{12 \times 9 \times \cancel{9}^3} = \frac{14}{3} = 4\frac{2}{3}$$

(e) $\left(\frac{2}{3} \text{ of } 108\right) - \left(\frac{1}{7} \text{ of } 84\right)$

$$= \left(\frac{2}{3} \times \cancel{108}^{36}\right) - \left(\frac{1}{7} \times \cancel{84}^{12}\right)$$

$$= (2 \times 36) - (1 \times 12)$$

$$= 72 - 12$$

$$= 60$$

(f) Packed in one packet = $\frac{1}{7}$ of 105

$$= \frac{1}{7} \times 105 = 15 \text{ kg}$$

$$\text{Number of packets} = \frac{105}{15} = 7$$

8. DECIMALS

Exercise 8.1

1. Place value of 5 in $45.32 = 5$

$$\text{Place value of 5 in } 69.059 = \frac{5}{100}$$

$$\text{Place value of 5 in } 0.50 = \frac{5}{10}$$

$$\text{Place value of 5 in } 510.25 = 500 \text{ and } \frac{5}{100}$$

$$\text{Place value of 5 in } 256.41 = 50$$

$$\text{Place value } 73.105 = \frac{5}{1000}$$

- 2.
- | | hundred | tens | ones | . | tenth | hundredth | thousandth | ten thousandth |
|-----|---------|------|------|---|-------|-----------|------------|----------------|
| (a) | | 4 | 6 | . | 4 | 8 | | |
| (b) | | 1 | 5 | . | 7 | 2 | | |
| (c) | 5 | 6 | 7 | . | 1 | 0 | 1 | 4 |
| (d) | 1 | 2 | 6 | . | 2 | 4 | 7 | |
| (e) | | | 4 | . | 6 | 7 | 8 | 9 |
| (f) | | 1 | 8 | . | 9 | 6 | 7 | |

Place values

(a) $\frac{4}{10}$ (b) $\frac{2}{100}$ (c) $\frac{4}{10000}$ (d) $\frac{7}{1000}$ (e) $\frac{8}{1000}$ (f) $\frac{9}{10}$

3. (a) 1125.63 (b) 90.19 (c) 34.3 (d) 76.305 (e) 555.55
4. (a) 6.53 (b) 4.032 (c) 900.063 (d) 0.006 (e) 65.20 (f) 0.8
5. (a) One and five hundredths four thousandths
 (b) Fifty six and nine-tenths eight thousandths
 (c) Seventy eight and nine hundredths seven-thousandths
 (d) Ninety one and eleven hundredths
 (f) Six-hundredths seven thousandths
 (g) Three hundred twenty five and two tenths five hundredths
 (h) Thirty and two-hundredths five thousandths
 (i) Ninety and fifty six hundredths
 (j) Thirty three and three tenth two hundredths four thousandths?
6. (a) 1.1 (b) 0.1 (c) 3.6 (d) 0.4

7. (a) $4.326 = 4 + \frac{3}{10} + \frac{2}{10} + \frac{6}{1000}$ (b) $45.12 = 40 + 5 + \frac{1}{10} + \frac{2}{100}$
 (c) $10.025 = 10 + 0 + \frac{2}{100} + \frac{5}{1000}$ (d) $110.12 = 100 + 10 + \frac{1}{10} + \frac{2}{100}$
 (e) $12.525 = 10 + 2 + \frac{5}{10} + \frac{2}{100} + \frac{5}{1000}$

Exercise 8.2

1. (a) $3.5 = \frac{35}{10} = 3\frac{5}{10} = 3\frac{1}{2}$ (b) $65.34 = \frac{6534}{100} = 65\frac{34}{100}$
 (c) $1.32 = \frac{132}{100} = 1\frac{32}{100}$ (d) $0.4 = \frac{4}{10} = \frac{2}{5}$
 (e) $73.6 = \frac{736}{10} = 73\frac{6}{10} = 73\frac{3}{5} = \frac{368}{5}$ (f) $0.19 = \frac{19}{100}$
 (g) $5.013 = \frac{5013}{1000}$
 (h) $13.085 = \frac{13085}{1000} = 13\frac{85}{1000} = 13\frac{1}{200}$
 (i) $428.75 = \frac{42875}{100} = 428\frac{75}{100} = 428\frac{3}{4}$
 (j) $60.04 = \frac{6004}{100} = 60\frac{4}{100} = 60\frac{1}{25} = \frac{1501}{25}$

2. (a) $2\frac{3}{4} = \frac{11}{4} = \frac{11 \times 25}{4 \times 25} = \frac{275}{100} = 2.75$
 (b) $\frac{7}{100} = 0.07$
 (c) $\frac{13}{2} = \frac{13 \times 50}{2 \times 50} = \frac{650}{100} = 6.50$
 (d) $\frac{21}{25} = \frac{21 \times 4}{25 \times 4} = \frac{84}{100} = 0.84$
 (e) $17\frac{1}{2} = \frac{35 \times 50}{2 \times 50} = \frac{1750}{100} = 17.50$
 (f) $3\frac{1}{25} = \frac{76}{25} = \frac{76 \times 4}{25 \times 4} = \frac{304}{100} = 3.04$
 (g) $11\frac{1}{4} = \frac{45}{4} = \frac{45 \times 25}{4 \times 25} = \frac{1125}{100} = 11.25$
 (h) $\frac{14}{25} = \frac{14 \times 4}{25 \times 4} = \frac{56}{100} = 0.56$
 (i) $\frac{29}{125} = \frac{29 \times 8}{125 \times 8} = \frac{232}{1000} = 0.232$
 (j) $\frac{4}{5} = \frac{4 \times 20}{5 \times 20} = \frac{80}{100} = 0.80$

