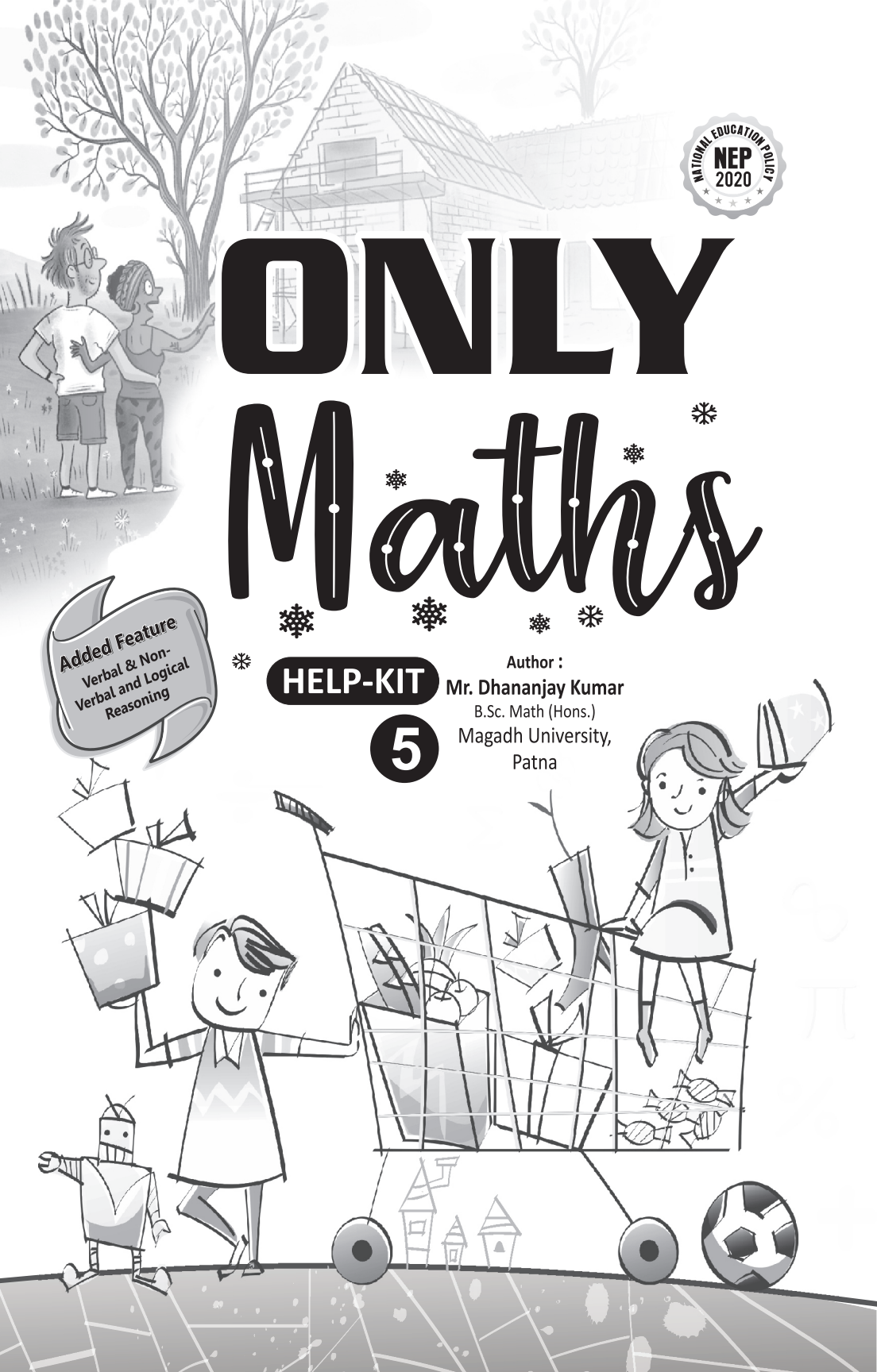


NATIONAL EDUCATION POLICY NEP 2020

ONLY Maths

Added Feature
Verbal & Non-Verbal and Logical Reasoning

HELP-KIT 5

Author :
Mr. Dhananjay Kumar
B.Sc. Math (Hons.)
Magadh University, Patna

1 Let us Revise

1. (a) 99999
(b) $99000 + 1 = 99001$
(c) $50000 - 1 = 49999$
(d) 100000
(e) 1000
(f) 999999
(g) $97000 - 1 = 96999$ (h) $72999 + 1 = 73000$

2. (a) 67,796 = **six** ten thousand + **seven** thousand + **seven** hundred + **nine** tens + **six** ones
(b) 4,90,070 = **four** lakhs + **Nine** ten thousand + **zero** thousand + **zero** hundred + **seven** tens + **zero** ones

3. (a) 75,759 = seventy five thousand seven hundred and fifty nine
(b) 30,000 = thirty thousand
(c) 4,10,800 = four lakhs ten thousand and eight hundred
(d) 3,59,680 = three lakhs fifty nine thousand six hundred and eighty
(e) 1,50,146 = one lakh fifty thousand one hundred and forty six

4. (a) 600,350 = six hundred thousand three hundred and fifty
(b) 450,152 = four hundred fifty thousand one hundred and fifty two
(c) 3,911,600 = three millions nine hundred eleven thousand and six hundred
(d) 6,037,007 = six millions thirty seven thousand and seven
(e) 8,000,000 = eight million

5. (a) 55,435 (b) 79,660 (c) 1,00,000 (d) 3,10,527
(e) 9,00,004 (f) 43,33,065 (g) 64,00,245 (h) 87,31,215
(i) 5,324,834 (j) 8,006,403

6. (a)

TTh	Th	H	T	O
8	4	3	6	2
+ 9	6	8	4	2
1 8	1	2	0	4

(b)

TTh	Th	H	T	O
7	4	5	7	8
+ 3	5	4	8	3
1 1	0	0	6	1

(c)

TTh	Th	H	T	O
7	3	5	1	0
+ 3	8	4	3	7
1 1	1	9	4	7

(d)

TTh	Th	H	T	O
8	7	6	5	3
+ 5	8	7	5	3
1 4	6	4	0	6

(e)

TTh	Th	H	T	O
5	8	7	2	0
+ 8	7	6	5	0
1 4	6	3	7	0

(f)

TTh	Th	H	T	O
8	6	5	4	7
+ 2	7	6	4	8
1 1	4	1	9	5

7.

	TTh	Th	H	T	O
	6	3	4	8	5
−	3	7	5	8	9
	2	5	8	9	6

8. (a)

	TTh	Th	H	T	O
	8	7	6	5	0
−	7	8	7	5	9
	0	8	8	9	1

(b)

	TTh	Th	H	T	O
	8	3	2	1	0
−	1	2	3	8	9
	7	0	8	2	1

(c)

	TTh	Th	H	T	O
	7	4	5	9	2
−	5	6	3	4	6
	1	8	2	4	6

9. Smallest number is

934567 – 42321

```
  934567
 − 42321
 ------
  892246   smaller number
```

10. Bags sold

```
    5180   Monday
  +45670   Tuesday
  -----
   50850
```

Bags left

```
  436840
 −50850
 ------
  385990   bags
```

11. She spend

```
  ₹150.25
  ₹225.00
+ ₹  75.00
  -------
  ₹450.55
```

12. Oil sold

	l	ml
	80	150
+	78	480
	158	630

∴ 158 l 630 ml of oil is sold

13. (a) 8 (b) 19 (c) 37 (d) 25

14. (a) 25 = XXVI (b) 38 = XXXVIII (c) 49 = XLIX (d) 98 = XCVIII
(e) 25 = XXV

15. (a) 15,625 = 10000 + 5000 + 200 + 60 + 5
(b) 3,05,450 = 300000 + 0 + 5000 + 400 + 50 + 0
(c) 89,472 = 80000 + 9000 + 400 + 70 + 2
(d) 92,503 = 90000 + 2000 + 500 + 0 + 3
(e) 4,87,399 = 400000 + 80000 + 7000 + 300 + 90 + 9
(f) 2,12,367 = 200000 + 10000 + 2000 + 300 + 60 + 7

16. (a) 59,253 < 65256 (b) 83246 < 94341

17. (a) 8706; 78,205; 87,502; 76,450 (a) 7341; 98,131; 87,231; 87,251

18. (a) 53,000 < 53,376 < 53594 < 54465
(b) 18,900 < 37,103 < 41905 < 41967

19. (a) 43,012 > 42,031 > 40321 > 4312 (b) 74,321 > 49378 > 6394 > 3649

20. (a) 9,12,410; 9,12,510; 9,12,610 **9,12,710; 9,12,810; 9,12,910**
(b) 74,256; 75,256; 76,256 **77,256; 78256; 79,256**
(c) 2,10,000; 3,10,000; 4,10,000 **5,10,000; 6,10,000; 7,10,000**

21. (a)

```
   1 1 2
  ×1 2 3
  -------
   3 3 6
  2 2 4×
 1 1 2××
 -------
 1 3 7 7 6
```

(b)

```
   3 1 2
  ×5 1 2
  -------
   6 2 4
  3 1 2×
 1 5 6 0××
 ---------
 1 5 9 7 4 4
```

(c)

```
   3 1 3
  ×2 1 2
  -------
   6 2 6
  3 1 3×
 6 2 6××
 -------
 6 6 3 5 6
```

(d)

```
   2 3 2 1
  ×1 2 1 1
  ---------
   2 3 2 1
  2 3 2 1×
 4 6 4 2××
2 3 2 1×××
----------
2 8 1 0 7 3 1
```

22. Total fees = ₹ 310 × 132

```
   3 1 0
  ×1 3 2
  -------
   6 2 0
  9 3 0×
 3 1 0××
 -------
 4 0 9 2 0
```

∴ total fees ₹ 40920

23. (a) 11556 ÷ 6

```
6 ) 11556 ( 1926
  –6
  ----
   55
 – 54
  ----
    15
  – 12
  ----
     36
   – 36
  ----
     0
```

∴ Quotient is 1926

(b) 63215 ÷ 5

```
5 ) 63215 ( 12643
  –5
  ----
   13
 –10
  ----
    32
  – 30
  ----
     21
   – 20
  ----
      15
    – 15
  ----
      0
```

∴ Quotient is 12643

(c) $918548 \div 4$

```
4 ) 918548 ( 229637
   –8
    11
   – 8
     38
   – 36
      25
    – 24
       14
    – 12
        28
     – 28
         0
```

$\therefore$ Quotient is 229637

(d) $25431 \div 7$

```
7 ) 25431 ( 3633
   –21
     44
   – 42
      23
    – 21
       21
     – 21
        0
```

$\therefore$ Quotient is 3633

24. Apples in each box $480 \div 6$

```
6 ) 480 ( 80
   – 48
      0
```

$\therefore$ Apples in each box $= 80$

25. Distance covers in 1 hour $240 \div 4$

```
4 ) 240 ( 60
   – 24
      0
```

Distance travelled in 1 hr $= 60$ km

Distance travelled in 3 hours $= 60 \times 3 = 180$ km

26. Tubelight produced in 1 day $14000 \div 7 = 2000$

```
7 ) 14000 ( 2000
   – 14
      0
```

$\therefore$ Tube light produced in 30 days $= 60000$

```
  2 0 0 0
  × 3 0
  0 0 0 0
 6 0 0 0 ×
 6 0 0 0 0
```

27. (a) 5, 10, 15, 20, **25, 30, 35**

(b) 6, 12, 18, 24, **30, 36, 42**

(c) 14, 28, 42, 56, **70, 84, 98**

(d) 10, 20, 30, 40, **50, 60, 70**

(e) 80, 70, 60, 50, **40, 30, 20**

28. (a) 6, 12, 18 are 3 common multiple of 2 and 3

(b) 18, 36 are 2 common multiple of 2 and 9

(c) Common multiple of 6 and 8 are 24, 48 less than 50

(d) 111, 113, 115, 117, 119 are odd numbers between 110 and 120

29. (a) 98 is largest 2 digit even number

(b) 101 is smallest three digit odd number

(c) 99999 is greatest five digit odd number

30. (a) $345\underline{2}$ is divisible by 2

$\because$ $3+4+5+2=14$ is not divisible by 3

$\therefore$ 3452 is not divisible by both 2 and 3

(b) $432\underline{3}$ is not divisible by 2

$\therefore$ 4323 is not divisible by both 2 and 3

(c) $502\underline{2}$ is divisible by 2

$\because$ $5+0+2+2=9$ divisible by 3

$\therefore$ 5022 is divisible by both 2 and 3

(d) $224\underline{4}$ is divisible by 2

$\because$ $2+2+4+4=12$ divisible by 3

$\therefore$ 2244 is divisible by both 2 and 3

31. 12345 is not divisible by 10

643210 is divisible by 10

98900 is divisible by 10

93216 is not divisible by 10

32. (a) $85-76=9$

(b) $165-126=39$

(c) $99-11=88$

(d) $100-35=65$

(e) $53-29=24$

(f) $403-150=253$

33. (a)

2	18
3	9
3	3
	1

2	12
2	6
	3

$\because$ $18=2\times3\times3$

$12=2\times2\times3$

$\therefore$ HCF $=2\times3=6$

(b)

2	24
2	12
2	6
	3

2	16
2	8
2	4
	2

$\because$ $24=2\times2\times2\times3$

$16=2\times2\times2\times2$

$\therefore$ HCF $=2\times2\times2=8$

(c)

2	36
2	18
3	9
	3

2	46
	23

$\because$ $36=2\times2\times2\times3$

$45=2\times23$

$\therefore$ HCF $=2$

(d)

2	60
2	30
3	15
	5

2	40
2	20
2	10
	5

$\because$ $60=2\times2\times3\times5$

$40=2\times2\times2\times5$

$\therefore$ HCF $=2\times2\times5=20$

34. (a) 8 : **16, 24, 32, 80, 48**

(b) 12 : **24, 36, 48, 60, 72**

35. Eggs produced by 39 hens

$$\begin{array}{r} 160 \\ \times 39 \\ \hline 1440 \\ 480\times \\ \hline 6240 \end{array}$$

6240 eggs produce by 39 hens in one year

36. 8 hr 10 min

$[8\times 60+10]$ minutes

480 + 10

Match lasts for 490 minutes

37.

$$\begin{array}{rl} 500.000 & \text{Litres} \\ -255.630 & \text{Litres} \\ \hline 244.370 & \text{Litres} \end{array}$$

244.370 / Oil can be put into the tanks

38. Weight of 1 box

$$\begin{array}{r} 0.03 \\ \times\ 25 \\ \hline 015 \\ 006\times \\ \hline 00.75 \end{array} \text{ kg}$$

Weight of 1 box = 0.75 kg

Cost of 1 box = ₹ 48

∴ Cost of 0.75 kg = ₹ 48

∴ Cost of 1 kg cheese = $\frac{48}{0.75}$

$$75\overline{)4800}\,(64$$
$$\begin{array}{r} -450 \\ \hline 300 \\ -300 \\ \hline \times \end{array}$$

₹ $\frac{4800}{75}$ = 64/kg

39. Perimeter of blackboard $= 2(l+b) = 2[300+140] = 2(440) = 880$ cm

Area of blackboard $= l\times b = 300\times 140 = 42000$ cm^2

$$\begin{array}{r} 300 \\ \times 140 \\ \hline 000 \\ 1200\times \\ 300\times\times \\ \hline 42000 \end{array}$$

40. (7.2 + 9.7) − 8.11

16.90 − 8.11

8.79

$$\begin{array}{r} 7.2 \\ +9.7 \\ \hline 16.90 \\ -\ 8.11 \\ \hline 8.79 \end{array}$$

41. (a) $\frac{4}{5} > \frac{3}{5}$ (b) $\frac{5}{8} > \frac{5}{10}$ (c) $\frac{6}{9} > \frac{6}{12}$

(d) $\frac{1}{5} \quad \frac{3}{15}$

$1 \times 15 \quad 3 \times 5$

$15 = 15$

$\therefore \frac{1}{5} = \frac{3}{15}$

(e) $\frac{2}{8} \quad \frac{1}{4}$

$2 \times 4 \quad 1 \times 8$

$8 = 8$

$\therefore \frac{2}{8} = \frac{1}{4}$

(f) $\frac{3}{7} \quad \frac{9}{21}$

$3 \times 21 \quad 9 \times 7$

$63 = 63$

$\therefore \frac{3}{7} = \frac{9}{21}$

42. (a) $\frac{3}{9}, \frac{6}{9}, \frac{5}{9}$

$\therefore \frac{6}{9} > \frac{5}{9} > \frac{3}{9}$

(b) $\frac{10}{11}, \frac{8}{11}, \frac{5}{11}$

$\therefore \frac{10}{11} > \frac{8}{11} > \frac{5}{11}$

(c) $\frac{3}{10}, \frac{2}{10}, \frac{5}{10}$

$\therefore \frac{5}{10} > \frac{3}{10} > \frac{2}{10}$

(d) $\frac{6}{12}, \frac{6}{9}, \frac{6}{11}$

$\therefore \frac{6}{9} > \frac{6}{11} > \frac{6}{12}$

(e) $\frac{3}{9}, \frac{3}{1}, \frac{3}{10}$

$\therefore \frac{3}{1} > \frac{3}{9} > \frac{3}{10}$

(f) $\frac{4}{18}, \frac{4}{9}, \frac{4}{11}$

$\therefore \frac{4}{9} > \frac{4}{11} > \frac{4}{18}$

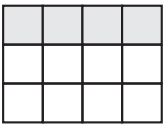
43. (a)

and

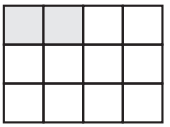
make

$\frac{2}{8} + \frac{4}{8} = \boxed{\frac{6}{8}}$

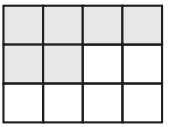
(b)



and



make



$\frac{4}{12} + \frac{2}{12} = \boxed{\frac{6}{12}}$

44. $\frac{5}{5} - \frac{3}{5} = \frac{5-3}{5} = \frac{2}{5}$

45. Part of home work done on Monday $= \frac{6}{9} - \frac{2}{9} = \frac{6-2}{9} = \frac{4}{9}$ of the work

46. (a) $\frac{8}{100} = 0.08$ (b) $\frac{6}{100} = 0.06$ (c) $\frac{14}{100} = 0.14$

(d) $\frac{5}{100} = 0.05$ (e) $\frac{27}{1000} = 0.027$ (f) $3\frac{5}{100} = 3.05$

(g) $123\frac{5}{100} = 123.05$ (h) $2\frac{25}{100} = 2.25$

47. (a) $0.73 = \frac{73}{100}$ (b) $0.11 = \frac{11}{100}$ (c) $2.05 = 2\frac{5}{100}$

(d) $29.37 = 29\frac{37}{100}$ (e) $0.183 = \frac{183}{1000}$ (f) $71.546 = 7\frac{546}{1000}$

48. (a) $\frac{3}{5} + \frac{7}{10} = \frac{3\times2}{5\times2} + \frac{7}{10} = \frac{6}{10} + \frac{7}{10} = \frac{6+7}{10} = \frac{13}{10} = 1\frac{3}{10}$

(b) $8\frac{1}{7} + 2\frac{3}{5} = \frac{57}{2} + \frac{13}{5} = \frac{57\times5}{7\times5} + \frac{13\times7}{5\times7} = \frac{285}{35} + \frac{91}{35} = \frac{285+91}{35} = \frac{376}{35} = 10\frac{26}{35}$

(c) $3\frac{1}{2} - 1\frac{2}{3} = \frac{7}{2} - \frac{5}{3} = \frac{7\times3}{2\times3} - \frac{5\times2}{3\times2} = \frac{21}{6} - \frac{10}{6} = \frac{21-10}{6} = \frac{11}{6} = 1\frac{5}{6}$

(d) $5\frac{2}{6} + 3\frac{1}{6} - 8 = \frac{32}{6} + \frac{19}{6} - \frac{8}{1} = \frac{32}{6} + \frac{19}{6} - \frac{8\times6}{1\times6}$

$= \frac{32+19-48}{6} = \frac{51-48}{6} = \frac{3}{6} = \frac{1}{2}$

(e) $\frac{5}{7} - \frac{2}{7} + \frac{6}{7} = \frac{5-2+6}{7} = \frac{3+6}{7} = \frac{9}{7} = 1\frac{2}{9}$

(f) $\frac{7}{10} + \frac{3}{10} - \frac{2}{10} = \frac{7+3-2}{10} = \frac{10-2}{10} = \frac{8}{10} = \frac{4}{5}$

(g) $\frac{4}{5} - \frac{3}{4} + \frac{5}{6} - \frac{15}{20} = \frac{4\times12}{5\times12} - \frac{3\times15}{4\times15} + \frac{5\times10}{6\times10} - \frac{15\times3}{20\times3} = \frac{48}{60} - \frac{45}{60} + \frac{50}{60} - \frac{45}{60}$

$= \frac{48-45+50-45}{60} = \frac{98-90}{60} = \frac{8}{60} = \frac{2}{15}$

(h) $\frac{12}{25} + \frac{7}{25} + \frac{11}{25} + \frac{14}{25} = \frac{12+7+11+14}{25} = \frac{44}{22} = 1\frac{19}{25}$

(i) $\frac{7}{10} - 3\frac{1}{5} + 5\frac{1}{2} = \frac{7}{10} - \frac{16}{5} + \frac{11}{2} = \frac{7\times2}{10\times2} - \frac{16\times4}{5\times4} + \frac{11\times10}{2\times10} = \frac{14}{20} - \frac{64}{20} + \frac{110}{20}$

$= \frac{14-64+110}{20} = \frac{124-64}{20} = \frac{60}{20} = 3$

49. (a) $423 \div 10 = 42.3$ (b) $2875 \div 100 = 28.75$

(c) $3743 \div 1000 = 3.743$ (d) $63 \div 100 = 0.63$

(e) $4 \div 1000 = 0.004$

(f) $43 \div 1000 = 0.043$

50. (a) $3.96 + 4.26 - 6.9 = 8.22 - 6.90 = 1.32$

$$\begin{array}{r} 8.22 \\ -6.90 \\ \hline 1.32 \end{array}$$

(b)
$$\begin{array}{r} 7.080 \\ -3.523 \\ \hline 3.557 \end{array}$$

(c)
$$\begin{array}{r} 4.065 \\ 31.230 \\ \hline 35.295 \end{array}$$

(d)
$$\begin{array}{r} 26.07 \\ -12.64 \\ \hline 13.43 \\ +\ 0.65 \\ \hline 14.08 \end{array}$$

(e)
$$\begin{array}{r} 0.85 \\ +0.70 \\ \hline 1.550 \\ -0.203 \\ \hline 1.347 \end{array}$$

51. (a) 7450 m
7000 m + 450 m
7 km + 450 m
7 km 450 m

(b) 3095 cm
3000 cm + 95 cm
30 m + 95 cm
30 m 95 cm

(c) 5085 m/
5000 m/ + 85 m/
5/ + 85 m/
5/ 85 m/

(d) 12827 g
12000 g + 827 g
12 kg + 827 g
12 kg 827 g

52. Wire left 210 m 00 cm
− 60 m 55 cm
149 m 45 cm
149 m 45 cm

53. (a) 0800 hr = 8:00 am
(b) 1520 hr = 1200 hr + 320 hrs = 3:20 pm
(c) 1807 hr = 1200 hr + 607 hrs = 6:07 pm
(d) 0655 = 655 hr = 6:55 pm

54. (a) 10 hours
10 × 60 minutes = 600 minutes
(b) 5 hours 30 minutes
[5 × 60 + 30] minutes
[300 + 30] minutes = 330 minutes
(c) 3 hours 36 minutes
[3 × 60 + 36] minutes
[180 + 36] minutes = 216 minutes
(d) 21 hours 45 minutes
[21 × 60 + 45] minutes
[1260 + 45] minutes 1305 minutes

55. 0945 hour to 1220 hour
9:45 am to 12:20 pm
12 : 20 pm
− 9 : 45 am
2 hours 35 minutes
time taken to reach Agra 2 hours 35 minutes

56. (a) 2 years 4 months
2 × 12 months + 4 months
(24 + 4) months = 28 months

(b) 15 years 10 months
(15 × 12 + 10) months
(180 + 10) months = 190 months

(c) 3 years 5 months
(3 × 12 + 5) months
(36 + 5) months = 41 months

(d) 6 years 9 months
(6 × 12 + 9) months
(72 + 9) months = 81 months

(e) 4 years 3 months
(4 × 12 + 3) months
(48 + 3) months = 51 months

(f) 5 years
5 × 12 = 60 months

57. (a) 5 weeks 2 days

$(5 \times 7 + 2)$ days

$(35 + 2)$ days $= 37$ days

(b) 9 weeks

(9×7) days $= 63$ days

(c) 52 weeks 15 days

$(52 \times 7 + 15)$ days

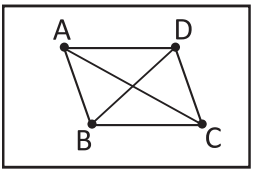
$(364 + 15)$ days $= 379$ days

(d) 2 weeks 1 day

$(2 \times 7 + 1)$ days

$(14 + 1)$ days $= 15$ days

58. (a)



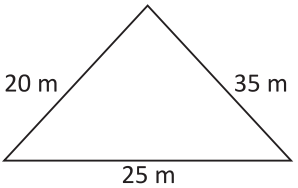
$\overline{AB}, \overline{AC}, \overline{AD}, \overline{BC}, \overline{BD}, \overline{CD}$ are six line segments

(b) $\overline{PQ}, \overline{PR}, \overline{PS}, \overline{PT}, \overline{QR}, \overline{QS}, \overline{QT}, \overline{RS}, \overline{RT}, \overline{ST}$ are 10 line segments

59. (a) Perimeter $= 3 + 5 + 4 = 12$ cm

(b) Perimeter $= 5 + 5 + 4 + 4 = 18$ cm

60.



distance covered in 1 round $= 20 + 35 + 25 = 80$ m

distance covered in 5 rounds $= 80 \times 5 = 400$ m

61. Length of boundary wall $= 2(l + b)$

$= 2(30 + 25)$ m $= 2(55)$ m $= 110$ m

62. (a) Number of students got distinction in English $= 10 \times 3 = 30$

(b) Number of students got distinction in Maths $= 10 \times 5 = 50$

(c) Number of students got distinction in Social Studies $= 10 \times 3 = 30$

$\therefore$ $30 - 20 = 10$ students got more distinction in social studies than science.

(d) 130 students represented in the pictograph

(e) Distinction on in all subjects $= 10 \times 5 = 50$

63. (a) equilateral triangle

(b) less

(c) right

(d) $3 \times$ side

(e) half

(f) product

(g) 1

(h) 7:45 pm

(i) 366 days

(j) $\frac{3}{5} = \frac{12}{\boxed{20}}$

❍❍❍

Exercise- 2.1

			Indian	International
1.	(a)	426769804 :	42,67,69,804;	426,769,804
	(b)	999999999 :	99,99,99,999;	999,999,999
	(c)	198423007 :	19,84,23,007;	198,423,007
	(d)	453200500 :	45,32,00,500;	453,200,500
	(e)	900000000 :	90,00,00,000;	900,000,000
	(f)	30001234 :	3,00,01,234;	30,001,234

2. (a) 8,73,991 : Eight lakh seventy three thousand nine hundred and ninety one

(b) 72,13,535 : Seventy two lakh thirteen thousand five hundred thirty five

(c) 99,10,001 : Ninety nine lakhs ten thousand and one

(d) 1,00,00,000 : One Crore

(e) 6,97,35,787 : Six crore Ninety seven lakhs thirty five thousand seven hundred eighty seven

(f) 88,99,77,666 : Eighty eight crore ninety nine lakhs seventy seven thousand six hundred and sixty six

3. (a) 2,561,001 = two millions five hundred sixty one thousand and one

(b) 4,353,405 = four million three hundred fifty three thousand four hundred and five

(c) 69,600,180 = sixty nine million six hundred thousand one hundred and eighty

(d) 79,157,287 = seventy nine million one hundred fifty seven thousand two hundred eighty seven

(e) 153,254,356 : one hundred fifty three million two hundred fifty four thousand three hundred fifty six

(f) 256,545,198 : two hundred fifty six million five hundred forty five thousand one hundred ninety eight

4. (a) 52,52,02,525 (b) 2,07,08,060 (c) 70,70,70,707

(d) 42,05,00,000 (e) 9,09,09,009 (f) 50,00,00,000

(g) 76,00,00,000 (h) 95,00,207

5. (a) 123,654,234 (b) 4,150,200,540 (c) 201,301,401

(d) 52,478,213 (e) 1,000,465,246 (f) 270,005,678

(g) 135,789,246

6. (a) **10** crores = 100 millions

(b) 10 millions = **1** crore

(c) 100 lakhs = **10** millions (d) 10 lakhs = **1** million
(e) 1 millions = **1000** thousands (f) 1 billion = **100** crore

Exercise- 2.2

1. (a) 100 (b) 400000000 (c) 0 (d) 600000
(e) 700000 (f) 5000

2. 600000000
90000000
5000000
600000
30000
5000
400
50
9

3. (a) 95,56,068 = 9000000 + 500000 + 50000 + 6000 + 0 + 60 + 8
(b) 53,82,981 = 5000000 + 300000 + 80000 + 2000 + 900 + 80 + 1
(c) 15,35,17,765 = 100000000 + 50000000 + 3000000 + 500000 + 10000 + 7000 + 700 + 60 + 5
(d) 81,12,518 = 8000000 + 100000 + 10000 + 2000 + 500 + 10 + 8
(e) 28,35,17,780 = 200000000 + 80000000 + 3000000 + 500000 + 10000 + 7000 + 700 + 80 + 0
(f) 7,78,45,631 = 70000000 + 7000000 + 800000 + 40000 + 5000 + 600 + 30 + 1

4. (a) 6,53,54,321 (b) 20, 20, 30, 405
(c) 79,15,465 (d) 5,80,40,203
(e) 10,40,20,707 (f) 87,53,044

Exercise- 2.3

		Predecessor	Successor
1. (a)	6,79,54,370	6,79,54,369	6,79,54,371
(b)	1,52,56,897	1,52,56,896	1,52,56,898
(c)	37,561,200	3,75,61,199	3,75,61,201
(d)	81,71,61,395	81,71,61,394	81,71,61,396
(e)	100,000	99,999	1,00,001
(f)	9,99,999	9,99,998	10,00,000

2. (a) 8,27,365 = 8,27,356 (b) 72,23,374 > 52,23,374
(c) 65,89,783 > 46,89,783 (d) 5,00,00,000 < 50,00,00,000
(e) 1,43,58,397 < 4,35,83,000 (f) 93,39,393 > 9,39,339

(g) 70,00,000 = 7,000,000 (h) 4,18,52,342 < 4,18,52,977
(i) 912,856 = 9,12,856 (j) 33,54,565 < 33,56,545

3. (a) 11,15,006 < 11,15,506 < 11,51,006 < 11,51,506
(b) 4,097,340 < 4,973,304 < 4,973,400 < 4,973,403
(c) 22,14,15,112 < 22,14,15,122 < 22,14,15,211 < 22,14,15,212
(d) 89,345,120 < 89,435,120 < 98,345,120 < 98,543,120
(e) 87,421 < 6,16,324 < 8,91,342 < 45,64,248 < 76,10,123
(f) 8,395 < 83,110 < 1,87,360 < 84,20,369 < 93,16,224
(g) 9,82,182 < 42,24,360 < 74,50,071 < 84,16,203 < 87,27,364
(h) 2,18,14,121 < 3,27,18,396 < 3,61,22,481 < 4,36,00,000 < 5,45,00,000
(i) 5,15,45,135 < 5,51,39,000 < 9,18,36,643 < 10,00,00,000 < 34,45,56,941

4. (a) 63,600,879 > 63,600,789 > 63,060,789 > 63,006,789
(b) 121,220,565 > 5,123,565 > 5,122,565 > 5,121,565
(c) 14,82,35,989 > 14,28,35,989 > 14,28,35,988 > 12,28,53,989
(d) 81,82,14,911 > 81,82,14,712 > 81,82,14,217 > 81,82,14,119
(e) 73,897 > 73,642 > 73,567 > 73,493 > 73,227
(f) 75,00,000 > 25,77,889 > 5,63,409 > 59,741 > 25,632
(g) 8,70,900 > 6,49,700 > 6,43,826 > 4,62,589 > 4,39,571
(h) 4,65,49,000 > 4,50,45,369 > 4,45,28,302 > 4,23,36,408 > 41,72,603
(i) 95,40,378 > 95,40,002 > 95,04,020 > 9,59,784 > 9,50,420

Exercise- 2.4

1.

	Greatest number	**Smallest number**
(a)	875430	304578
(b)	9866320	2036689
(c)	9753100	1003579
(d)	87655533	33555678
(e)	98876520	20567889

2.

	Smallest number	**Greatest number**
(a)	103457	754310
(b)	224589	985432

3.

	Smallest number	**Greatest number**
(a)	3004589	9985430
(b)	1123678	8876321

4. 1003479 (smallest)
9974310 (largest)

5. 10234569 (smallest)
96543210 (greatest)

6. (a) 9,56,748; 9,56,749; 9,56,750; 9,56,751
(b) 3,42,10,463; 3,42,10,464; 3,42,10,465; 3,42,10,466
(c) 21,050,206; 21,050,207; 21,050,208; 21,050,209
(d) 48,71,36,597; 48,71,36,598; 48,71,36,599; 48,71,36,600

7. (a) 7,428,526; 7,428,626; 7,428,726; 7,428,826
(b) 3,517,600; 3,517,700; 3,517,800; 3,517,900
(c) 8,42,39,287; 8,42,39,387; 8,42,39,487; 8,42,39,587
(d) 9,63,00,853; 9,63,00,953; 9,63,01,053; 9,63,01,153

8. (a) 4,05,921; 4,06,921; 4,07,921; 4,08,921
(b) 13,07,00,587; 13,07,01,587; 13,07,02,587; 13,07,03,587
(c) 4,528,415; 4,529,415; 4,530,415; 4,531,415
(d) 7,132,068; 7,133,068; 7,134,068; 7,135,068

Exercise- 2.5

1.

	Number	Nearest 10
(a)	5486	5490
(b)	17,092	17,090
(c)	63,547	63,550
(d)	70,965	70,970
(e)	70,293	70,290

2.

	Number	Nearest 10
(a)	54,760	54,800
(b)	2,30,528	2,30,500
(c)	90,450	90,500
(d)	4,63,573	4,63,600
(e)	23,28,716	23,28,700

3.