- (k) $7\frac{3}{10} = \frac{73}{10} = 7.3$
- (l) $12\frac{3}{1000} = \frac{12003}{1000} = 12.003$
- (m) $7\frac{2}{100} = \frac{702}{100} = 7.02$
- (n) $2\frac{4}{10000} = \frac{20004}{10000} = 2.0004$
- (o) $\frac{17}{25} = \frac{17 \times 4}{25 \times 4} = \frac{68}{100} = 0.68$
- (p) $7\frac{2}{5} = \frac{37}{5} = \frac{37 \times 20}{5 \times 20} = \frac{740}{100} = 7.40$
- (q) $\frac{8}{125} = \frac{8 \times 8}{125 \times 8} = \frac{64}{1000} = 0.064$

Exercise 8.3

1. (a) $845 \text{ cm} = \frac{845}{100} \text{ m} = 8.45 \text{ m}$
- (b) $755 \text{ m } 36 \text{ cm} = 755\frac{36}{100} \text{ m} = 755.36 \text{ m}$
- (c) $1468 \text{ cm} = \frac{1468}{100} \text{ m} = 14.68 \text{ m}$
- (d) $983 \text{ m } 12 \text{ cm} = 983\frac{12}{100} \text{ m} = 983.12 \text{ m}$
- (e) $1245 \text{ cm} = \frac{1245}{100} \text{ m} = 12.45 \text{ m}$
2. (a) $148 \text{ mm} = \frac{148}{10} \text{ cm} = 14.8 \text{ cm}$
- (b) $49 \text{ mm} = \frac{49}{10} \text{ cm} = 4.9 \text{ cm}$
- (c) $6 \text{ cm } 4 \text{ mm} = 6\frac{4}{10} \text{ cm} = 6.4 \text{ cm}$
- (d) $92 \text{ cm } 2 \text{ mm} = 92\frac{2}{10} \text{ cm} = 92.2 \text{ cm}$
- (e) $224 \text{ mm} = \frac{224}{10} \text{ cm} = 22.4 \text{ cm}$
3. (a) $25 \text{ kg } 15 \text{ g} = 25\frac{15}{1000} \text{ kg} = 25.015 \text{ kg}$
- (b) $7 \text{ kg } 125 \text{ g} = 7\frac{125}{1000} \text{ kg} = 7.125 \text{ kg}$
- (c) $8145 \text{ g} = \frac{8145}{1000} \text{ kg} = 8.145 \text{ kg}$
- (d) $15005 \text{ g} = \frac{15005}{1000} \text{ kg} = 15.005 \text{ kg}$

- (e) $8 \text{ kg } 350 \text{ g} = 8 \frac{350}{1000} \text{ kg} = 8.350 \text{ kg}$
4. (a) $2750 \text{ m} = \frac{2750}{1000} \text{ km} = 2.750$
- (b) $5222 \text{ m} = \frac{5222}{1000} \text{ km} = 5.222 \text{ km}$
- (c) $84 \text{ km } 92 \text{ m} = 84 \frac{92}{1000} \text{ km} = 84.092 \text{ km}$
- (d) $795 \text{ m} = \frac{795}{1000} \text{ km} = 0.795$
- (e) $7 \text{ km } 318 \text{ m} = 7 \frac{318}{1000} \text{ km} = 7.318 \text{ km}$
5. (a) 5 rupees 25 Paise
 $= ₹ 5 \frac{25}{100} = ₹ 5.25$
- (b) 20 Rupees 80 Paise
 $= ₹ 20 \frac{80}{100} = ₹ 20.80$
- (c) 7575 Paise
 $= ₹ \frac{7575}{100} = ₹ 75.75$
- (d) 9003 Paise
 $= ₹ \frac{9003}{100} = ₹ 90.03$
- (e) 65 Rupees 5 Paise
 $= ₹ 65 \frac{5}{100} = ₹ 65.05$
6. (a) $8 \text{ l } 200 \text{ ml} = 8 \frac{200}{100} \text{ l} = 8.200 \text{ l}$
- (b) $10500 \text{ ml} = \frac{10500}{1000} = 10.500 \text{ l}$
- (c) $12 \text{ l } 275 \text{ ml} = 12 \frac{275}{100} \text{ l} = 12.275 \text{ l}$
- (d) $15 \text{ l } 50 \text{ ml} = 15 \frac{50}{100} \text{ l} = 15.050 \text{ l}$
- (e) $17030 \text{ ml} = \frac{17030}{1000} \text{ l} = 17.030 \text{ l}$
7. (a) ₹ 17.25 = 17 Rupees 25 Paise
- (b) $9.050 \text{ l} = 9 \text{ l } 50 \text{ ml}$
- (c) $15.375 \text{ km} = 15 \text{ km } 375 \text{ m}$
- (d) ₹ 56.35 = 56 Rupees 35 Paise
- (e) $21.300 \text{ l} = 21 \text{ l } 300 \text{ ml}$
- (f) $12.950 \text{ km} = 12 \text{ km } 950 \text{ m}$
- (g) $17.5 \text{ cm} = 17 \text{ cm } 5 \text{ mm}$
- (h) $25.6 \text{ cm} = 25 \text{ cm } 6 \text{ mm}$
- (i) $14.5 \text{ m} = 14 \text{ m } 50 \text{ cm}$
- (j) $8.15 \text{ m} = 8 \text{ m } 15 \text{ cm}$
- (k) $35.08 \text{ m} = 35 \text{ m } 8 \text{ cm}$
- (l) $11.04 \text{ kg} = 11 \text{ kg } 40 \text{ g}$