	Number	Nearest 1000
(a)	80,567	81,000
(b)	7,96500	7,97000
(c)	29,482	29,000
(d)	73,69,702	73,70,000
(e)	21,50,500	21,51,000

4. (a) No (b) Yes (c) No (d) Yes
(e) No

MCQs

1. (c) **2.** (b) **3.** (b) **4.** (a)
5. (b) **6.** (a) **7.** (b) **8.** (a)

Test Exercise

1. (a) 6,50,624 = 600000 + 50000 + 0 + 600 + 20 + 4
(b) 9,71,982 = 900000 + 70000 + 1000 + 900 + 80 + 2
(c) 6,94,808 = 600000 + 90000 + 4000 + 800 + 0 + 8
(d) 5,21,096 = 500000 + 20000 + 1000 + 0 + 90 + 6

2. (a) 6,23,040 (b) 9,42,920 (c) 37,609 (d) 80,007
(e) 80,016 (f) 2,53,501

3. (a) 79,462 = seventy nine thousand four hundred and sixty two
(b) 60,899 = sixty thousand eight hundred and nintey nine
(c) 72,405 = seventy two thousand four hundred and five
(d) 9,50,048 = nine lakh fifty thousand and forty eight

4. (a) 12,096 < 12,906 (b) 21,989 > 21,899

(c) 25,490 < 25,940 (d) 14,825 + 5 < 14,830 – 5

(e) 21,099 – 9 = 21,090 (f) 43,247 + 13 > 43,237 – 13

5. (a) 3187 < 4025 < 6,72,345 < 9,14,520

(b) 1048 < 1840 < 61,408 < 8,61,084

(c) 16,593 < 39,356 < 45,396 < 7,23,965

6. (a) 8250 > 5802 > 2805 > 2085

(b) 7,28,076 > 47,068 > 36087 > 18067

(c) 3,46,582 > 48,652 > 45,682 > 42,865

7. (a) 9,99,999 (b) 89,999 (c) 78,800 (d) 9000

(e) 2,068 (f) 1,00,000

❍❍❍

3 Roman Numerals

Exercise- 3.1

1. (a) 9 = IX (b) 45 = XLV (c) 20 = XX (d) 31 = XXXI

(e) 11 = XI (f) 71 = LXXI (g) 40 = XL (h) 37 = XXXVII

(i) 86 = LXXXVI (j) 92 = XCII (k) 154 = CLIV (*l*) 560 = DLX

(m) 243 = CCXLIII (n) 434 = CDXXXIV

(o) 970 = CMLXX (p) 220 = CCXX (q) 456 = CDLVI (r) 347 = CCCXLVII

2. (a) VI = 6 (b) XXII = 22 (c) XL = 40 (d) LXXVI = 76

(e) XCV = 95 (f) XIV = 14 (g) XXVII = 27 (h) XLIX = 49

(i) LXII = 62 (j) LXXV = 75 (k) DXL = 540 (*l*) CCXXVII = 227

(m) MDCCLXXII = 1772 (n) DCCIV = 704

(o) DLXI = 561 (p) MMCCLXIII = 2263

(q) MMMXV = 3015 (r) CMXIX = 919

3. (a) LX > XL (b) XC < C

(c) CDVI < CMVI (d) 125 = CXXV

(e) 204 < CCCIV (f) XXXVIII > 83

(g) XX + XXX = L (h) MMC ÷ DCC = III

(i) CD – C > LX (j) LXX – LX < XI

4. (a) XL + III = **XLIII** (b) L + VIII = **LVIII**

(c) CCC – LXX = **CCXXX** (d) DCV – XC = **DXV**

(e) XXX ÷ XXX = **I** (f) M ÷ C = **X**

(g) VIII × VII = **LVI** (h) C ÷ **II** = L (i) DCCC × C ÷ X = **LXXXIX**

5. (a) XVII < XLII < LIX < LXXV < XCIX
(b) LIV < CL < DX < MCD
(c) VIII < XIX < XXIX < XXXIV < XLIII
(d) LXV < LXXXIV < CX < CCXIX < CCC < VIII
(e) V < X < XV < XXI < XL < XC < C
(f) XXIV < XXVI < XXXII < LXV < LXXXI < XCV

6. (a) XCV > LXXV > LXV > LV > XLV > XXV
(b) MLIX > DCXX > CCXLV > CIX > LXXIV
(c) DCCXVIII > CC > LXXXVI > XL > XXXVII
(d) DDCIV > DCII > CCCXXXIII > CCXXVIII > XLIX
(e) XCII > LXXXII > XLIII > XIX > IX
(f) XCIX > LXVI > LIV > XLI > XXX > XVI
(g) XCV > LXXVI > LXV > LV > XLV > XXV

7. (a) XX + XXX = L (b) XXIV + XXX **<** 57
(c) XXXIII ÷ XI = III (d) L + L = C
(e) LXX – LX **<** XII (f) LXII – XXVI **>** XXVI
(g) XLIII – XL = III (h) C ÷ II **<** LX

8. (a) XX + III = **XXIII** (b) XL + III = **XLIII**
(c) L + VIII = **LVIII** (d) XXII – XX = **II**
(e) LXX – L = **XX** (f) LVIII – L = **VIII**
(g) XXX ÷ XXX = **I** (h) VIII × VII = **LVI**
(i) L × II = **C** (j) LXXXI ÷ IX = **IX**
(k) LXIV – **IV** = LX (*l*) **LX** – XL = XX
(m) LXXXVIII + **VI** = XCIX (n) XLII + **VIII** = L
(o) C ÷ II = **L**

9. (a) XX (b) II (c) XXX (d) XC
(e) LV (f) XCV (g) XCVII (h) LXVI
(i) XIX

Exercise- 3.2

1. (a) MCMXLI = 1941 (b) DLXXIX = 579
(c) MCDXX = 1420 (d) MCM = 1900
(e) CXCIX = 199 (f) MMCDX = 2410

2. (a) 2012 = MMXII (b) 1415 = MCDXV
(c) 3005 = MMMV (d) 1971 = MCMLXXI
(e) 1608 = MDCVIII (f) 2006 = MMVI

3. (a) VVV ✗ (b) XI ✓ (c) LLIV ✗
(d) XM ✗ (e) CCCL ✓ (f) DDD ✗

4. (a) MCMLXXI (b) MMXXIV (c) MMXXVI
(d) MCMXLVII (e) MCMXLVIII

5.	(a) XXXIV	34	(b) DCCLXVIII	768
	(c) CIX	109	(d) CCCL	350
	(e) MCCL	1250		
	(f) CDXLIX	449		
	(g) MMCCCXXII	2322		
	(h) CMLXXVIII	978		
	(i) MCCCXLIV	1344		
	(j) DCXLII	642		

Mental Maths

L – XVI = XXXIV

MCQs

1. (b)	**2.** (c)	**3.** (c)	**4.** (b)
5. (a)	**6.** (b)	**7.** (a)	**8.** (b)

❍❍❍

4 Addition and Subtraction

Exercise- 4.1

1. (a) $75{,}638 + 0 = \boxed{75{,}638}$

(b) $99{,}999 + 1 = \boxed{1{,}00{,}000}$

(c) $1{,}89{,}439 + 2{,}52{,}715 = \boxed{2{,}52{,}715} + 1{,}89{,}439$

(d) $0 + \boxed{9{,}75{,}631} = 975{,}631$

(e) $1{,}21{,}541 + (70{,}000 + 89{,}604) = (\boxed{89{,}604} + 1{,}21{,}541) + 70{,}000$

(f) $(40{,}560 + 750) + 391 = \boxed{40{,}560} + (750 + 391)$

2. (a)

LHS	RHS
68275	139430
+139430	+68275
207705	207705

$\therefore$ LHS = RHS

(b)

LHS	RHS
231610	508720
+508720	+231610
740330	740330

$\therefore$ LHS = RHS

(c)

LHS	RHS
30451608	29143175
+29143175	+ 8975650
59594783	38118825
+ 8975650	+30451608
68570433	68570433

∴ LHS = RHS Verified

(d)

LHS	RHS
7134291	1529057
+1529059	+ 927750
8663348	2456807
+ 927750	+7134291
9591098	9591098

∴ LHS = RHS Verified

Exercise- 4.2

1. (a)

TL	L	TTH	Th	H	T	O
1	2	4	5	6	9	4
+4	3	2	1	2	0	3
5	5	6	6	8	9	7

(b)

TL	L	TTH	Th	H	T	O
3	7	6	5	4	8	4
+3	8	7	8	4	6	7
7	6	4	3	9	5	1

(c)

C	TL	L	TTH	Th	H	T	O
1	8	4	1	6	5	6	1
+ 3	2	3	8	4	4	3	9
5	0	8	0	1	0	0	0

(d)

C	TL	L	TTH	Th	H	T	O
2	6	5	8	4	3	1	3
+ 3	8	4	1	2	7	8	3
6	4	9	9	7	0	9	6

(e)

TL	L	TTH	Th	H	T	O
9	4	8	4	6	8	4
2	3	0	0	0	6	1
+ 2	3	1	4	7	8	4
1 4	0	9	9	4	2	9

(f)

C	TL	L	TTH	Th	H	T	O
6	1	4	1	2	3	4	9
2	8	4	1	7	8	4	3
+ 7	8	1	6	5	7	1	
9	7	6	4	6	7	6	3

(g)

TL	L	TTH	Th	H	T	O
2	1	2	3	4	5	8
+9	7	3	5	4	2	1
1 1	8	5	8	8	7	9

(h)

L	TTH	Th	H	T	O
3	4	3	6	7	8
+5	3	0	4	0	7
8	7	4	0	8	5

(i)

TL	L	TTH	Th	H	T	O
8	9	7	8	2	0	
+ 4	6	2	2	8	9	
+ 5	7	6	8	5	7	
1 9	3	6	9	6	6	

(j)

L	TTH	Th	H	T	O
7	0	3	6	8	9
+ 7	0	3	7	3	1
+ 2	3	1	5	2	6
1 6	3	8	9	4	6

(k)

L	TTH	Th	H	T	O
	6	1	5	4	3	2
+	5	7	4	3	7	5
+	2	0	4	6	0	5
+	6	3	9	8	8	9
2	0	3	4	3	0	1

(l)

L	TTH	Th	H	T	O
	6	8	4	8	7	1
+	8	9	4	0	2	0
+	5	5	0	3	5	0
+	4	3	0	1	5	6
2	5	5	9	3	9	7

(m)

L	TTH	Th	H	T	O
	9	2	5	3	6	8
+	1	8	2	5	0	7
+	1	2	3	4	5	6
1	2	3	1	3	3	1

(n)

TTH	Th	H	T	O
	8	3	1	7	2
+	2	4	5	2	4
+	2	9	5	0	1
1	3	7	2	0	1

2. (a)

```
  8684696
 +669414
 9354110
```

(b)

```
  599565
 +886605
 1486170
```

(c)

```
  7373892
 +960612
 8334504
```

(d)

```
   8968416
     892314
 +31526120
  41386850
```

(e)

```
  563456
 +765765
 1329221
```

(f)

```
  8978957
 +5453215
 14432172
```

(g)

```
    452334
 +5439254
 +7769943
 13661531
```

(h)

```
    339102
 +1469645
 +5567890
 +6565656
 13942293
```

3. (a)

L	TTH	Th	H	T	O
	9	(8)	6	5	(7)
+	3	8	7	8	8
1	(3)	7	4	(4)	5

(b)

C	TL	L	TTH	Th	H	T	O
	7	4	8	(2)	6	8	(9)
+	8	3	(1)	7	(8)	8	3
1	5	(8)	0	0	5	7	2

(c)

C	L	TTH	Th	H	T	O
	9	(2)	3	1	7	5
+	4	1	(8)	5	6	3
+	1	2	8	3	(6)	9
(1)	4	7	0	(1)	0	(7)

(d)

L	TTH	Th	H	T	O
	4	1	(7)	8	7
+	1	(7)	4	3	2
+	2	5	3	(8)	9
	(8)	4	6	0	(8)

Mental Maths

(a)

C	TL	L	TTH	Th	H	T	O
4	5	6	7	5	2	9	4
− 2	8	2	1	2	6	5	6
1	7	4	6	2	6	3	8

(b)

TL	L	TTH	Th	H	T	O
6	7	3	5	1	8	3
+ 2	3	1	3	7	1	4
9	0	4	8	8	9	7

(c)

TL	L	TTH	Th	H	T	O
8	0	3	7	4	1	7
+ 1	5	3	9	6	2	1
9	5	6	7	0	3	8

(d)

TL	L	TTH	Th	H	T	O
6	4	5	1	7	6	7
− 2	3	2	1	4	0	2
4	1	3	0	3	6	5

(e)

TL	L	TTH	Th	H	T	O
2	1	9	7	8	5	1
− 0	5	5	4	2	1	1
1	6	4	3	6	4	0

Exercise- 4.3

1. Money spend on house = ₹ 55,23,800
Money spend on car = + ₹ 8,49,350
Spend in all = ₹ 63,73,150

2. Manufactured soap cakes = ₹ 18,34,869
Manufactured bottles = + ₹ 2,52,86,147
Total item manufactured = ₹ 2,71,21,016

3. Population of Country A = 14,65,86,300
Population of Country B = + 6,15,21,350
Total population = 20,81,07,650

4. Female voters = 37,64,162
Male voters = + 98,41,628
Total voters = 1,36,05,790

5. Mr. Kapoor have = ₹ 47,35,150
Mr. Kapoor deposited = + ₹ 18,87,250
Total amount = ₹ 66,22,400

6. Toys manufactured in January = 12,36,840
Toys manufactured in February = 25,25,800
Toys manufactured in March = + 16,30,785
Total toys manufactured = 53,93,425

7. Mr. Solanki spend on house = ₹ 34,25,800
Mr. Solanki spend on car = + ₹ 3,40,450
Mr. Solanki total spend = ₹ 37,66,250

8. Ist candidate get = 1,75,912 votes
IInd candidate get = 2,65,313 votes
IIIrd candidate get = + 75,630 votes
Votes Polled = 5,16,855

9. Population of Country A = 1,35,80,607
Population of Country B = 8,01,67,145
Population of Country C = + 6,25,65,680
Total population = 15,63,13,432

10. Books sold in Ist week = 4,26,212
Books sold in IInd week = + 85,32,154
Total books sold = 89,58,366

11. Production of wheat in Ist state = 3,75,708 kg
Production of wheat in IInd state = 38,96,501 kg
Production of wheat in IIIrd state = + 28,79,597 kg
Total production = 71,51,806 kg

12. Expenditure on land = ₹ 9,36,000
Expenditure on material = ₹ 4,96,378
Expenditure on labourer = ₹ 96,900
Total expenditure = ₹ 15,29,278

Exercise- 4.4

1. (a) 79,34,693 – 0 = **79,34,693**
(b) 6,66,66,666 – 1 = **6,66,66,665**
(c) 6,34,507 – **6,34,507** = 0
(d) 8,19,734 – **0** = 8,19,734

Exercise- 4.5

1. (a)

	L	TTH	Th	H	T	O
	5	8	4	2	2	3
–	1	3	8	9	9	8
	4	4	5	2	2	5

(b)

TL	L	TTH	Th	H	T	O
8	6	8	0	4	7	7
– 5	3	8	9	9	4	1
3	2	9	0	5	3	6

(c)

TL	L	TTH	Th	H	T	O
7	6	5	7	5	0	4
– 2	9	4	1	8	3	8
4	7	1	5	6	6	6

(d)

TL	L	TTH	Th	H	T	O
6	5	4	0	2	3	4
– 1	4	2	9	4	1	4
5	1	1	0	8	2	0

(e)

C	TL	L	TTH	Th	H	T	O
9	6	5	1	6	6	2	4
– 3	9	9	0	6	6	4	7
5	6	6	0	9	9	7	7

(f)

C	TL	L	TTH	Th	H	T	O
9	7	8	4	2	4	3	6
– 6	5	1	4	3	8	4	2
3	2	6	9	8	5	9	4

(g)

C	TL	L	TTH	Th	H	T	O
4	5	8	4	0	3	6	6
– 1	8	3	8	4	2	5	7
2	7	4	5	6	1	0	9

(h)

TC	C	TL	L	TTH	Th	H	T	O
5	0	0	3	0	0	4	5	2
– 2	1	1	7	8	9	2	6	1
2	8	8	5	1	1	1	9	1

(i)

C	TL	L	TTH	Th	H	T	O
9	2	3	7	4	5	6	4
– 1	2	3	8	1	4	2	5
7	9	9	9	3	1	3	9

2. (a)

```
  91,41,662
 –88,99,412
 ----------
  02,42,250
```

(b)

```
  86,00,004
 –23,14,164
 ----------
  62,85,840
```

(c)

```
   9,70,00,654
  –7,38,41,642
  ------------
   2,31,59,012
```

(d)

```
   8,69,41,237
  –2,86,54,124
  ------------
   5,82,87,113
```

3.

```
   8,00,03,014        1,85,34,126
 –   59146239       –   8,84,163
 -------------      -----------
   2,08,56,775        1,76,49,963  difference
```

Checking

```
  1,76,49,963
      8,84,163
  -----------
  1,85,34,126
```

which is equal to minuend

5. (a)

TL	L	TTH	Th	H	T	O
9	(9)	9	4	9	8	6
– 4	3	4	(1)	6	(4)	4
(5)	6	5	3	(3)	4	(2)

(b)

L	TTH	Th	H	T	O
8	(1)	6	5	(6)	5
– 4	3	(4)	1	7	6
(3)	8	2	(3)	8	(9)

(c)

C	TL	L	TTH	Th	H	T	O
2	(6)	5	8	(7)	5	0	0
–	2	(9)	5	6	7	8	9
(2)	3	6	2	6	(7)	1	(1)

(d)

TL	L	TTH	Th	H	T	O
9	5	9	6	4	5	2
– 4	(0)	2	(5)	8	(1)	7
(5)	5	(7)	0	(6)	3	(5)

(e)

TL	L	TTH	Th	H	T	O
7	(5)	9	3	(2)	4	1
–	6	(7)	(2)	3	4	5
(6)	9	2	0	8	(9)	(6)

(f)

TL	L	TTH	Th	H	T	O
9	6	(5)	5	6	7	(0)
– 7	(2)	6	(5)	4	(2)	8
(2)	3	9	0	(2)	4	2

Exercise- 4.6

1. Sum of two numbers = 68,47,911
One of the number = −36,27,819
Other number = 32,20,092

2. Cost of building = ₹ 4,84,16,238
Man have = −₹ 1,57,68,416
More money required = ₹ 3,26,47,822

3. Cost of computer + printer = ₹ 74,984
Cost of computer = −₹ 35,978
Cost of printer = ₹ 39,006

4. Total load of cereal = 4,63,841 kg
+ 2,14,576 kg
6,78,417 kg

Train can carry 2,02,025 kg in 1 trip
Cereal left for IInd trip = 6,78,417 kg
− 2,02,025 kg
4,76,392 kg

5. Total votes = 76,56,322
Votes polled = −62,93,488
Unpolled votes = 14,62,834

6. 7,70,770
− 3,24,985
4,45,785
7,70,770 is 4,45,785 more than 3,24,985

7. Population in 2011 = 2,75,70,903
Population in 2001 = −87,75,988
Increase in population = 1,87,94,915

8. Money borrowed = ₹ 18,88,972
Money repaid = −₹ 15,75,612
To pay = ₹ 3,13,360

9. 5,17,63,509
− 2,96,17,895
2,21,45,614
2,21,45,614 should be added to 2,96,17,895 to get 5,17,63,509

10. 4,36,18,805
+ 1,21,93,781
IInd number 5,58,12,586

IInd number = 5,58,12,586
Ist number = + 4,36,18,805
Sum of two numbers = 9,94,31,391

11. People died = 43,70,090
People fled = + 2,25,36,615
Total left = 2,69,06,705

Total population = 7,11,90,821
Total left = − 2,69,06,705
People still left = 4,42,84,116

12. Children appeared this year = 4,02,215
Children appeared last year = − 3,58,162
44,053

44,053 children appeared more this year than last year

13. City B have more population than A by

43,12,103
− 32,46,015
10,66,088

14. Production in 2008 decreased by

23,18,720
− 21,89,615
1,29,105

15. Earnings = ₹ 8,12,75,450
Expenses = − ₹ 6,80,92,375
Profit = ₹ 2,31,83,075

16. Candidate appeared = 7,63,412
Candidate passed = − 2,72,528
Candidate failed = 4,90,884

17. Men = 5,32,917
Women = 3,42,913
Children = + 26,098
Population of town = 9,01,928

18. Salary = ₹ 3,55,244
Spend = − ₹ 2,09,000
Save = ₹ 1,46,244

19. (a) Pencils = 3,71,942
Notebooks = 2,74,180
Erasers = 2,67,893
Covers = + 1,79,172
Total stock = 11,03,207

(b) Pencils = 3,71,942
Notebooks = − 2,74,180
Difference = 97,762

(c) Pencils = 3,71,942
Erasers = − 2,67,893
Difference = 1,04,049

(d) Notebook more by

2,74,180
− 1,79,172
95,008

MCQs

1. (c) **2.** (a) **3.** (b) **4.** (c)
5. (b) **6.** (c) **7.** (b)

Test Exercise

1. (a) Sum (b) Attend
(c) Place value (d) Difference
(e) Subtrahend (f) Number
(g) Successor (h) Predecessor
(i) Product (j) Multiplier
(k) Quotient (*l*) Zero

2. (a)

	TTH	Th	H	T	O
	3	4	8	7	6
+	2	3	4	6	5
	5	8	3	4	1

(b)

	L	TTH	Th	H	T	O
	2	3	6	8	7	6
+	3	7	9	4	7	8
	6	1	6	3	5	4

(c)

	TL	L	TTH	Th	H	T	O
		9	7	8	8	2	4
+		8	6	4	3	6	3
	1	8	4	0	1	8	7

3. (a)

	TTH	Th	H	T	O
	8	7	1	4	3
–	2	7	8	3	9
	5	9	3	0	4

(b)

	L	TTH	Th	H	T	O
	9	8	6	4	0	0
–		9	8	7	8	9
	8	8	7	6	1	1

(c)

	L	TTH	Th	H	T	O
	5	7	8	3	9	6
–	4	3	2	7	8	4
	1	4	5	6	1	2

4. (a) 546361 + 0 = **546361**
(b) 49639 + 1 = **49640**
(c) 49634 – 0 = **49634**
(d) 83648 – 1 = **83647**
(e) 49364 + **500** = 49864
(f) **893364** + 4000 = 897364
(g) 57369 – **4000** = 53369
(h) 368 + **274** = 274 + 368

5 Multiplication and Division

Exercise- 5.1

1. (a) $93,597 \times \mathbf{0} = 0$ (b) $6,79,125 \times \mathbf{1} = 6,79,125$

(c) $25,798 \times 69,437 = 69,437 \times \mathbf{25,798}$

(d) $9,35,095 \times 0 = \mathbf{0}$ (e) $1 \times 85,793 = \mathbf{85,793}$

(f) $\mathbf{8175} \times 5595 = 5595 \times 8175$

(g) $82 \times (40 \times 6) = (82 \times 40) \times \mathbf{6} = \mathbf{40} \times (82 \times 6)$

(h) $286 \times 1 = \mathbf{286}$ (i) $425 \times \mathbf{1} = 425$

(j) $0 \times 630 = \mathbf{0}$ (k) $48 \times 25 = 25 \times \mathbf{48}$

(*l*) $(30 \times 6) \times 10 = 30 \times (6 \times \mathbf{10})$ (m) $425 \times \mathbf{1} = 156$

(n) $156 \times \mathbf{1} = 156$ (o) $46 \times (25 + 30) = (46 \times \mathbf{25}) + (46 \times \mathbf{30})$

(p) $14 \times (20 - 8) = (14 \times \mathbf{20}) - (\mathbf{14} \times 8)$ (q) $6 \times 8 \times 10 \times 25 \times 0 = \mathbf{0}$

2. (a) $2 \times 5 \times 16 = (2 \times 5) \times 16 = 10 \times 16 = 160$

(b) $5 \times 3 \times 2 = (5 \times 2) \times 3 = 10 \times 3 = 30$

(c) $4 \times 25 \times 36 = 100 \times 36 = 3600$ (d) $4 \times 500 \times 8 = 2000 \times 8 = 16000$

(e) $2 \times 50 \times 97 = 100 \times 97 = 9700$

3. (a) $99 \times 107 = (100 - 1) \times 107 = 100 \times 107 - 1 \times 107 = 10700 - 107 = 10593$

(b) $79 \times 92 = 79 \times (100 - 8) = 79 \times 100 - 79 \times 8 = 7900 - 632 = 7268$

(c) $46 \times 139 = 46 \times (100 + 39) = 46 \times 100 + 46 \times 39$

$= 4600 + 46 \times (40 - 1) = 4600 + 46 \times 40 - 46 \times 1$

$= 4600 + 1840 - 46 = 6440 - 46 = 6394$

(d) $19 \times 3065 = 19 \times (3000 + 60 + 5) = 19 \times 3000 + 19 \times 60 + 19 \times 5$

$= 57000 + 1140 + 95 = 58235$

(e) $65 \times 98 = 65 \times (100 - 2) = 65 \times 100 - 65 \times 2 = 6500 - 130 = 6370$

(f) $28 \times 878 = 28 \times (1000 - 122) = 28 \times 1000 - 28 \times 122$

$= 28000 - 28 \times (100 + 22)$

$= 28000 - 28 \times 100 - 28 \times 22$

$= 28000 - 2800 - 616 = 24584$

Exercise- 5.2

1. (a) $68 \times \mathbf{100} = 6800$ (b) $6935 \times 1000 = \mathbf{6935000}$

(c) $286 \times \mathbf{10000} = 28,60,000$ (d) $121 \times 1,00,000 = \mathbf{1,21,00,000}$

(e) $9999 \times 10 = \mathbf{99990}$ (f) $\mathbf{10,00,000} \times 89 = 8,90,00,000$

(g) $92 \times 10 = \mathbf{920}$ (h) $146 \times 20 = \mathbf{2920}$

(i) $283 \times 400 =$ **1,13,200** (j) $56 \times 1000 =$ **56000**

(k) $25 \times 8000 =$ **2,00,000** (*l*) $189 \times 3000 =$ **5,67,000**

(m) $90 \times 900 =$ **81,000** (n) $218 \times 50 =$ **10,900**

(o) $1713 \times 6000 = 1,02,78,000$ (p) $2983 \times 1000 =$ **29,83,000**

2. (a) $178 \times 50 = 178 \times 5 \times 10 = 890 \times 10 = 8900$

(b) $2369 \times 60 = 2369 \times 6 \times 10 = 14214 \times 10 = 1,42,140$

(c) $861 \times 900 = 861 \times 9 \times 100 = 7749 \times 100 = 7,74,900$

(d) $13169 \times 600 = 13169 \times 6 \times 100 = 79014 \times 100 = 79,01,400$

(e) $7215 \times 5000 = 7215 \times 5 \times 1000 = 36075 \times 1000 = 3,60,75,000$

(f) $8271 \times 3000 = 8271 \times 3 \times 1000 = 24813 \times 1000 = 2,48,13,000$

(g) $20 \times \boxed{20} = 400$ (h) $52 \times \boxed{100} = 5200$

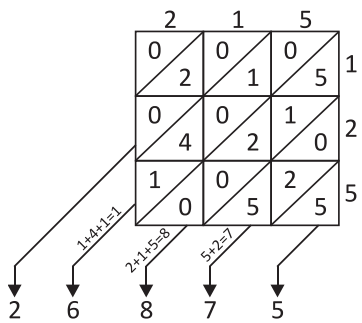
(i) $13 \times \boxed{300} = 3900$ (j) $425 \times \boxed{1000} = 4,25,000$

(k) $68 \times \boxed{200} = 13600$ (*l*) $1598 \times \boxed{1000} = 15,98,000$

(m) $80 \times \boxed{80} = 6400$ (n) $700 \times \boxed{7} = 4900$

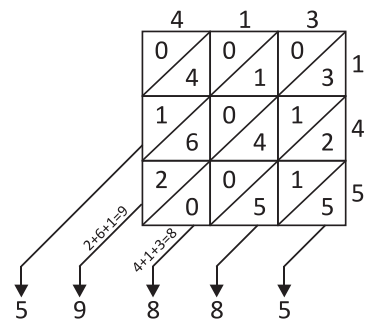
(o) $90 \times \boxed{900} = 81000$ (p) $46 \times \boxed{100} = 4600$

3. (a)



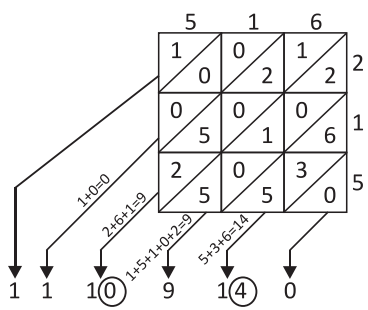
$\therefore\ 215 \times 125 = 26875$

(b)



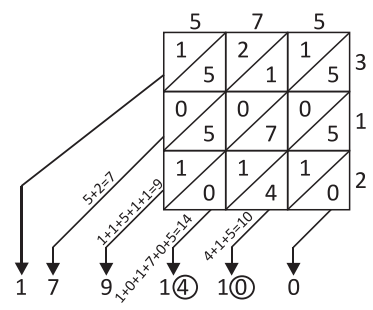
$\therefore\ 413 \times 145 = 59885$

(c)



$\therefore\ 516 \times 215 = 110940$

(d)



$\therefore\ 575 \times 312 = 179400$

Exercise- 5.3

1. (a)

				TTh	Th	H	T	O
				1	5	6	7	5
					×	9	2	3
				4	7	0	2	5
			3	1	3	5	0	×
	1	4	1	0	7	5	×	×
	1,	4	4,	6	8,	0	2	5

(b)

		TTh	Th	H	T	O
		1	2	3	7	6
			×	4	7	6
		7	4	2	5	6
	8	6	6	3	2	×
4	9	5	0	4	×	×
5	8,	9	0,	9	7	6

(c)

		L	TTh	Th	H	T	O
		3	5	5	3	2	1
				×	2	4	3
	1	0	6	5	9	6	3
1	4	2	1	2	8	4	×
7	1	0	6	4	2	×	×
8,	6	3,	4	3,	0	0	3

(d)

		TTh	Th	H	T	O
		1	1	2	6	7
			×	2	4	3
		3	3	8	0	1
	4	5	0	6	8	×
2	2	5	3	4	×	×
2	7,	3	7,	8	8	1

(e)

		Th	H	T	O
		7	3	0	4
		×	1	2	5
	3	6	5	2	0
1	4	6	0	8	×
7	3	0	4	×	×
9,	1	3,	0	0	0

(f)

		Th	H	T	O
		2	1	3	5
		×	1	3	5
	1	0	6	7	5
	6	4	0	5	×
2	1	3	5	×	×
2,	8	8,	2	2	5

(g)

			TTh	Th	H	T	O
			1	9	4	3	4
			×	1	5	6	2
			3	8	8	6	8
	1	1	6	6	0	4	×
	9	7	1	7	0	×	×
	9	4	3	4	×	×	×
3,	0	3,	5	5,	9	0	8

(h)

		TTh	Th	H	T	O
		1	0	6	5	4
			×	8	7	5
		5	3	3	7	0
	7	4	5	7	8	×
8	5	2	3	2	×	×
9	3,	2	2,	3	5	0

(i)

			Th	H	T	O
			9	2	3	4
			×	3	2	5
		4	6	1	7	0
	1	8	4	6	8	×
2	7	7	0	2	×	×
3	0,	0	1,	0	5	0

(j)

		TTh	Th	H	T	O
		6	7	2	4	5
		×	1	2	3	4
	2	6	8	9	8	0
	2	0	1	7	3	5 ×
1	3	4	4	9	0	× ×
6	7	2	4	5	×	× ×
8,	2	9,	8	0,	3	3 0

(k)

				TTh	Th	H	T	O
				9	2	4	2	1
				×	2	1	2	1
				9	2	4	2	1
		1	8	4	8	4	2	×
		9	2	4	2	1	×	×
1	8	4	8	4	2	×	×	×
1	9,	6	0,	2	4,	9	4	1

(l)

				TTh	Th	H	T	O
				2	4	1	0	5
				×	1	5	0	5
			1	2	0	5	2	5
			0	0	0	0	0	×
1	2	0	5	2	5	×	×	
2	4	1	0	5	×	×	×	
3,	6	2,	7	8,	0	2	5	

(m)

			TTh	Th	H	T	O
			5	4	3	2	1
			×	1	6	7	5
		2	7	1	6	0	5
	3	8	0	2	4	7	×
3	2	5	9	2	6	×	×
5	4	3	2	1	×	×	×
9,	0	9,	8	7,	6	7	5

(n)

				TTh	Th	H	T	O
				8	4	7	1	0
				×	4	2	3	1
				8	4	7	1	0
		2	5	4	1	3	0	×
	1	6	9	4	2	0	×	×
3	3	8	8	4	0	×	×	×
3	5,	8	4,	0	8,	0	1	0

(o)

				TTh	Th	H	T	O
				2	5	6	7	1
				×	6	2	1	5
			1	2	8	3	5	5
			2	5	6	7	1	×
		5	1	3	4	2	×	×
1	5	4	0	2	6	×	×	×
1	5,	9	5,	4	5,	2	6	5

2. (a)

			5	5,	5	5	5
				×	6	2	6
		3	3	3	3	3	0
	1	1	1	1	1	0	×
3	3	3	3	3	0	×	×
3,	4	7,	7	7,	4	3	0

(b)

			6	0,	1	2	1
				×	5	8	5
		3	0	0	6	0	5
	4	8	0	9	6	8	×
3	0	0	6	0	5	×	×
3,	5	1,	7	0,	7	8	5

(c)

		1	8,	3	5	7
			×	3	6	9
	1	6	5	2	1	3
1	1	0	1	4	2	×
5	5	0	7	1	×	×
6	7,	7	3,	7	3	3

(d)

			4	7	0,	8	9	6
					×	8	1	3
		1	4	1	2	6	8	8
		4	7	0	8	9	6	×
3	7	6	7	1	6	8	×	×
3	8,	2	8,	3	8,	4	4	8

(e)

			7,	6	4,	8	9	7
					×	2	5	2
		1	5	2	9	7	9	4
	3	8	2	4	4	8	5	×
1	5	2	9	7	9	4	×	×
1	9,	2	7,	5	4,	0	4	4

(f)

			3,	8	5,	4	6	2
					×	5	1	8
		3	0	8	3	6	9	6
		3	8	5	4	6	2	×
1	9	2	7	3	1	0	×	×
1	9,	9	6,	6	9,	3	1	6

(g)

			3	5,	6	3	9
				×	4	2	8
		2	8	5	1	1	2
		7	1	2	7	8	×
1	4	2	5	5	6	×	×
1,	5	2,	5	3,	4	9	2

(h)