Exercise 8.4

1. (a) like decimals are 3.45 and 141.01
- (b) like decimals are 12.15 and 3.75
- (c) like decimals are 8.43 and 119.87
 16.009 and 8.114
- (d) like decimals are 8.5 and 195.8
 115.125 and 5.689
2. (a) like decimals are 11.500, 11.738, 512.510
- (b) like decimals 745.090, 39.118, 12.800
- (c) like decimals are 81.500, 394.260, 0.489
- (d) like decimals are 346.620, 439.100, 30.623
3. (a) $6.7 = 6.700$
- (b) $10.01 = 10.010$
- (c) $144.89 = 144.890$

4. (a) $6.5 = 6.50, 6.500$ (b) $11.80 = 11.8, 11.800$
 (c) $91.700 = 91.70, 91.7$ (d) $51.4 = 51.49, 51.400$

Exercise 8.5

1. (a) 7.06, 70.6, 0.76 76.0
 (b) 14.68, 146.8, 1.468, 18.64
 (c) 189.26, 198.62, 891.62, 9186.2
 (d) 4987.23, 498.723, 49.8723, 49872.3
2. (a) 43.50, ~~4.950~~, 453.0, 405.3
 (b) ~~146.267~~, 1462.67, 1647.62, 1764.26
 (c) 2461.41, 2174.14, 27151.4, ~~271.414~~
 (d) 462.4781, ~~46.24781~~, 424.7816, 4781.426
3. (a) $37.17 < 37.7$ (b) $144.2 > 87.489$
 (c) $75.5 = 75.500$ (d) $8.345 < 80.45$
 (e) $78.190 < 87.91$ (f) $197.1 > 97.95$
4. (a) $44.76 < 46.47 < 46.74 < 47.64$ (b) $8.06 < 8.60 < 80.6 < 86.0$
 (c) $9.067 < 90.67 < 96.07 < 97.60$ (d) $52.67 < 52.76 < 56.72 < 57.62$
5. (a) $590.35 > 559.03 > 553.09 > 550.93$
 (b) $0.68 > 60.08 > 6.80 > 6.008$
 (c) $461.23 > 46.123 > 42.163 > 41.623$
 (d) $554.04 > 54.40 > 50.44 > 5.440$

Exercise 8.6

- | | | | | | |
|--------|---|-----|---|-----|--|
| 1. (a) | $\begin{array}{r} 42.86 \\ + 20.13 \\ \hline 62.99 \end{array}$ | (b) | $\begin{array}{r} 157.241 \\ + 23.42 \\ \hline 180.661 \end{array}$ | (c) | $\begin{array}{r} 812.160 \\ + 247.271 \\ \hline 1059.431 \end{array}$ |
| (d) | $\begin{array}{r} 46.401 \\ + 322.12 \\ \hline 368.521 \end{array}$ | (e) | $\begin{array}{r} 2164.12 \\ 14.00 \\ + 123.71 \\ \hline 2301.83 \end{array}$ | (f) | $\begin{array}{r} 216.600 \\ 0.004 \\ + 4.681 \\ \hline 221.285 \end{array}$ |
| 2. (a) | $\begin{array}{r} 27.583 \\ - .22 \\ \hline 27.363 \end{array}$ | (b) | $\begin{array}{r} 37.000 \\ - 0.031 \\ \hline 36.949 \end{array}$ | (c) | $\begin{array}{r} 12.993 \\ - 2.28 \\ \hline 10.713 \end{array}$ |
| (d) | $\begin{array}{r} 12.170 \\ - 1.387 \\ \hline 10.783 \end{array}$ | (e) | $\begin{array}{r} 1.25 \\ - 0.10 \\ \hline 1.15 \end{array}$ | (f) | $\begin{array}{r} 115.55 \\ - 111.62 \\ \hline 3.93 \end{array}$ |



Exercise 8.7

1. (a) $39.145 \times 10 = 391.45$ (b) $82.483 \times 100 = 8248.3$
 (c) $436.385 \times 1000 = 436385$ (d) $114.01 \times 100 = 11401$
 (e) $345.19 \times 1000 = 345190$ (f) $17.5 \times 400 = 1750 \times 4 = 7000$
 (g) $8814 \times 500 = 8814 \times 5 = 44070$ (h) $19.365 \times 2000 = 19365 \times 2 = 38730$
2. (a)
$$\begin{array}{r} 21.12 \\ \times 4 \\ \hline 84.48 \end{array}$$
 (b)
$$\begin{array}{r} 35.475 \text{ three decimal places} \\ \times 0.2 \text{ one decimal place} \\ \hline 7.0950 \text{ (total 4 decimal places)} \end{array}$$
- (c)
$$\begin{array}{r} 12.56 \\ \times 41 \\ \hline 1256 \\ 5024 \times \\ \hline 514.96 \end{array}$$
 (d)
$$\begin{array}{r} 2.5 \text{ one decimal place} \\ \times 2.5 \text{ one decimal place} \\ \hline 125 \\ 50 \times \\ \hline 6.25 \text{ (total 2 decimal place)} \end{array}$$
- (e)
$$\begin{array}{r} 6.789 \text{ 3 decimal places} \\ \times 0.41 \text{ 2 decimal places} \\ \hline 6789 \\ 27156 \times \\ \hline 2.78349 \text{ total 5 decimal places} \end{array}$$
 (f)
$$\begin{array}{r} 7.26 \\ \times 4 \\ \hline 29.04 \end{array}$$