	1,	2	4,	5	9	7
				×	9	6
	7	4	7	5	8	2
1	1	2	1	3	7	3	×
1,	1	9,	6	1,	3	1	2

(i)

			8	4,	2	4	6
				×	7	2	9
		7	5	8	2	1	4
	1	6	8	4	9	2	×
5	8	9	7	2	2	×	×
6,	1	4,	1	5,	3	3	4

3. (a) $23968 \times 999 = 23968 \times (1000 - 1) = 23968 \times 1000 - 23968$

$= 23968000 - 23968$

$= 2,39,44,032$

(b) $964310 \times 9999 = 964310 \times (10000 - 1) = 964310 \times 10000 - 964310 \times 1$
$= 9643100000 - 964310 = 9,64,21,35,690$

(c) $481964 \times 99 = 481964 \times (100 - 1) = 481964 \times 100 - 481964 \times 1$
$= 48196400 - 481964 = 4,77,14,436$

Exercise- 5.4

1. Cost of 1 apartment = ₹ 7,23,459
Number of apartments = × 48
57,87,960
+ 28939800
Total cost = ₹ 3,47,27,760

2. Each student pay = ₹ 18,875
Number of students = × 438
151000
566250
+ 7550000
Paid in 1 year = ₹ 82,67,250

3. Save in a year = ₹ 16439
Number of years = × 25
82195
328780
Total savings = ₹ 4,10,975

4. Number of employees = 1,37,073
Each employee get = × 465
685365
8224380
+ 54829200
Total bonus = ₹ 6,37,38,945

5. Number of members = 56,348
Each contribute = × 275
281740
3944360
+ 11269600
Total collection = ₹ 1,54,95,700

6. Number of books = 3,26,174
SP of 1 book = × 164
13,04,696
19570440
+ 32617400
Publisher earn = ₹ 53492536

7. Salary in 1 month = ₹ 26850
Number of employees = × 150
0000
1342500
2685000
40,27,500
Number of months = × 12
Salary paid in 1 year = ₹ 4,83,30,000

8. Boxes = 35
Each box contain = × 33 books
105
1050
1155 books
Weight of 1 book = × 975 gm
5775
80850
1039500
Weight of 35 boxes = 1126125 gm
or 1126 kg 125 gm

9. Teddy bear produced in 1 day = 893
Number of days = × 350
000
44650
= 267900
In 1 year Total teddy bear produced = 31250
Cost of 1 teddy bear = × 30
000000
9376500
Total cost = ₹ 9,376,500

10. Toys produced/day = 2,35,790
Working days = × 24
943160
4715800
Total production = 56,58,960

11. Smallest number = 607
Greatest 5 digit = × 99999
5463
54630
546300
5463000
54630000
Product = 606,99,393

12. Number of bags in 1 truck = 7883
Number of trucks = × 65
39415
472980
Total bags = 512395
Weight of 1 bag = × 254
20,49,580
25619750
102479000
Weight of wheat carried by trucks = 13,01,48,330 kg

13. T-shirts sold = 6240
SP T-shirt = × 156
37440
312000
624000
SP of T-shirts = ₹ 9,73,440

Jeans sold = 3424
SP 1 Jeans = × 867
23,968
205440
2739200
SP of Jeans = ₹ 29,68,608

SP of Jeans = ₹ 29,68,608
SP of T-shirts = ₹ + 973440
Shopkeeper make = ₹ 39,42,048

14. Cost 1 bicycle = ₹ 564
Number of bicycle = × 285
2820
45120
112800
Cost of bicycles = ₹ 1,60,740

15. Total hours = 1322
Minute in 1 hour = × 60
0000
79320
Total minutes = 79320

16. Toys made in 1 week = 3455
Total weeks = × 215
17275
34550
691000
Total toys made = 7,42,825

17. Charges/student = ₹ 4565
Number of students = × 450
0000
228250
1826000
Total collection = ₹ 20,54,250

18. Days/year = 365
Years = 45
1825
14600
Total days = 16425

19. Anita earing in 2 months = ₹ 28450
Anita earing in 1 month = ₹ 28450 / 2 = ₹ 14225
3 years (36 months) = ₹ 14225 × 36
85350
= 426750
Anita Total earnings in 3 years = ₹ 5,12,100

20. Saving in 1 week = ₹ 5165
× 300
0000
0000×
15495××
Savings in 300 weeks = ₹ 15,49,500

21. Tubelight produced in1 day = 23780
Days = × 1578
190240
166460×
118900××
23780×××
Production of tubelight in 1578 days = 3,75,24,840

22. Cost of 1 scooter = ₹ 29595
Number of scooters = × 2130
00000
88785×
29595××
59190×××
Total cost = ₹ 6,30,37,350

23. Cost of 1 sofaset = ₹ 5975
Number of sofaset = × 1865
29875
35850×
47800××
5975×××
Cost of 1865 sofasets = ₹ 1,11,43,375

24. Iron nails in 1 box = 74925

Boxes = × 1755

374625

374625×

524475××

74925×××

Total nails = 13,14,93,375

Exercise- 5.5

1. (a) $9359 \div 9359 = \mathbf{1}$ (b) $18{,}750 \div 1 = \mathbf{18{,}750}$

(c) $0 \div 12{,}559 = \mathbf{0}$ (d) $59{,}549 \div 89{,}549 = \mathbf{1}$

(e) $0 \div 99{,}999 = \mathbf{0}$ (f) $\mathbf{35} \div 35 = 1$

(g) $46 \div 46 = \mathbf{1}$ (h) $0 \div 126 = \mathbf{0}$

(i) $16 \div 1 = \mathbf{16}$ (j) $14 \div 0 =$ **Not possible**

(k) $\mathbf{0} \div 128 = 128$ (*l*) $16 \div \mathbf{16} = 1$

(m) $24 \div \mathbf{24} = 1$ (n) $\mathbf{0} \div 157 = 0$

(o) $\mathbf{829} \div 829 = 1$ (n) $76 \div \mathbf{76} = 1$

2. ∵ Dividend = Divisor × Quotient + R

Number $= 45 \times 25 + 9 = 1125 + 9 = 1134$

45

25

225

90×

1125

3. ∵ Dividend = Divisor × Quotient + Remainder

$4904 =$ Divisor $\times 29 + 3$

$4904 - 3 =$ Divisor $\times 29$

$4901 =$ Divisor $\times 29$

$\frac{4901}{29} =$ Divisor

29) 4901 (169

−29

200

−174

26

− 26

×

∴ Divisor 169

4.

		Quotient	**Remainder**
(a)	35,249 ÷ 10	3524	9
(b)	6,07,148 ÷ 10	60714	8

(c)	11,53,679 ÷ 100	11536	79
(d)	58,073 ÷ 100	580	73
(e)	24,01,389 ÷ 1000	2401	389
(f)	8,10,015 ÷ 1000	810	15
(g)	4,137 ÷ 1000	4	137
(h)	72,957 ÷ 1000	72	957
(i)	25,790 ÷ 10000	2	5790
(j)	9,21,112 ÷ 10000	92	1112
(k)	37,91,315 ÷ 10000	379	1315
(*l*)	85,34,925 ÷ 10000	853	4925

Exercise- 5.6

1. (a)

```
        17402
324 ) 5638272
      –324
       2398
      –2268
        1302
       –1296
          0672
         – 648
           24
```

∴ Quotient = 17402
Remainder = 24

(b)

```
        888
215 ) 190920
      –1720
        1892
       –1720
         1720
        –1720
           0
```

∴ Quotient = 888
Remainder = 0

(c)

```
        51462
125 ) 6432750
      –625
        182
       –125
         577
        –500
          775
         – 750
           250
          – 250
             0
```

∴ Quotient = 51462
Remainder = 0

(d)

```
        5897
463 ) 2730311
      –2315
       4153
      –3704
        4491
       –4167
         3241
        – 3241
           0
```

∴ Quotient = 5897
Remainder = 0

(e)

```
        1346
409 ) 550514
      −409
       1415
      −1227
        1881
       −1636
         2454
        −2454
            0
```

∴ Quotient = 1346
Remainder = 0

(f)

```
        3764
3509 ) 13207876
       −10527
        26808
       −24563
         22457
        −21054
          14036
         −14036
              0
```

∴ Quotient = 3764
Remainder = 0

(g)

```
        5897
463 ) 2730312
      −2315
       4153
      −3704
        4491
       −4167
         3242
        −3241
            1
```

∴ Quotient = 5897
Remainder = 1

(h)

```
        9755
963 ) 9394989
      −8667
       7279
      −6741
        5388
       −4815
         5739
        −4815
          924
```

∴ Quotient = 9755
Remainder = 924

(i)

```
        540926
523 ) 282904694
      −2615
       2140
      −2092
        04846
       −4707
         1399
        −1046
          3534
         −3138
           396
```

∴ Quotient = 540926
Remainder = 396

(j)

```
        27389
584 ) 15995177
      −1168
       4315
      −4088
        2271
       −1752
        5197
       −4672
         5257
        −5256
            1
```

∴ Quotient = 27389
Remainder = 1

(k)

```
        737497
128 ) 94399662
      −896
        479
      −384
         959
        −896
          636
         −512
           1246
          −1152
             942
            −896
              46
```

∴ Quotient = 737497

Remainder = 46

(l)

```
        417076
125 ) 52134578
      −500
        213
      −125
         884
        −875
          957
         −875
           828
          −750
            78
```

∴ Quotient = 417076

Remainder = 78

(m)

```
        4563
650 ) 2965950
      −2600
        3659
      −3250
         4095
        −3900
           1950
          −1950
              0
```

∴ Quotient = 4563

Remainder = 0

(n)

```
        4589
333 ) 1528137
      −1332
        1961
      −1665
         2963
        −2664
           2997
          −2997
              0
```

∴ Quotient = 4589

Remainder = 0

(o)

```
        4562
341 ) 1555642
      −1364
        1916
      −1705
         2114
        −2046
           682
          −682
              0
```

∴ Quotient = 4562

Remainder = 0

2. (a)

```
      1261
15 ) 18923
     −15
      39
     −30
       92
      −90
        23
       −15
         8
```

Checking = Quotient × Divisor + R

```
  1261     = 1261 × 15 + 8
 × 15      = 18915 + 8
 6305      = 18923
1261×      = Dividend
18915
```

(b)

```
      195
37 ) 7239
     −37
      352
     −333
       199
      − 185
        24
```

∴ Quotient = 195

Remainder = 24

Checking

Divisor × Quotient + R

37 × 195 + 14

= 7215 + 14

= 7239

= Dividend

```
 195
 ×37
1365
585×
7215
```

(c)

```
      1190
36 ) 42872
     −36
      68
     −36
      327
     − 324
        32
```

∴ Quotient = 1190

Remainder = 32

Checking

Divisor × Quotient + R

36 × 110 + 32

= 42840 + 32

= 42872

= Dividend

```
 1190
 ×36
 7140
3570×
42840
```

(d)

```
      94
284 ) 26854
     −2556
      1294
     −1136
       158
```

∴ Quotient = 94

Remainder = 158

Checking

Divisor × Quotient + R

284 × 94 + 158

= 26696 + 158

= 26854

= Dividend

```
 284
 ×94
1136
2556×
26696
```

(e)

```
      921
176 ) 162097
     −1584
      369
     −352
      177
     − 176
        1
```

∴ Quotient = 921

Remainder = 1

(f)

```
      87
368 ) 32138
     −2944
      2698
     −2576
       122
```

∴ Quotient = 87

Remainder = 122

Checking

Divisor × Quotient + R

$176 \times 921 + 1$

$= 162096 + 1$

$= 162097$

$= \text{Dividend}$

$$\begin{array}{r} 921 \\ \times 176 \\ \hline 5526 \\ 6447\times \\ 921\times\times \\ \hline 162096 \end{array}$$

Checking

Divisor × Quotient + R

$368 \times 87 + 122$

$= 32016 + 22$

$= 32138$

$= \text{Dividend}$

$$\begin{array}{r} 368 \\ \times 87 \\ \hline 2576 \\ 2944\times \\ \hline 32016 \end{array}$$

(g)

$$\begin{array}{r} 224 \\ 115\,\overline{)\,25766} \\ -230 \\ \hline 276 \\ -230 \\ \hline 466 \\ -460 \\ \hline 6 \end{array}$$

$\therefore$ Quotient $= 224$

Remainder $= 6$

Checking

Divisor × Quotient + R

$115 \times 224 + 6$

$= 25760 + 6$

$= 25766$

$= \text{Dividend}$

$$\begin{array}{r} 224 \\ \times 115 \\ \hline 1120 \\ 224\times \\ 224\times\times \\ \hline 25760 \end{array}$$

(h)

$$\begin{array}{r} 79 \\ 533\,\overline{)\,42135} \\ -3731 \\ \hline 4825 \\ -4797 \\ \hline 28 \end{array}$$

$\therefore$ Quotient $= 79$

Remainder $= 28$

Checking

Divisor × Quotient + R

$533 \times 79 + 28$

$= 42107 + 28$

$= 42135$

$= \text{Dividend}$

$$\begin{array}{r} 533 \\ \times 79 \\ \hline 4797 \\ 3731\times \\ \hline 42107 \end{array}$$

(i)

$$\begin{array}{r} 250 \\ 215\,\overline{)\,53962} \\ -430 \\ \hline 1096 \\ -1075 \\ \hline 212 \end{array}$$

$\therefore$ Quotient $= 250$, Remainder $= 212$

Checking

Divisor × Quotient + R

$215 \times 250 + 212$

$= 53750 + 212$

$= 53962$

$= \text{Dividend}$

$$\begin{array}{r} 250 \\ \times 215 \\ \hline 1250 \\ 250\times \\ 500\times\times \\ \hline 53750 \end{array}$$

Exercise- 5.7

1. Cost of 216 mobiles = ₹ 11,72,880

Cost of 1 mobile phone = ₹ $\dfrac{1172880}{216}$

$$\begin{array}{r} 5430 \\ 216\,\overline{)\,1172880} \\ -1080 \\ \hline 928 \\ -864 \\ \hline 648 \\ -648 \\ \hline 0 \end{array}$$

$\therefore$ Cost of 1 mobile phone is ₹ 5430

2. Other number is 269928 ÷ 552

```
          489
552 ) 269928
     −2208
      4912
     −4416
      4968
     −4968
         0
```

∴ Other number is 489

3. Each labour get 573125 ÷ 125

```
          4585
125 ) 573125
     −500
       731
     −625
       1062
     −1000
         625
        −625
           0
```

∴ Each labour get ₹ 4585

4. No. of boxes required 614250 ÷ 945

```
          650
945 ) 614250
     −5670
      4725
     −4725
         0
```

∵ Boxes required = 650

5. Cartons required 18247575 ÷ 563

```
          32411
563 ) 18247575
     −1689
      1357
     −1226
       2315
      −2252
        637
       −563
         745
        −563
         182
```

∴ 32411 cartons required and 182 mangoes left

6. Cost of Washing Machine
807380 ÷ 316

```
          2555
316 ) 807380
     −632
      1753
     −1580
       1738
      −1580
        1580
       −1580
           0
```

∴ Cost of 1 washing machine ₹ 2555

7. No. of rows required
52650 ÷ 975

```
          54
975 ) 52650
     −4875
      3900
     −3900
         0
```

∴ Rows required in stadium 54

8. Boxes required for books

$182412 \div 563$

```
        324
563 ) 182412
     –1689
      1351
     –1126
       2252
      –2252
         0
```

$\therefore$ Boxes required $= 324$

9. Cost of one calculator

$61040 \div 218$

```
        280
218 ) 61040
     –436
      1744
     –1744
        0
```

$\therefore$ Cost of 1 calculator $=$ ₹ 280

10. Contribution of each student $342400 \div 856$

```
        400
856 ) 342400
     –3424
        0
```

$\therefore$ Each student contribute ₹ 400

11. Number $=$ Divisor $\times$ Quotient $+$ Remainder

$435 \times 5643 + 46 = 2454705 + 46 = 2454751$

```
      5643
    × 435
     2815
    169290
   2257200
   2454705
```

12. Largest 6 digit number 999999, Largest 3 digit number 999

```
        1001
999 ) 999999
     –999
      000999
       –999
          0
```

$\therefore$ 999999 is largest six digit number exactly divisible by largest 3 digit number 999

13. 1 person earn in a month $3109760 \div 688$

```
        4520
688 ) 3109760
     –2752
       3577
      –3440
        1376
       –1376
           0
```

∴ 1 person earn = ₹ 4520

```
   4520
  ×765
  22600
 27120×
31640××
3457800
```

∴ 765 persons earns ₹ 34,57,800

∴ 765 persons earn = ₹ 4520

14. Packets required

834535 ÷ 185

```
        4511
185 ) 834535
      −740
        945
      −925
         203
        −185
          185
         −185
            0
```

∴ Packets required for glasses = 4511

15. Cost of 1 washing machine

2227250 ÷ 295

```
        7550
295 ) 2227250
      −2065
        1622
       −1475
         1475
        −1475
            0
```

∴ Cost of 1 washing machine = ₹ 7550

16. Bundles required

176435 ÷ 355

```
        497
355 ) 176435
      −1420
        3443
       −3195
         2485
        −2485
            0
```

∴ Bundles required for water pipe = 497

17. Weight carried by one truck

1820910 ÷ 2415

```
        754
2415 ) 1820910
      −16905
        13041
       −12075
         9660
        −9660
            0
```

∴ Each truck can carry 754 kg

18. Packets required 5346250 ÷ 1250

```
        4277
1250 ) 5346250
      −5000
        3462
       −2500
         9625
        −8750
          8750
         −8750
            0
```

∴ Packets required for toys = 4277

MCQs

1. (a) $672 \times 8000 = 5376000$ **2.** (c)

3. (b) $999 \times 99 = 999 \times (100 - 1) = 999 \times 100 - 999 = 99900 - 999 = 98901$

4. (b)

Mental Maths

1	0	1		
		2	6	3
2	0			3
0		8	4	5
2	2			0

Test Exercise

1. (a)

			3	0	8	2
			×	2	6	5
3082 × 5 =		1	5	4	1	0
3082 × 60 =	1	8	4	9	2	0
3082 × 200 =	6	1	6	4	0	0
	8,	1	6,	7	3	0

(b)

			2	5	7	4
			×	1	9	8
2574 × 8 =		2	0	5	9	2
2574 × 90 =	2	3	1	6	6	0
2574 × 100 =	2	5	7	4	0	0
	5,	0	9,	6	5	2

(c)

			4	8	2	9
			×	3	6	4
4829 × 4 =		1	9	3	1	6
4829 × 60 =	2	8	9	7	4	0
4829 × 300 =	1	4	4	8	7	0	0
	1	7,	5	7,	7	5	6

(d)

			3	6	8	7
			×	4	0	8
3687 × 8 =		2	9	4	9	6
3687 × 0 =		0	0	0	0	0
3687 × 400 =	1	4	7	4	8	0	0
	1	5,	0	4,	2	9	6

(e)

			5	6	1	3
			×	2	9	7
5613 × 7 =		3	9	2	9	1
5613 × 90 =	5	0	5	7	7	0
5613 × 200 =	1	1	2	2	6	0	0
	1	6,	6	7,	0	6	1

(f)

			3	0	8	2
			×	4	9	8
3082 × 8 =		2	4	6	5	6
3082 × 90 =	2	7	7	3	8	0
3082 × 400 =	1	2	3	2	8	0	0
	1	5,	3	4,	8	3	6

2. (a)

	19310
	× 62
19310 × 2 =	38620
19310 × 60 =	1158600
	11,97,220

(b)

	611125
	× 285
61125 × 5 =	3055625
61125 × 80 =	4889000
61125 × 200 =	12222500
	17,41,70,625

(c)

	183579
	× 651
183579 × 1 =	183579
183579 × 50 =	9178950
183579 × 600 =	110147400
	11,95,09,929

(d)

	740869
	× 912
740869 × 2 =	1481738
740869 × 10 =	7408690
740869 × 900 =	666782100
	67,56,72,528

(e)

	45673
	× 529
45673 × 9 =	411057
45673 × 20 =	913460
45673 × 500 =	22836500
	241,61,017

(f)

	369170
	× 283
369170 × 3 =	1107510
369170 × 80 =	29533600
369170 × 200 =	73834000
	10,44,75,110

(g)

	76489
	× 251
76489 × 1 =	76489
76489 × 50 =	3824450
76489 × 200 =	15297800
	1,91,98,739

(h)

	385462
	× 581
385462 × 1 =	385462
385462 × 80 =	30836960
385462 × 500 =	192731000
	22,39,53,422

(i)

	258348
	× 425
258348 × 5 =	1291740
258348 × 20 =	5166960
258348 × 400 =	103339200
	10,97,79,900

3. (a)

	673210
	× 562
673210 × 2 =	1346420
673210 × 60 =	40392600
673210 × 500 =	336605000
	37,83,44,020

Thirty seven crores eighty three lakhs forty four thousand and twenty

(b)

	896340
	× 323
896340 × 3 =	2689020
896340 × 20 =	17926800
896340 × 300 =	268902000
	28,95,17,820

Twenty eight crores ninety five lakhs seventeen thousand eight hundred and twenty

(c)

	3 9 4 5 2 2
	× 1 5 1
394522 × 1 =	3 9 4 5 2 2
394522 × 50 =	1 9 7 2 6 1 0 0
394522 × 100 =	3 9 4 5 2 2 0 0
	5,9 5,7 2,8 2 2

Five crores ninety five lakhs seventy two thousands eight hundred and twenty two

(d)

	2 5 4 3 2 2
	× 2 4 6
254322 × 6 =	1 5 2 5 9 3 2
254322 × 40 =	1 0 1 7 2 8 8 0
254322 × 200 =	5 0 8 6 4 4 4 0
	6,2 5,6 3,2 1 2

Six crores twenty five lakhs sixty three thousand two hundred and twelve

(e)

	1 6 2 5 4 3 5
	× 8 6
1625435 × 6 =	9 7 5 2 6 1 0
1625435 × 80 =	1 3 0 0 3 4 8 0 0
	1 3,9 7,8 7,4 1 0

Thirteen crores ninety seven lakhs eighty seven thousand four hundred and ten

4. (a)

```
     699
9 ) 6294
   −54
    89
   −81
    84
   −81
     3
```

∴ Quotient = 699, R = 3

Checking

Divisor × Quotient + R

9 × 699 + 3
= 6491 + 3
= 6494
= dividend

```
  699
   ×9
 6491
```

(b)

```
     635
8 ) 5086
   −48
    28
   −24
    46
   −40
     6
```

∴ Quotient = 699, R = 3

Checking

Divisor × Quotient + R

8 × 635 + 6
= 5080 + 6
= 5086
= dividend

```
  635
   ×8
 5080
```

(c)

```
     465
6 ) 2794
   −24
    39
   −36
    34
   −30
     4
```

∴ Quotient = 465, R = 4

```
  465
   ×6
 2790
```

Checking

Divisor × Quotient + R

9 × 465 + 4 = 2790 + 4
= 2794
= dividend

(d)

```
     4406
7 ) 30845
   −28
    28
   −28
    045
   −42
     3
```

∴ Quotient = 4406, R = 3

```
 4406
   ×7
30842
```

Checking

Divisor × Quotient + R

7 × 4406 + 3 = 30842 + 3
= 30845
= dividend

(e)

```
     8559
5 ) 42798
   −40
    27
   −25
     29
    −25
      48
     −45
       3
```

∴ Quotient = 8559, R = 3

Checking

Divisor × Quotient + R

5 × 8559 + 3

= 42795 + 3

= 42798

= dividend

```
  8559
   ×5
 42795
```

(f)

```
     130096
4 ) 520386
   −4
    12
   −12
     038
    −36
      26
     −24
       2
```

∴ Quotient = 130096, R = 2

Checking

Divisor × Quotient + R

4 × 130096 + 2

= 520384 + 2

= 520386

= dividend

```
  130096
     ×4
 520384
```

5. (a)

```
     917
74 ) 67892
   −666
     129
    −74
      552
     −518
       34
```

∴ Quotient = 917, R = 34

Checking

Divisor × Quotient + R

74 × 917 + 34

= 67858 + 34

= 67892

= dividend

```
   917
   ×74
  3668
 64190
 67858
```

(b)

```
     6324
86 ) 543869
   −516
     278
    −258
      206
     −172
       349
      −344
         5
```

∴ Quotient = 6324, R = 5

Checking

Divisor × Quotient + R

86 × 6324 + 5

= 543869 + 5

= 543869

= dividend

```
   6324
   ×86
  37944
 50592×
 543864
```

(c)

```
     1701
51 ) 86752
   −51
    357
   −357
      052
     −51
        1
```

∴ Quotient = 1701, R = 1

Checking

Divisor × Quotient + R

```
   1701
   ×51
   1701
 8505×
 86751
```

(d)

```
     859
68 ) 58432
   −544
    403
   −340
     632
    −612
      20
```

∴ Quotient = 859, R = 20

Checking

Divisor × Quotient + R

```
   859
   ×68
  6872
 5154×
 58412
```

$51 \times 1701 + 1$
$= 86751 + 1$
$= 86752 =$ dividend

(e)

```
      463
58 ) 26908
     −232
     ----
       370
      −348
      ----
        228
       −174
       ----
         54
```

$\therefore$ Quotient $= 463$, R $= 54$

Checking

Divisor $\times$ Quotient $+$ R

$58 \times 463 + 54$
$= 26854 + 54$
$= 26908 =$ dividend

```
  463
 ×58
 ----
 3704
2315×
-----
26854
```

$68 \times 859 + 20$
$= 58412 + 20$
$= 58432 =$ dividend

(f)

```
      1315
36 ) 47349
     −36
     ---
      113
     −108
     ----
       54
      −36
      ---
      189
     −180
     ----
        9
```

$\therefore$ Quotient $= 1315$, R $= 9$

Checking

Divisor $\times$ Quotient $+$ R

$36 \times 1315 + 9$
$= 47340 + 9$
$= 47349 =$ dividend

```
 1315
 ×36
-----
 7890
3945×
-----
47340
```

(g)

```
      14185
59 ) 836921
     −59
     ---
      246
     −236
     ----
       109
       −59
       ---
       502
      −472
      ----
        301
       −295
       ----
          6
```

$\therefore$ Quotient $= 14185$, R $= 6$

Checking

Divisor $\times$ Quotient $+$ R

$59 \times 14185 + 6 = 836915 + 6$
$= 836921$
$= $ dividend

```
 14185
  ×59
 -----
127665
70925×
------
836915
```

(h)

```
      900
84 ) 836921
     −756
     ----
      002
```

$\therefore$ Quotient $= 900$, R $= 2$

Checking

Divisor $\times$ Quotient $+$ R

$84 \times 900 + 2$
$= 75600 + 2$
$= 75602$
$= $ dividend

(i)

```
      952
62 ) 59024
     −558
     ----
      322
     −310
     ----
       124
      − 124
      -----
          0
```

$\therefore$ Quotient $= 952$, R $= 0$

Checking

Divisor $\times$ Quotient $+$ R

$62 \times 952 + 0 = 59024 + 0$
$= 59024$
$= $ dividend

```
  952
  ×62
 ----
 1904
5712×
-----
59024
```

6. (a)

```
          8348
371 ) 3097112
      −2968
        1291
       −1113
         1781
       − 1484
          2972
         −2968
             4
```

$\therefore$ Quotient $= 8348$, R $= 4$

Checking

Divisor $\times$ Quotient $+$ R

$371 \times 8348 + 4$

$= 3097108 + 4$

$= 3097112$

$=$ dividend

```
   8348
  ×371
   8348
 58436×
25044××
3097108
```

(b)

```
          4469
632 ) 2824408
      −2528
        2964
       −2528
         4360
       − 3792
          5688
         −5688
            0
```

$\therefore$ Quotient $= 4469$, R $= 0$

Checking

Divisor $\times$ Quotient $+$ R

$632 \times 4469 + 0$

$= 2824408 + 0$

$= 2824408$

$=$ dividend

```
   4469
  ×632
   8938
 13407×
26814××
2824408
```

(c)

```
          4568
321 ) 1466328
      −1284
        1823
       −1605
         2182
       − 1926
          2568
         −2568
            0
```

$\therefore$ Quotient $= 4568$, R $= 0$

Checking

Divisor $\times$ Quotient $+$ R

$321 \times 4568 + 0$

$= 1466328 + 0$

$=$ dividend

```
   4568
  ×321
   4568
  9136×
13704××
1466328
```

(d)

```
          64328
757 ) 48696296
      −4542
        3276
       −3028
         2482
       − 2271
          2119
         −1514
           6056
         − 6056
              0
```

$\therefore$ Quotient $= 64328$, R $= 0$

Checking

Divisor $\times$ Quotient $+$ R

$757 \times 64328 + 0$

$= 48696296 + 0$

$=$ dividend

```
   64328
  ×757
  450296
 32140×
450296××
48696296
```

(e)

```
        12365
255 ) 3153075
      −255
        603
      −510
        930
      − 765
        1657
      −1530
         1275
       −1275
            0
```

$\therefore$ Quotient $= 12365$, R $= 0$

Checking

Divisor $\times$ Quotient $+$ R

$255 \times 12365 + 0$

$= 3153075 + 0$

$=$ dividend

```
   12365
   ×255
   61825
  61825×
 24730××
 3153075
```

(f)

```
       325
515 ) 167620
      −1545
        1312
      −1030
         2820
       − 2575
          245
```

$\therefore$ Quotient $= 325$, R $= 0$

Checking

Divisor $\times$ Quotient $+$ R

$515 \times 325 + 245$

$= 167375 + 245$

$= 167620$

$=$ dividend

```
   325
   ×515
   1625
  325×
 1625××
 167375
```

7. Dividend $=$ Divisor $\times$ Quotient $+$ R

$321 \times 1234 + 46 = 396114 + 46 = 396160$

$\because$

```
   1234
   ×321
   1234
  2468×
 3702××
 396114
```

8.

```
        1325
425 ) 563247
      −425
        1382
      −1275
         1074
       − 850
          2247
        −2125
           122
```

$\therefore$ Quotient $= 1325$

Remainder $= 122$

❍❍❍

Exercise- 6.1

1. (a) Multiples (b) 7 (c) Number itself
(d) End (e) Common multiples

2. (a) Multiples of 15 are 15, 30, 45, 60, 75, 90, 105, 120, 135, 150
(b) Twentieth multiple of $17 = 17 \times 20 = 340$
(c) Eight multiple of $25 = 25 \times 8 = 200$
(d) Hundredth multiple of $50 = 50 \times 100 = 5000$

3. (a) Multiples of 3 = 6, 9, 12, 15, 18 (b) Multiples of 12 = 24, 36, 48, 60, 72
(c) Multiples of 11 = 22, 33, 44, 55, 66

4. (a) Multiples of 12 = 12, 24, 36, 48, ...
Multiples of 8 = 8, 16, 24, 32, 40, 48, ...
2 Common multiples of 12, 8 are 24, 48, ...
(b) Multiples of 16 = 16, 32, 48, 64, 80, 96, ...
Multiples of 6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96 , ...
2 Common multiples of 16 and 6 are 48, 96
(c) Multiples of 5 = 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, ...
Multiples of 10 = 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, ...
Multiples of 25 = 25, 50, 75, 100 , ...
2 Common multiples of 5, 10, 25 are 50, 100
(d) Multiples of 6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, ...
Multiples of 15 = 15, 30, 45, 60, ...
Multiples of 30 = 30, 60
2 Common multiples of 6, 15, 30 are 30, 60

5. (a)
$24 \div 1 = 24$
$24 \div 2 = 12$
$24 \div 3 = 8$
$24 \div 4 = 6$
$24 \div 6 = 4$
$24 \div 8 = 3$
$24 \div 12 = 2$
$24 \div 24 = 1$
$\therefore$ factors of 24 are = 1, 2, 3, 4, 6, 8, 12, 24

(b)
$36 \div 1 = 36$
$36 \div 2 = 18$
$36 \div 3 = 12$
$36 \div 4 = 9$
$36 \div 6 = 6$
$36 \div 9 = 4$
$36 \div 18 = 2$
$36 \div 36 = 1$
$\therefore$ factors of 36 are = 1, 2, 3, 4, 6, 9, 18, 36

(c) $108 \div 1 = 108$
$108 \div 2 = 54$
$108 \div 3 = 36$
$108 \div 4 = 27$
$108 \div 6 = 18$
$108 \div 9 = 12$
$108 \div 12 = 9$
$108 \div 18 = 6$
$108 \div 27 = 4$
$108 \div 54 = 2$
$108 \div 36 = 3$
$108 \div 108 = 1$
$\therefore$ factors of 108 are = 1, 2, 3, 4, 6, 9, 12, 18, 27, 54, 108, 36

(d) $25 \div 1 = 25$
$25 \div 5 = 5$
$25 \div 25 = 1$
$\therefore$ factors of 5 are = 1, 5, 25

(e) $15 \div 1 = 15$
$15 \div 3 = 5$
$15 \div 5 = 3$
$15 \div 15 = 1$
$\therefore$ factors of 15 are = 1, 3, 5, 15

(f) $28 \div 1 = 28$
$28 \div 2 = 14$
$28 \div 4 = 7$
$28 \div 7 = 4$
$28 \div 14 = 2$
$28 \div 28 = 1$
$\therefore$ factors of 28 are = 1, 2, 4, 7, 14, 28

(g) $35 \div 1 = 35$
$35 \div 5 = 7$
$35 \div 7 = 5$
$35 \div 35 = 1$
$\therefore$ factors of 35 are = 1, 5, 7, 35

(h) $19 \div 1 = 19$
$19 \div 19 = 1$
$\therefore$ factors of 19 are = 1, 19

(i) $52 \div 1 = 52$
$52 \div 2 = 26$
$52 \div 4 = 13$
$52 \div 13 = 4$
$52 \div 26 = 2$
$52 \div 52 = 1$
$\therefore$ factors of 52 are = 1, 2, 4, 13, 26, 52

(j) $45 \div 1 = 45$
$45 \div 3 = 15$
$45 \div 5 = 9$
$45 \div 9 = 5$
$45 \div 15 = 3$
$45 \div 45 = 1$
$\therefore$ factors of 45 are = 1, 3, 5, 9, 15, 45

(k) $30 \div 1 = 30$
$30 \div 2 = 15$
$30 \div 3 = 10$
$30 \div 5 = 6$
$30 \div 6 = 5$
$30 \div 10 = 3$
$30 \div 15 = 2$
$30 \div 30 = 1$
$\therefore$ factors of 30 are = 1, 2, 3, 5, 6, 10, 15, 30

(*l*) $23 \div 1 = 23$
$23 \div 23 = 1$
$\therefore$ factors of 23 are = 1, 23

(m) $27 \div 1 = 27$
$27 \div 3 = 9$
$27 \div 9 = 3$
$27 \div 27 = 1$
$\therefore$ factors of 27 are = 1, 3, 9, 27