Exercise 8.8

1. (a) $\frac{45.5}{10} = 4.55$ (b) $\frac{395.6}{100} = 3.956$ (c) $\frac{48216}{1000} = 48.216$
 (d) $\frac{39145}{1000} = 0.039145$ (e) $\frac{246}{30} = \frac{0.245}{3} = 0.082$
 (f) $\frac{38.148}{50} = \frac{3.8148}{5} = 0.76296$
 (g) $\frac{4.86}{200} = \frac{0.0486}{2} = 0.0243$ (h) $\frac{214.16}{500} = \frac{2.1416}{5} = 0.42832$
2. (a) $18.0 \div 3$

$$\begin{array}{r} 3 \overline{)18.0} \text{ (6.0)} \\ \underline{18.} \\ 0 \end{array}$$

 $\therefore 18.0 \div 3 = 6.0$
- (b) $56.64 \div 2$

$$\begin{array}{r} 2 \overline{)56.64} \text{ (28.32)} \\ \underline{4} \\ 16 \\ \underline{16} \\ 06 \\ \underline{6} \\ 04 \\ \underline{04} \\ 0 \end{array}$$

 $\therefore 56.64 \div 2 = 28.32$



(c) 40.96

$$\begin{array}{r} 16 \overline{) 40.96} \quad (2.56 \\ \underline{32} \\ 89 \\ \underline{80} \\ 96 \\ \underline{96} \\ \times \end{array}$$

$\therefore 40.96 \div 16 = 2.56$

(e) 564 \div 4.8

$$= \frac{564 \times 10}{4.8 \times 10} = \frac{5640}{48}$$

$$\begin{array}{r} 48 \overline{) 5640} \quad (117.5 \\ \underline{48} \\ 84 \\ \underline{48} \\ 360 \\ \underline{336} \\ 240 \\ \underline{240} \\ \times \end{array}$$

$\therefore 564 \div 4.8 = 117.5$

(g) 6300 \div 210

$$= \frac{6.300}{2.10} \times \frac{100}{100}$$

$$= \frac{630}{210}$$

$$\begin{array}{r} 210 \overline{) 630} \quad (3 \\ \underline{630} \\ 0 \end{array}$$

$\therefore 6300 \div 210 = 3$

(d) 188.28 \div 12

$$\begin{array}{r} 12 \overline{) 188.28} \quad (15.69 \\ \underline{12} \\ 68 \\ \underline{60} \\ 82 \\ \underline{72} \\ 108 \\ \underline{108} \\ \times \end{array}$$

$\therefore 188.28 \div 12 = 15.69$

(f) $\frac{10.15}{1.45}$

$$= \frac{10.15 \times 100}{1.45 \times 100}$$

$$= \frac{1015}{145}$$

$$\begin{array}{r} 145 \overline{) 1015} \quad (7 \\ \underline{1015} \\ 0 \end{array}$$

$\therefore 10.15 \div 1.45 = 7$

(h) $\frac{0.3375}{0.125}$

$$= \frac{0.3375 \times 1000}{0.125 \times 1000}$$

$$= \frac{337.5}{125}$$

$$\begin{array}{r} 125 \overline{) 337.5} \quad (2.7 \\ \underline{250} \\ 875 \\ \underline{875} \\ 0 \end{array}$$

$\therefore 0.3375 \div 0.125 = 2.7$



$$3. \quad (a) \quad \frac{0.85}{0.09} = \frac{0.85 \times 100}{0.09 \times 100} = \frac{85}{9}$$

$$\begin{array}{r} 9 \overline{) 85} \quad (9.444 \\ \underline{81} \\ 40 \\ \underline{36} \\ 40 \end{array}$$

$$\therefore 0.85 \div 0.09 = 9.44$$

$$(c) \quad \frac{6.9}{0.07} = \frac{6.9 \times 100}{0.07 \times 100} = \frac{690}{7}$$

$$\begin{array}{r} 7.9 \overline{) 690} \quad (98.571 \\ \underline{63} \\ 60 \\ \underline{56} \\ 40 \\ \underline{35} \\ 50 \\ \underline{49} \\ 10 \\ \underline{7} \\ 3 \end{array}$$

$$\therefore 6.9 \div 0.07 = 98.57$$

$$(e) \quad \frac{5.25}{1.78} = \frac{5.25 \times 100}{1.78 \times 100} = \frac{525}{178}$$

$$\begin{array}{r} 178 \overline{) 525} \quad (2.949 \\ \underline{356} \\ 1690 \\ \underline{1602} \\ 880 \\ \underline{712} \\ 1680 \\ \underline{1602} \\ 78 \end{array}$$