(n) $72 \div 1 = 72$
$72 \div 2 = 36$
$72 \div 3 = 24$
$72 \div 4 = 18$
$72 \div 6 = 12$
$72 \div 8 = 9$
$72 \div 9 = 8$
$72 \div 12 = 6$
$72 \div 18 = 4$
$72 \div 36 = 2$
$72 \div 72 = 1$
$\therefore$ factors of 72 are = 1, 2, 3, 4, 6, 8, 9, 12, 18, 36, 72

(o) $65 \div 1 = 65$
$65 \div 5 = 13$
$65 \div 13 = 65$
$65 \div 65 = 1$
$\therefore$ factors of 65 are = 1, 5, 13, 65

(p) $31 \div 1 = 31$
$31 \div 31 = 1$
$\therefore$ factors of 31 are = 1, 31

(q) $42 \div 1 = 42$
$42 \div 2 = 21$
$42 \div 3 = 14$
$42 \div 6 = 7$
$42 \div 7 = 6$
$42 \div 14 = 3$
$42 \div 21 = 2$
$42 \div 42 = 1$
$\therefore$ factors of 42 are = 1, 2, 3, 6, 7, 14, 21, 42

(r) $49 \div 1 = 49$
$49 \div 7 = 7$
$49 \div 49 = 1$
$\therefore$ factors of 49 are = 1, 7, 49

(s) $60 \div 1 = 60$
$60 \div 2 = 30$
$60 \div 3 = 20$
$60 \div 4 = 15$
$60 \div 5 = 12$
$60 \div 10 = 6$
$60 \div 6 = 10$
$60 \div 12 = 5$
$60 \div 15 = 60$
$60 \div 20 = 3$
$60 \div 30 = 2$
$60 \div 60 = 1$
$\therefore$ factors of 60 are = 1, 2, 3, 4, 5, 6, 12, 15, 20, 30, 60, 10

(t) $10 \div 1 = 10$
$10 \div 2 = 5$
$10 \div 5 = 2$
$10 \div 10 = 1$
$\therefore$ factors of 10 are = 1, 2, 5, 10

6. (a) Factors of 14 = 1, 2, 7, 14
Factors of 30 = 1, 2, 3, 5, 6, 10, 15, 30
Common factors of 14 and 30 are 1, 2

(b) Factors of 27 = 1, 3, 9, 27
Factors of 42 = 1, 2, 3, 4, 6, 7, 14, 21, 42
Common factors of 27, 42 are = 1, 3

(c) Factors of 44 = 1, 2, 4, 11, 22, 44
Factors of 66 = 1, 2, 3, 4, 6, 11, 33, 22, 66
Common factors of 44, 66 are = 1, 2, 11, 22

(d) Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36
Factors of 45 = 1, 3, 9, 5, 15, 45
Common factors of 36, 45, 1, 3, 9

Exercise- 6.2

1. Odd numbers between 1 and 30 are 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29
Even numbers between 1 and 30 are 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28

2. Prime numbers between 20 and 40 are 23, 29, 31, 37

3. Composite numbers between 23 and 46 are 24, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 38, 39, 40, 42, 44

4. Twin prime numers upto 20 are (5, 7), (11, 13), (17, 19)

5. (a) Factors of 21 = 1, 3, 7, 21
Factors of 27 = 1, 3, 9, 27
1, 3 are common factors
Therefore 21 and 27 are not co-prime

(b) Factors of 25 = 1, 5, 25
Factors of 12 = 1, 2, 3, 6, 12
Common factors = 1
∴ 25 and 12 are co-prime

(c) Factors of 18 = 1, 2, 3, 6, 9, 18
Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24
Common factors = 1, 2, 3, 6
∴ 18 and 24 are not co-prime

(d) Factors of 14 = 1, 2, 7, 14
Factors of 18 = 1, 2, 3, 6, 9, 18
Common factors = 1, 2
∴ 14 and 18 are not co-prime

(e) Factors of 8 = 1, 2, 4, 8
Factors of 15 = 1, 3, 5, 15
Common factors = 1
∴ 8 and 15 are co-prime

(f) Factors of 13 = 1, 13
Factors of 17 = 1, 17
Common factors = 1
∴ 13 and 17 are co-prime

6. (a) c (b) p (c) c (d) p
(e) p (f) c (g) p

Exercise- 6.3

1. (a) Divisible by 2

$16\underline{8}$, $6846\underline{0}$

(b) Divisible by 8

$\underline{96}$, $89\underline{304}$, $9331\underline{016}$

$\because$ last three digit divisible by 8

(c) 918

$9+1+8=18$ divisible by 3

$7386=7+3+8+6=24$ divisible by 3

$293761=2+9+3+7+6+1=28$ not divisible by 3

$313012=3+1+3+0+1+2=10$ not divisible by 3

(d) 111

Sum of odd place digits $=1+1=2$

Sum of even place digits $=1$

Difference $=2-1=1$

Not divisible by 11

6731

Sum of digits at odd places $=1+7=8$

Sum of digits at even places $=3+6=9$

Difference $=9-8=1$

Not divisible by 11

2354

Sum of digits at odd places $=4+3=7$

Sum of digits at even places $=5+2=7$

Difference $=7-7=0$

$\therefore$ 2354 divisible by 11

7180910

Sum of digits at odd places $=0+9+8+7=24$

Sum of digits at even places $=1+0+1=2$

Difference $=24-2=22$

$\therefore$ 7180910 divisible by 11

(e) $64\underline{0}$ divisible by 5

$37\underline{9}$ not divisible by 5

$46854\underline{5}$ divisible by 5

$37986\underline{3}$ not divisible by 5

(f) $610\underline{2}$

6102 divisible by 2

$6+1+0+2=9$

6102 divisible by 3

$\therefore$ 6102 divisible by 6

15
15 not divisible by 2
$\therefore$ 15 not divisible by 6
308
308 is divisible by 2
$3+0+8=11$
308 not divisible by 3
$\therefore$ 308 is not divisible by 6
896723
896723 not divisible by 2
$\therefore$ 896723 not divisible by 6

(g) 6364 not divisible by 10
97860 divisible by 10
5280 divisible by 10
795860 divisible by 10

(h) 1654
Not divisible by 4 as last two digits not divisible by 4
69388
69388 divisible by 4 as last two digit divisible by 4
33608
33608 is divisible by 4 as last two digits divisible by 4
40
40 is divisible by 4

2. (a) False (b) True (c) True (d) True
(e) False

3. (a) 8926 is divisible 2 as last digit is even
8926 is not divisible by 4 as last 2 digits not divisible by 4
(b) 10552 is divisible by 2 as last digit is even
10552 is divisible by 4 as last two digits is divisible by 4
(c) 368700 is divisible by 2 as last digit is even
368700 is divisible by 4 as last two digits divisible by 4
(d) 702908 is divisible by 2 as last digit is even
702908 is divisible by 4 as last two digits divisible by 4

4. (a) 2832
$2+8+3+2=15$
2832 is divisible by 3 as there sum of digits divisible by 3
(b) 74048
$7+4+4+8=23$
74048 is not disisible by 3 as sum of digits not divisible by 3
(c) 453105
$4+5+3+0+5=18$
453105 is divisible by 3 as sum of digits divisible by 3

5. (a) 8600 is divisible by both 5 and 10
(b) 54805 is divisible by 5 but not by 10
(c) 273915 is divisible by 5 but not by 10
(d) 683090 is divisible by both 10 and 5

6. (a) $923\underline{4}$ divisible by 2 as even number at unit place
$9+2+3+4=18$ divisible by 3
$\therefore$ 9234 divisible by 3
$\therefore$ 9234 divisible by 6 because divisible by both 2 and 3
(b) $6720\underline{0}$ is divisible by 2 as even number at unit place
$6+7+2+0+0=15$ is divisible by 3
$\therefore$ 67200 is divisible by 3
$\therefore$ 67200 divisible by 6 as it is divisible by both 2 and 3
(c) $14384\underline{2}$ is divisible as even number at unit place
$1+4+3+8+4+2=22$ not divisible by 3
$\therefore$ 143842 is not divisible by 3
$\therefore$ 143842 not divisible by 6
(d) $71865\underline{0}$ is divisible by 2 as even number at unit place
$7+1+8+6+5+0=27$ is divisible by 3
$\therefore$ 718650 divisible by 3 also
$\therefore$ 71860 divisible by 6

7. (a) 5310
$5+3+1+0=9$ is divisible by 9
$\therefore$ 5310 divisible by 9
(b) 24720
$2+4+7+2+0=15$ is not divisible by 9
$\therefore$ 24720 is not divisible by 9
(c) 587430
$5+8+7+4+3+0=27$ is divisible by 9
$\therefore$ 587430 is divisible by 9
(d) 863121
$8+6+3+1+2+1=21$ is not divisible by 9
$\therefore$ 863121 is not divisible by 9

8. (a) 9246
$9+2+4+6=21$ is divisible by 3 but not by 9
$\therefore$ 9246 is divisible by 3 but not divisible by 9
(b) 75600
$7+5+6+0+0=18$ it divisible by 9 and 3
$\therefore$ 75600 is divisible by 9 and 3 both
(c) 259413
$2+5+9+4+1+3=24$ is divisible by 3 but not by 9
$\therefore$ 259413 is divisible by 3 but not divisible by 9
(d) 536220
$5+3+6+2+2+0=18$ is divisible by both 3 and 9
$\therefore$ 536220 is divisible by both 9 and 3

Exercise- 6.4

1. (a) ✓ (b) ✗ (c) ✓ (d) ✓
(e) ✓ (f) ✗

2. (a)

2	36
2	18
3	9
3	3
	1

$\therefore\ 36 = 2 \times 2 \times 2 \times 3$

(b)

2	64
2	32
2	16
2	8
2	4
2	2
	1

$\therefore\ 64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$

(c)

3	75
5	25
5	5
	1

$\therefore\ 75 = 3 \times 5 \times 5$

(d)

7	91
13	13
	1

$\therefore\ 91 = 7 \times 13$

(e)

2	12
2	6
3	3
	1

$\therefore\ 12 = 2 \times 2 \times 3$

(f)

5	35
5	7
	1

$\therefore\ 35 = 5 \times 7$

(g)

2	76
2	38
19	19
	1

$\therefore\ 76 = 2 \times 2 \times 19$

(h)

5	65
13	13
	1

$\therefore\ 65 = 5 \times 13$

(i)

2	88
2	44
2	22
11	11
	1

$\therefore\ 88 = 2 \times 2 \times 2 \times 11$

(j)

5	95
19	19
	1

$\therefore\ 95 = 5 \times 19$

(k)

2	48
2	24
2	12
2	6
3	3
	1

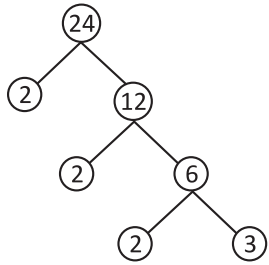
$\therefore\ 48 = 2 \times 2 \times 2 \times 2 \times 3$

(*l*)

2	26
13	13
	1

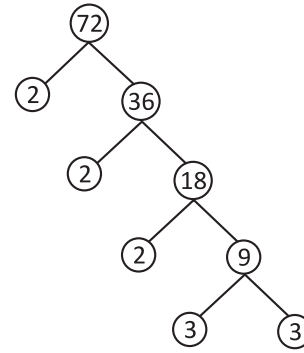
$\therefore\ 26 = 2 \times 13$

3. (a)



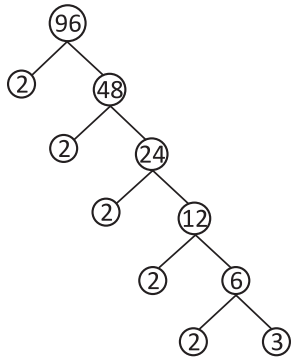
$\therefore\ 24 = 2 \times 2 \times 2 \times 3$

(b)



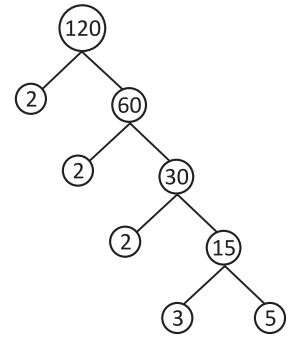
$\therefore\ 72 = 2 \times 2 \times 2 \times 3 \times 3$

(c)



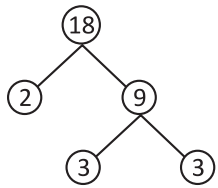
$\therefore\ 96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

(d)



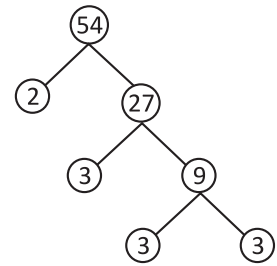
$\therefore\ 120 = 2 \times 2 \times 2 \times 3 \times 5$

(e)



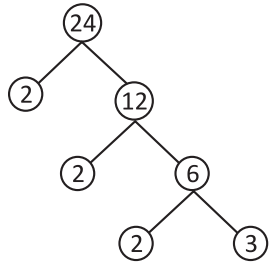
$\therefore\ 18 = 2 \times 3 \times 3$

(f)



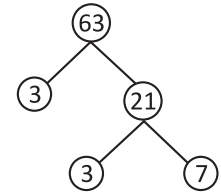
$\therefore\ 54 = 2 \times 3 \times 3 \times 3$

(g)



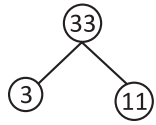
$\therefore\ 24 = 2 \times 2 \times 2 \times 3$

(h)



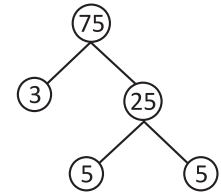
$\therefore\ 63 = 3 \times 3 \times 7$

(i)



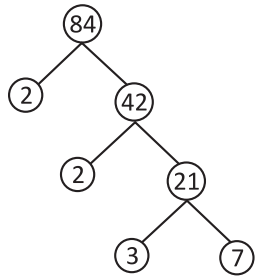
$\therefore\ 33 = 3 \times 11$

(j)



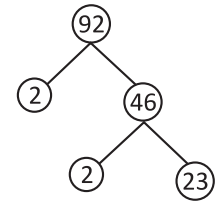
$\therefore\ 75 = 3 \times 5 \times 5$

(k)



$\therefore\ 84 = 2 \times 2 \times 3 \times 7$

(*l*)



$\therefore\ 92 = 2 \times 2 \times 23$

Exercise- 6.5

1. (a)

2	54
3	27
3	9
3	3
	1

2	108
2	54
3	27
3	9
3	3
	1

$\therefore$ Prime factors of

$$54 = 2 \times 3 \times 3 \times 3$$

$$108 = 2 \times 2 \times 3 \times 3 \times 3$$

$\therefore$ HCF of 54, 108 $= 2 \times 3 \times 3 \times 3 = 54$

(b)

2	216
2	108
2	54
3	27
3	9
3	3
	1

2	252
2	126
3	63
3	21
7	7
	1

$\therefore$ Prime factors of

$$216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

$$252 = 2 \times 2 \times 3 \times 3 \times 7$$

$\therefore$ HCF of 216, 252 $= 2 \times 2 \times 3 \times 3 = 36$

(c)

2	430
5	215
43	43
	1

2	280
2	140
2	70
5	35
7	7
	1

2	640
2	320
2	160
2	80
2	40
2	20
2	10
5	5
	1

$\therefore$ Prime factors of

$$430 = 2 \times 5 \times 43$$

$$280 = 2 \times 2 \times 2 \times 5 \times 7$$

$$640 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5$$

$\therefore$ HCF of 430, 280, 840 is $2 \times 5 = 10$

(d)

3	3261
	1087

3	3093
	1031

3	5577
	1859

$\therefore$ Prime factors of

$$3261 = 3 \times 1087$$

$$3093 = 3 \times 1031$$

$$5577 = 3 \times 1859$$

$\therefore$ HCF of 3261, 3093, 5577 is 3

(e)

2	762
3	381
	127

2	1270
5	635
	127

∴ Prime factors of

$$762 = 2 \times 3 \times 127$$

$$1270 = 2 \times 5 \times 127$$

∴ HCF of 762 and 1270 is $2 \times 127 = 254$

(f)

2	160
2	80
2	40
2	20
2	10
5	5
	1

2	182
7	91
13	13
	1

2	96
2	48
2	24
2	12
2	6
3	3
	1

∴ Prime factors of

$$160 = 2 \times 2 \times 2 \times 2 \times 2 \times 5$$

$$182 = 2 \times 7 \times 13$$

$$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

∴ HCF of 160, 182, 96 is 2

2. (a)

```
52 ) 980 ( 4
   – 208
     8 ) 52 ( 6
       – 48
         4 ) 8 ( 2
           – 8
             0
```

∴ HCF of 216, 52 is 4

(b)

```
520 ) 980 ( 1
    – 520
      120 ) 520 ( 4
          – 480
            40 ) 120 ( 3
               – 120
                 0
```

∴ HCF of 640 and 520 is 40

(c)

```
435 ) 630 ( 1
    – 435
      195 ) 435 ( 2
          – 390
            45 ) 95 ( 2
               – 90
                5 ) 45 ( 9
                  – 45
                    0
```

∴ HCF of 435 and 630 is 5

(d)

```
310 ) 412 ( 1
    – 310
      102 ) 310 ( 3
          – 306
            4 ) 102 ( 25
              – 8
               22
               20
                2 ) 4 ( 2
                  4
                  0
```