$$\therefore 5.25 \div 1.78 = 2.95$$

$$(b) \quad 0.99 \div 14$$

$$\begin{array}{r} 14 \overline{) 0.99} \quad (0.07071 \\ \underline{98} \\ 100 \\ \underline{98} \\ 20 \\ \underline{14} \\ 6 \end{array}$$

$$\therefore 0.99 \div 14 = 0.07$$

$$(d) \quad \frac{4.62}{2.5} = \frac{4.62 \times 10}{2.5 \times 10} = \frac{46.2}{25}$$

$$\begin{array}{r} 25 \overline{) 46.2} \quad (1.848 \\ \underline{25} \\ 212 \\ \underline{200} \\ 120 \\ \underline{100} \\ 200 \\ \underline{200} \\ 0 \end{array}$$

$$\therefore 4.62 \div 2.5 = 1.85$$

$$(f) \quad \frac{39.44 \times 100}{0.23 \times 100} = \frac{3944}{23}$$

$$\begin{array}{r} 23 \overline{) 3944} \quad (171.478 \\ \underline{23} \\ 164 \\ \underline{161} \\ 34 \\ \underline{23} \\ 110 \\ \underline{92} \\ 180 \\ \underline{161} \\ 190 \\ \underline{184} \\ 6 \end{array}$$

$$\therefore \frac{3944}{0.07} = 17148$$

$$(g) \quad \frac{23.56 \times 10}{17 \times 10} = \frac{235.6}{17}$$

$$\begin{array}{r} 17 \overline{) 235.6} \quad (13.858 \\ \underline{17} \\ 65 \\ \underline{51} \\ 146 \\ \underline{136} \\ 100 \\ \underline{85} \\ 150 \\ \underline{136} \\ 14 \end{array}$$

$$\therefore \frac{23.56}{17} = 13.86$$

$$(h) \quad \frac{27.52 \times 10}{13 \times 10} = \frac{275.2}{13}$$

$$\begin{array}{r} 13 \overline{) 275.2} \quad (21.169 \\ \underline{26} \\ 15 \\ \underline{13} \\ 22 \\ \underline{13} \\ 90 \\ \underline{78} \\ 120 \\ \underline{117} \\ 03 \end{array}$$

$$\therefore \frac{27.52}{13} = 21.17$$

Exercise 8.9

$$\begin{array}{r} 1. \quad \text{Total length} = \quad 2.46 \text{ m} \\ \quad \quad \quad \quad \quad 1.35 \text{ m} \\ \quad \quad \quad \quad \quad + 0.92 \text{ m} \\ \hline \quad \quad \quad \quad \quad 4.73 \text{ m} \end{array}$$

$$\begin{array}{r} 3. \quad \text{Total length of ribbon} = \quad 1.50 \\ \quad \quad \quad \quad \quad \quad \times 27 \\ \quad \quad \quad \quad \quad \quad 1050 \\ \quad \quad \quad \quad \quad \quad 300 \times \\ \hline \text{Total length of ribbon} = \quad \underline{40.50} \end{array}$$

$$\begin{array}{r} 5. \quad \text{She weigh now} \quad 97.5 \text{ kg} \\ \quad \quad \quad \quad \quad - 13.8 \text{ kg} \\ \hline \quad \quad \quad \quad \quad \underline{83.7 \text{ kg}} \end{array}$$

$$\begin{array}{r} 7. \quad \text{Cost of 1 kg of sugar} = ₹ \frac{291.25 \times 10}{125 \times 10} \\ \quad \quad \quad \quad \quad = ₹ \frac{2912.5}{125} = ₹ 23.3 \end{array}$$

$$\begin{array}{r} \text{Cost of 3.5 kg of sugar} = \quad 23.3 \\ \quad \quad \quad \quad \quad \quad \times 3.5 \\ \hline \quad \quad \quad \quad \quad 1165 \\ \quad \quad \quad \quad \quad 699 \times \\ \hline \text{Cost of 3.5 kg of sugar} = \quad \underline{₹ 81.55} \end{array}$$

$$\begin{array}{r} 2. \quad \text{Athlete runs in 1 day} = 201 \div 30 \\ \quad \quad \quad \quad \quad = \frac{201}{30} \text{ km} = \frac{20.1}{3} \text{ km} \\ \quad \quad \quad \quad \quad = 6.7 \text{ km} \end{array}$$

$$\begin{array}{r} 4. \quad \text{He earns} = \quad ₹ 110.50 \\ \quad \quad \quad \quad \quad \quad \times 30 \\ \quad \quad \quad \quad \quad \quad 0000 \\ \hline \text{He earns} = \quad \underline{₹ 3315.00} \end{array}$$

$$\begin{array}{r} 6. \quad \text{Number of bricks} \quad 19 \overline{) 3230} \quad (170 \\ \quad \quad \quad \quad \quad = \frac{32.30 \text{ m}}{0.19 \text{ m}} \\ \quad \quad \quad \quad \quad = \frac{32.30 \times 100}{0.19 \times 100} = \frac{3230}{19} \\ \quad \quad \quad \quad \quad = 170 \end{array}$$

$$\begin{array}{r} 125 \overline{) 2912.5} \quad (23.3 \\ \underline{250} \\ 412 \\ \underline{375} \\ 375 \\ \underline{375} \\ 0 \end{array}$$



$$= \frac{14}{3 \times 5} = \frac{14}{15}$$

(c) $1 + \frac{7}{15} \times 1\frac{14}{31} \times 4\frac{3}{7} \div 3$

$$= 1 + \frac{7}{15} \times \frac{45}{31} \times \frac{31}{7} \times \frac{1}{3}$$

$$= 1 + 1 = 2$$

(e) $4\frac{1}{2} \div \left(\frac{1}{3} + 1\frac{1}{2}\right)$

$$= \frac{9}{2} \div \left(\frac{1}{3} + \frac{3}{2}\right)$$

$$= \frac{9}{2} \div \left(\frac{1 \times 2}{3 \times 2} + \frac{3 \times 3}{2 \times 3}\right)$$

$$= \frac{9}{2} \div \left(\frac{2}{6} + \frac{9}{6}\right)$$

$$= \frac{9}{2} \div \frac{2+9}{6}$$

$$= \frac{9}{2} \div \frac{11}{6}$$

$$= \frac{9}{2} \times \frac{6}{11}$$

$$= \frac{9 \times 3}{11} = \frac{27}{11} = 2\frac{5}{11}$$

$$= 10 + 10 = 20$$

(d) $1\frac{3}{7} \div 3\frac{3}{14} - 1\frac{7}{9} \div 2\frac{3}{4} \times \frac{11}{32}$

$$= \frac{10}{7} \div \frac{45}{14} - \frac{16}{9} \div \frac{11}{4} \times \frac{11}{32}$$

$$= \frac{10}{7} \times \frac{14}{45} - \frac{16}{9} \times \frac{4}{11} \times \frac{11}{32}$$

$$= 2 \times \frac{2}{9} - \frac{2}{9}$$

$$= \frac{2}{9} \times (2-1) = \frac{2}{9} \times 1 = \frac{2}{9}$$

(f) $9\frac{1}{3} \times 2\frac{3}{7} \times 1\frac{7}{9} \div 2\frac{2}{27} - 1\frac{2}{7}$

$$= \frac{28}{3} \times \frac{17}{7} \times \frac{16}{9} \div \frac{56}{27} - \frac{9}{7}$$

$$= \frac{28}{3} \times \frac{17}{7} \times \frac{16}{9} \times \frac{27}{56} - \frac{9}{7}$$

$$= \frac{28 \times 17 \times 16 \times 27}{3 \times 7 \times 9 \times 56} - \frac{9}{7}$$

$$= \frac{17 \times 8}{7} - \frac{9}{7}$$

$$= \frac{136-9}{7}$$

$$= \frac{127}{7} = 18\frac{1}{7}$$

Exercise 9.2

1. (a) $20 - \{3 + (5 \times 7 - 5) \div 6\}$

$$= 20 - \{3 + (35 - 5) \div 6\}$$

$$= 20 - \{3 + 30 \div 6\}$$

$$= 20 - \{3 + 5\}$$

$$= 20 - 8 = 12$$

(c) $3 \times 2 + 6 - 4 - (4 - 0)$

$$= 3 \times 2 + 6 - 4 - 4$$

$$= 6 + 6 - 4 - 4$$

$$= 12 - 4 - 4$$

$$= 8 - 4$$

$$= 4$$

(e) $\frac{2}{3} \times \left[\left(\frac{4}{5} \div \frac{3}{5}\right) + 5\right]$

(b) $75 - \{31 + (12 + 4.120)\}$

$$= 75 - \{31 + 5.320\}$$

$$= 75 - 36.320$$

$$= 38.680$$

(d) $[100 - \{90 - (20 \times 3) \div 2\}]$

$$= [100 - \{90 - 60 \div 2\}]$$

$$= [100 - \{90 - 30\}]$$

$$= [100 - 60]$$

$$= 40$$

$$\begin{aligned}
 &= \frac{2}{3} \times \left[\frac{4}{\cancel{5}} \times \frac{\cancel{5}}{3} + 5 \right] = \frac{2}{3} \times \left[\frac{4}{3} + 5 \right] = \frac{2}{3} \times \left[\frac{4 + 5 \times 3}{3} \right] \\
 &= \frac{2}{3} \times \frac{19}{3} = \frac{38}{9} = 4\frac{2}{9}
 \end{aligned}$$

(f) $[57 - (11 + 2)] \times 2 = \{57 - 13\} \times 2 = 44 \times 2 = 88$

(g) $\left(\frac{2}{3} \times \frac{1}{4}\right) + \left(\frac{3}{4} \div \frac{9}{28}\right) = \frac{2 \times 1}{3 \times 4} + \left(\frac{3}{4} \times \frac{28}{9}\right)$

$$\begin{aligned}
 &= \frac{1}{3 \times 2} + \left(\frac{3 \times \cancel{28}^7}{4 \times \cancel{9}_3}\right) = \frac{1}{3 \times 2} + \frac{7}{3} = \frac{1}{6} + \frac{7 \times 2}{3 \times 2} \\
 &= \frac{1}{6} + \frac{14}{6} = \frac{1 + 14}{6} = \frac{15}{6} = 2\frac{3}{6} = 2\frac{1}{2}
 \end{aligned}$$

(h) $(40 + 5 \times 3) \div 11 \times 5$

$$= (40 + 15) \div 11 \times 5 = 55 \div 11 \times 5 = 5 \times 5 = 25$$

(i) $200 + [2\{8 + (10 \times 7 - 25) \div 9\}]$

$$\begin{aligned}
 &= 200 + [2\{8 + (70 - 25) \div 9\}] \\
 &= 200 + [2\{8 + 45 \div 9\}] \\
 &= 200 + [2\{8 + 5\}] = 200 + [2\{13\}] = 200 + [26] \\
 &= 200 + 26 = 226
 \end{aligned}$$

(j) $100 + [25 \div \{40 - (20 - 5)\}]$

$$\begin{aligned}
 &= 100 + [25 \div \{40 - 15\}] = 100 + [25 \div 25] \\
 &= 100 + 1 = 101
 \end{aligned}$$

(k) $57.5 + 1 - (36.4 - 12.52)$

$$= 57.5 + 1 - (23.88) = 58.5 - 23.88 = 34.62$$

(l) $5.9 + \{(18.42 + 126.8) - 50.1\}$

$$= 5.9 + \{45.22 - 50.1\} = 5.9 - 4.88 = 1.02$$

(m) $[8.6 + 26 + 34.3] - 53.31$

$$= 68.9 - 53.31 = 15.59$$

(n) $12\frac{2}{3} + \left[(16 - 10\frac{3}{4} + 1\frac{15}{48}) \right] = 2\frac{38}{3} + \left[\left(16 - \frac{43}{4} \right) \div \frac{63}{48} \right]$

$$\begin{aligned}
 &= \frac{38}{3} + \left[\left(\frac{16 \times 4 - 43}{4} \right) \times \frac{48}{63} \right] = \frac{38}{3} + \left[\frac{64 - 43}{4} \times \frac{48}{63} \right] \\
 &= \frac{38}{3} + \left[\frac{21 \times \cancel{48}^{12}}{4 \times \cancel{63}_3} \right] = \frac{38}{3} + \frac{12}{3} = \frac{38 + 12}{3} = \frac{50}{3} = 16\frac{2}{3}
 \end{aligned}$$

(o) $\frac{1}{4} + \left[5\frac{1}{3} + \left(\frac{21}{66} \div \frac{7}{11} \right) \right]$

$$\begin{aligned}
 &= \frac{1}{4} + \left[\frac{16}{3} + \left(\frac{21}{66} \div \frac{7}{11} \right) \right] = \frac{1}{4} + \left[\frac{16}{3} + \left(\frac{21}{66} \times \frac{11}{7} \right) \right] \\
 &= \frac{1}{4} + \left[\frac{16}{3} + \frac{\cancel{21} \times 11}{\cancel{66} \times 7} \right] = \frac{1}{4} + \left[\frac{16}{3} + \frac{3}{6} \right]
 \end{aligned}$$

$$\begin{aligned}
&= \frac{1}{4} + \left[\frac{16}{3} + \frac{1}{2} \right] = \frac{1}{4} + \left[\frac{16 \times 2}{3 \times 2} + \frac{1 \times 3}{2 \times 3} \right] \\
&= \frac{1}{4} + \left[\frac{32}{6} + \frac{3}{6} \right] = \frac{1}{4} + \frac{32+3}{6} = \frac{1}{4} + \frac{35}{6} \\
&= \frac{1 \times 3}{4 \times 3} + \frac{35 \times 2}{6 \times 2} = \frac{3}{12} + \frac{70}{12} \\
&= \frac{3+70}{12} = \frac{73}{12} = 6\frac{1}{12}
\end{aligned}$$

(p) $(35 \times 2) \div 7 - 3$

$$= 70 \div 7 - 3 = 10 - 3 = 7$$

2. (a) $72 \div (3 \times 4) = 72 \div 12 = 6$ (b) $72 - (7 \times 9) = 72 - 63 = 9$

(c) $6(8 - 5) = 6 \times 3 = 18$ (d) $(93 - 73) \times (3 + 2)$

$$= 20 \times 5 = 100$$

(e) $0.5 \text{ of } [84 - (12 \times 6)]$

$$= 0.5 \times (84 - 72) = 0.5 \times 12 = 6$$

(f) $(2 + 7) \times (14 - 8) = 9 \times 6 = 54$

WORKSHEET

(a) $[9 \times 12 + 7] \div 5 = [108 + 7] \div 5 = 115 \div 5 = 23$

each child get 23 toffees.

(b) $9 + 8 + (6 \times 4) - 3$

10. Percentage

Exercise 10.1

1. (a) 28%

(b) 21%

(c) 79%

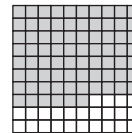
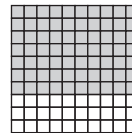
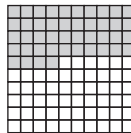
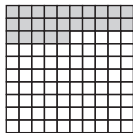
(d) 83%

2. (a) 25%

(b) 44%

(c) 70%

(d) 66%



Exercise 10.2

1. (a) $\frac{6}{12} = \frac{6}{12} \times 100\% = 50\%$

(b) $\frac{13}{25} = \frac{13}{25} \times 100\% = 13 \times 4\% = 52\%$

(c) $2\frac{2}{5} = \frac{12}{5} = \frac{12}{5} \times 100\% = 12 \times 20\% = 240\%$

(d) $1\frac{3}{20} = \frac{23}{20} = \frac{23}{20} \times 100\% = 23 \times 5\% = 115\%$

(e) $7\frac{1}{4} = \frac{29}{4} = \frac{29}{4} \times 100\% = 29 \times 25\% = 725\%$

$$\begin{aligned}
 \text{(f)} \quad \frac{4}{5} &= \frac{4}{5} \times 100\% = 4 \times 20\% = 80\% \\
 \text{(g)} \quad 2\frac{5}{8} &= \frac{21}{8} = \frac{21}{8} \times 100\% = \frac{21}{2} \times 25\% = 262.5\% \\
 \text{(h)} \quad \frac{9}{50} &= \frac{9}{50} \times 100\% = 9 \times 2\% = 18\% & \text{(i)} \quad 3\frac{2}{5} &= \frac{17}{5} = \frac{17}{5} \times 100\% = 340\% \\
 \text{(j)} \quad &= \frac{18}{20} \times 100\% = 18 \times 5\% = 90\%
 \end{aligned}$$

Exercise 10.3

$$\begin{aligned}
 1. \quad \text{(a)} \quad 0.7 &= 0.7 \times 100\% = 70\% & \text{(b)} \quad 0.3712 &= 0.3712 \times 100\% = 37.12\% \\
 \text{(c)} \quad 43.51 &= 43.51 \times 100\% = 4351\% & \text{(d)} \quad 2.14 &= 2.14 \times 100\% = 214\% \\
 \text{(e)} \quad 4.6 &= 4.6 \times 100\% = 460\% & \text{(f)} \quad 5.021 &= 5.021 \times 100\% = 502.1\% \\
 \text{(g)} \quad 0.158 &= 0.158 \times 100\% = 15.8\% & \text{(h)} \quad 5.36 &= 5.36 \times 100\% = 536\% \\
 \text{(i)} \quad 0.43 &= 0.43 \times 100\% = 43\% & \text{(j)} \quad 0.037 &= 0.037 \times 100\% = 3.7\% \\
 2. \quad \text{(a)} \quad \frac{9}{24} &= 0.375 = 0.375 \times 100\% = 37.5\% & \text{(b)} \quad \frac{8}{125} &= 0.064 = 0.064 \times 100\% = 6.4\% \\
 \text{(c)} \quad \frac{37}{25} &= 1.48 = 1.48 \times 100\% = 148\% & \text{(d)} \quad \frac{3}{4} &= 0.75 = 0.75 \times 100\% = 75\% \\
 \text{(e)} \quad \frac{11}{20} &= 0.55 = 0.55 \times 100\% = 55\% & \text{(f)} \quad \frac{7}{10} &= 0.7 = 0.7 \times 100\% = 70\% \\
 \text{(g)} \quad \frac{1}{100} &= 0.01 = 0.01 \times 100\% = 1\% & \text{(h)} \quad \frac{57}{48} &= 1.1875 = 1.1875 \times 100\% \\
 & & &= 118.75\%
 \end{aligned}$$

Exercise 10.4

$$\begin{aligned}
 1. \quad \text{(a)} \quad 16\frac{2}{3}\% &= \frac{50}{3}\% = \frac{50}{3 \times 100} = \frac{1}{3 \times 2} = \frac{1}{6} & \text{(b)} \quad 132\% &= \frac{132}{100} = \frac{33}{25} = 1\frac{8}{25} \\
 \text{(c)} \quad 9\% &= \frac{9}{100} & \text{(d)} \quad 23\frac{2}{5}\% &= \frac{117}{5}\% = \frac{117}{5 \times 100} = \frac{117}{500} \\
 \text{(e)} \quad 5.6\% &= \frac{5.6}{100} = \frac{56}{1000} = \frac{7}{125} & \text{(f)} \quad 0.5\% &= \frac{0.5}{100} = \frac{5}{1000} = \frac{1}{200} \\
 \text{(g)} \quad 7\frac{1}{2}\% &= \frac{15}{2}\% = \frac{15}{200} = \frac{3}{40} & \text{(h)} \quad 2.2\% &= \frac{2.2}{100} = \frac{22}{1000} = \frac{11}{500} \\
 \text{(i)} \quad 33\% &= \frac{33}{100} & \text{(j)} \quad 0.5\% &= \frac{0.5}{100} = \frac{5}{1000} = \frac{1}{200} \\
 2. \quad \text{(a)} \quad 0.5\% &= \frac{0.5}{100} = 0.005 & \text{(b)} \quad 4.7\% &= \frac{4.7}{100} = 0.047 \\
 \text{(c)} \quad 2.2\% &= \frac{2.2}{100} = 0.022 & \text{(d)} \quad 4.5\% &= \frac{4.5}{100} = 0.045 \\
 \text{(e)} \quad 130\% &= \frac{130}{100} = 1.3 & \text{(f)} \quad 125\% &= \frac{125}{100} = 1.25 \\
 \text{(g)} \quad 23.05\% &= \frac{230.5}{100} = 2.305 & \text{(h)} \quad 85\% &= \frac{85}{100} = 0.85 \\
 \text{(i)} \quad 32.6\% &= \frac{32.6}{100} = 0.326 & \text{(j)} \quad 35\% &= \frac{35}{100} = 0.35
 \end{aligned}$$