∴ HCF of 310 and 412 is 2

(e) 42) 330 (4
− 294
36) 42 (1
− 36
6) 36 (6
− 36
0

∴ HCF of 42 and 330 is 6

(f) 154) 770 (4
− 770
0

∴ HCF of 154 and 770 is 154

∴ 154) 924 (6
− 924
0

∴ HCF of 154, 770 and 924 is 154

3. (a) (ii) (b) (iii) (c) (iii) (d) (i)
(e) (ii)

4. (a)

3	3, 9
	1, 3

∴ HCF of 3, 9 = 3

(b)

3	15, 45
5	5, 15
	1, 3

∴ HCF of 15, 45 = 3 × 5 = 15

(c)

2	62, 124
31	31, 62
	1, 2

∴ HCF of 62, 124 = 2 × 31 = 62

(d)

3	9, 12, 6
	3, 4, 2

∴ HCF = 3

(e)

2	44, 22
11	22, 11
	2, 11

∴ HCF of 44 and 22 = 22

(f)

2	80, 60
2	40, 30
5	20, 15
	4, 3

∴ HCF of 80, 60 = 2 × 2 × 5 = 20

(g)

7	35, 49
	5, 7

∴ HCF of 35 and 49 = 7

(h)

1	4, 6, 9
	4, 6, 9

∴ HCF of 4, 6, 9 = 1

Exercise- 6.6

1. (a)

3	15
5	5
	1

2	30
3	15
5	5
	1

Prime factors of

15 = 3 × 5

30 = 2 × 3 × 5

LCM of 15 and 30 = 3 × 5 × 2 = 30

(b)

2	42
3	21
7	7
	1

2	84
2	42
3	21
7	7
	1

$\therefore$ Prime factors of

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

$$84 = 2 \times 2 \times 3 \times 7$$

LCM of 42 and 84 $= 2 \times 3 \times 7 \times 2 = 84$

(c)

3	45
3	15
5	5
	1

5	65
13	13
	1

$\therefore$ Prime factors of

$$45 = 3 \times 3 \times 5$$

$$84 = 5 \times 13$$

LCM of 45 and 65 $= 3 \times 3 \times 5 \times 13 = 9 \times 65 = 585$

(d)

2	64
2	32
2	16
2	8
2	4
2	2
	1

2	96
2	48
2	24
2	12
2	6
3	3
	1

2	112
2	56
2	28
2	14
7	7
	1

$\therefore$ Prime factors of

$$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

$$112 = 2 \times 2 \times 2 \times 2 \times 7$$

LCM of 64, 96 and 112 is $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 7 = 64 \times 21 = 1344$

(e)

5	125
5	25
5	5
	1

2	180
2	90
3	45
3	15
5	5
	1

2	210
3	105
5	35
7	7
	1

$\therefore$ Prime factors of

$$125 = 5 \times 5 \times 5$$

$$180 = 2 \times 2 \times 3 \times 3 \times 5$$

$$210 = 2 \times 3 \times 5 \times 7$$

LCM of 125, 180 and 210 is $5 \times 5 \times 5 \times 3 \times 3 \times 2 \times 2 \times 7 = 125 \times 9 \times 28$
$= 31500$

(f)

2	198
3	99
3	33
11	11
	1

2	216
2	108
2	54
3	27
3	9
3	3
	1

2	360
2	180
2	90
3	45
3	15
5	5
	1

$\therefore$ Prime factors of

$$198 = 2 \times 3 \times 3 \times 11$$

$$216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

$$360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

LCM of 198, 216, 360 is $2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 11 = 11880$

2. (a)

2	22, 33, 44
2	11, 33, 22
11	11, 33, 11
3	1, 3, 1
	1, 1, 1

$\therefore$ LCM of 22, 33 and 44 is $2 \times 2 \times 11 \times 3 = 12 \times 11 = 132$

(b)

2	16, 24, 32
2	8, 12, 16
2	4, 6, 8
2	2, 3, 4
2	1, 3, 2
3	1, 3, 1
	1, 1, 1

$\therefore$ LCM of 16, 24 and 32 is $2 \times 2 \times 2 \times 2 \times 2 \times 3 = 96$

(c)

3	35, 51, 85
5	35, 17, 85
7	7, 17, 17
17	1, 17, 17
	1, 1, 1

$\therefore$ LCM of 35, 51 and 85 is $3 \times 5 \times 7 \times 17 = 1785$

(d)

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

$\therefore$ LCM of 12, 24 and 36 is $2 \times 2 \times 2 \times 3 \times 3 = 8 \times 9 = 72$

(e)

2	16, 91, 90, 455
2	8, 91, 45, 455
2	4, 91, 45, 455
2	2, 91, 45, 455
7	1, 91, 45, 455
3	1, 13, 45, 65
5	1, 13, 15, 65
3	1, 13, 3, 13
13	1, 13, 1, 13
	1, 1, 1, 1

$\therefore$ LCM of 16, 91, 90 and 455 is $2 \times 2 \times 2 \times 2 \times 7 \times 3 \times 5 \times 3 \times 13 = 65520$

(f)

2	44, 126, 198
2	22, 63, 99
3	11, 63, 99
3	11, 21, 33
7	11, 7, 11
11	11, 1, 11
	1, 1, 1

$\therefore$ LCM of 44, 126 and 198 is $2 \times 2 \times 3 \times 3 \times 7 \times 11 = 2772$

Exercise- 6.7

1. HCF of 28, 48

```
28 ) 48 ( 1
   – 28
     20 ) 28 ( 1
        – 20
           8 ) 20 ( 2
             – 16
                4 ) 8 ( 2
                  – 8
                    0
```

$\therefore$ HCF $= 4$

$\therefore$ 4 is greatest number which exactly divide 28 and 48

2. LCM of 16, 30, 45

2	16, 30, 45
2	8, 15, 45
2	4, 15, 45
2	2, 15, 45
3	1, 15, 45
3	1, 5, 15
5	1, 5, 5
	1, 1, 1

$\therefore$ $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 16 \times 9 \times 5 = 144 \times 5 = 720$

$\therefore$ 720 is smallest number exactly divisible by 16, 30, 45

3. HCF of 396, $(619 - 7)$

396, 612

```
396 ) 612 ( 1
    – 396
      216 ) 396 ( 2
          – 216
            180 ) 216 ( 1
                – 180
                  36 ) 180 ( 5
                     – 180
                       0
```

$\therefore$ 36 is greatest number that divides 396 exactly but divides 619 to give remainder 7

4. LCM of 75, 135, 189, 252

3	75, 135, 189, 252
3	25, 45, 63, 84
3	25, 15, 21, 28
5	25, 5, 7, 28
7	5, 1, 7, 28
2	5, 1, 1, 4
2	5, 1, 1, 2
5	5, 1, 1, 1
	1, 1, 1, 1

$\therefore$ LCM $= 3\times3\times3\times5\times7\times2\times2\times5 = 27\times35\times4\times5 = 18900$

$\therefore$ $18900 - 7 = 18893$

18893 is smallest number when increased by seven is exactly divisible by 75, 135, 189, 252

5. LCM of 168, 252, 336, 378

2	168, 252, 336, 378
2	84, 126, 168, 189
2	42, 63, 84, 189
2	21, 63, 42, 189
3	21, 63, 21, 189
3	7, 21, 7, 63
3	7, 7, 7, 21
7	7, 7, 7, 7
	1, 1, 1, 1

$\therefore$ LCM $= 2\times2\times2\times2\times3\times3\times3\times7 = 16\times27\times7 = 3024$

$\therefore$ 3024 kg is the least amount of weight which can be put into exact number of parcels

6. HCF of 120, 180, 240

```
120 ) 180 ( 1
    – 120
      (60) 120 ( 2
           – 120
             0
```

$\therefore$ HCF of 120, 180 is 60

$\therefore$

```
60 ) 240 ( 4
   – 240
     0
```

∴ 60 is HCF of 120, 180, 240

∴ 60 *l* is the capacity of greatest container which can be used to measure this oil exactly

7. LCM of 30, 70, 120, 140

2	30, 70, 120, 140
2	15, 35, 60, 70
2	15, 35, 30, 35
3	15, 35, 15, 35
5	5, 35, 5, 35
7	1, 7, 1, 7
	1, 1, 1, 1

∴ LCM $= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 8 \times 15 \times 7 = 840$

∴ Four bells will toll together again after 840 seconds

8. HCF of 420, 540

```
420 ) 540 ( 1
    – 420
      120 ) 420 ( 3
          – 360
            60 ) 120 ( 2
               – 120
                  0
```

∴ 60 is HCF

∴ 60 is the maximum number of students can be kept in each group

9. LCM of 2, 5, 8, 10

2	2, 5, 8, 10
2	1, 5, 4, 5
2	1, 5, 2, 5
5	1, 5, 1, 5
	1, 1, 1, 1

∴ LCM $= 2 \times 2 \times 2 \times 5 = 40$

∴ After 40 seconds four bells ring together again

10. HCF of 72, 96, 136

```
72 ) 96 ( 1
   – 72
     24 ) 72 ( 3
        – 72
          0
```

∴ HCF of 72, 96 is 24

```
24 ) 136 ( 5
   – 120
     16 ) 24 ( 1
        – 16
          8) 16 ( 2
           – 16
             0
```

∴ 8 is the greatest number which divides 72, 96 and 136 without leaving remainder

11.

2	22, 54, 108, 135, 198
2	11, 27, 54, 135, 99
3	11, 27, 27, 135, 99
3	11, 9, 9, 45, 33
3	11, 3, 3, 15, 11
5	11, 1, 1, 5, 11
11	11, 1, 1, 1, 11
	1, 1, 1, 1, 1

∴ LCM $= 2 \times 2 \times 3 \times 3 \times 3 \times 5 \times 11 = 4 \times 27 \times 55 = 5940$

12. HCF of 208 – 18; 358 – 18

190, 340

```
190 ) 340 ( 1
    – 190
      150 ) 190 ( 3
          – 150
            40 ) 150 ( 3
               – 120
                 30 ) 40 ( 1
                    – 30
                      10) 30 ( 3
                         – 30
                           0
```

∴ 10 is the greatest number which divide 208, 358 leaving remainder 18 in each case

13. LCM of 20, 30, 40

2	20, 30, 40
2	10, 15, 20
2	5, 15, 10
3	5, 15, 5
5	5, 5, 5
	1, 1, 1

∴ LCM $= 2 \times 2 \times 2 \times 3 \times 5 = 8 \times 15 = 120$ minutes

$\therefore$ 3 lions roars together after 120 minutes (2 hours) they roar again at 11 am + 2 hour = 1:00 pm

14. HCF of 3453 – 2, 9370 – 3

3451, 9367

```
3451 ) 9367 ( 2
     – 6902
       2465 ) 3451 ( 1
            – 2465
              986 ) 2465 ( 2
                  – 1972
                    493 ) 986 ( 2
                        – 986
                          0
```

$\therefore$ 493 is largest number which divides 3453 and 9370 leaving 2 and 3 as remainder

15.

2	6, 8, 12, 15, 20
2	3, 4, 6, 15, 10
2	3, 2, 3, 15, 5
3	3, 1, 3, 15, 5
5	1, 1, 1, 5, 5
	1, 1, 1, 1, 1

$\therefore$ LCM $= 2 \times 2 \times 2 \times 3 \times 5 = 120$

$\therefore$ $120 + 5 = 125$ is least number which when divided by 6, 8, 12, 15, 20 leaves remainder 5

16. HCF of 7 m, 3 m 85 cm, 12 m 95 cm

or 700 cm, 385 cm, 1295 cm

```
385 ) 700 ( 1
    – 385
      315 ) 385 ( 1
          – 315
            70 ) 315 ( 3
                – 280
                  35 ) 70 ( 1
                     – 70
                       0
```

HCF of 700 cm, 385 cm is 35 cm

Now

```
35 ) 1295 ( 37
   – 105
     245
   – 245
       0
```

$\therefore$ 35 cm is greatest possible length can be used to measure exactly 7 m, 3 m 85 cm, 12 m 95 cm

17. LCM of 6, 8, 12, 15, 20

2	6, 8, 12, 15, 20
2	3, 4, 6, 15, 10
2	3, 2, 3, 15, 5
3	3, 1, 3, 15, 5
5	1, 1, 1, 5, 5
	1, 1, 1, 1, 1

$\therefore$ LCM $= 2 \times 2 \times 2 \times 3 \times 5 = 8 \times 15 = 120$

$\therefore$ $120 + 5 = 125$ is smallest numbe which when divided by 6, 8, 12, 15 and 20 leaves the same reminder 5

18. HCF of 1653, 2261, 2527

$\therefore$

```
1653 ) 2261 ( 1
     – 1653
       608 ) 1653 ( 2
           – 1216
             437 ) 608 ( 1
                 – 437
                   171 ) 437 ( 2
                       – 342
                         95 ) 171 ( 1
                            – 95
                              76 ) 95 ( 1
                                 – 76
                                  19 ) 76 ( 4
                                     – 76
                                       0
```

$\therefore$ HCF of 1653, 2261 is 19

$\therefore$

```
19 ) 2527 ( 133
   – 19
     62
   – 57
     57
   – 57
      0
```

$\therefore$ 19 kg is biggest measure of milk must be there to measure all the quantities exactly

19. LCM of 60, 90, 80

2	60, 90, 80
2	30, 45, 40
2	15, 45, 20
2	15, 45, 10
5	15, 45, 5
3	3, 9, 1
3	1, 3, 1
	1, 1, 1

$\therefore$ LCM $= 2 \times 2 \times 2 \times 5 \times 3 \times 3 = 40 \times 9 = 360$

```
360 ) 10000 ( 27
      – 720
        2700
      – 2520
         180
```

$\therefore$ $360 \times 27 + 360 = 9720 + 360 = 10080$ is smallest five digit number divisible by 60, 90 and 80

20. HCF of 42, 49, 63

```
42 ) 49 ( 1
   – 42
     7 ) 42 ( 6
       – 42
         0
```

$\therefore$ HCF of 42, 49 $= 7$

$\therefore$

```
7 ) 63 ( 9
    63
     0
```

$\therefore$ HCF of 42, 49, 63 $= 7$

$\therefore$ 7 m is greatest possible length of plank

21. LCM of 10, 15, 16

2	10, 15, 16
2	5, 15, 8
2	5, 15, 4
2	5, 15, 2
3	5, 15, 1
5	5, 5, 1
	1, 1, 1

$\therefore$ LCM $= 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 16 \times 15 = 240$

Smallest number of students is 240 which can be arranged exactly in the rows 10, 15 or 16 students each.

22. HCF of 2 m 5 cm, 3 m 69 cm and 8 m 61 cm or HCF of 205 cm, 369 cm and 861 cm

$\therefore$

```
205 ) 369 ( 1
    – 205
      164 ) 205 ( 1
          – 164
            41 ) 164 ( 4
                 – 164
                    0
```

$\therefore$ HCF of 205, 369 $= 41$

$\therefore$

```
41 ) 861 ( 21
   – 82
     41
   – 41
      0
```

$\therefore$ 41 cm is greatest possible length can be used to measure 2 m 5 cm, 3 m 69 cm and 8 m 61 cm exactly

23. LCM of 72, 108, 144

2	72, 108, 144
2	36, 54, 72
2	18, 27, 36
2	9, 27, 18
3	9, 27, 9
3	3, 9, 3
3	1, 3, 1
	1, 1, 1

$\therefore$ LCM $= 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 432$

$\therefore$ 432 is smallest number which is exactly divisible by 72, 108, 144

24.

```
840 ) 2296 ( 2
    – 1680
      616 ) 840 ( 1
          – 616
            224 ) 616 ( 1
                – 448
                  168 ) 224 ( 1
                      – 168
                        56 ) 168 ( 3
                           – 168
                               0
```

$\therefore$ 56 is greatest number that will divide 840 and 2296 without leaving remainder

Exercise- 6.8

1. LCM $\times$ HCF $= \text{I}^{st}$ number $\times \text{II}^{nd}$ number

$2520 \times 126 = 504 \times \text{II}^{nd}$ number

$\dfrac{2520 \times 126}{504} = \text{II}^{nd}$ number

$630 =$ other number

2. LCM × HCF = Product of numbers

$60 \times HCF = 360$

$HCF = \frac{360}{60}$

$HCF = 6$

3. LCM × HCF = I^{st} no. × IInd no.

$36 \times 216 = 54 \times II^{nd}$ number

$\frac{36 \times 216}{54} = II^{nd}$ number

$144 =$ other number

4. LCM × HCF = Product of numbers

$60 \times HCF = 4800$

$HCF = \frac{4800}{60}$

$HCF = 80$

5. LCM × HCF = I^{st} no. × IInd no.

$133 \times 1596 = 144 \times II^{nd}$ number

$\frac{133 \times 1596}{144} =$ other number

$1862 =$ other number

MCQs

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

Test Exercise

1. (a) 56 is a **multiple** of 7

(b) 56 is a **factor** of 25

(c) 9 is a **factor** of 63

(d) 88 is a **multiple** of 8

2. (a)

```
4 ) 24 ( 6
   −24
     0
```

Remainder is 0

∴ 4 is factor of 24

(b)

```
10 ) 100 ( 10
    −10
      0
```

Remainder is 0

∴ 10 is factor of 100

3. (a) $18 \div 1 = 18$

$18 \div 2 = 9$

$18 \div 3 = 6$

$18 \div 9 = 2$

$18 \div 9 = 1$

∴ factors of 18 are 1, 2, 3, 9, 18

(b) $35 \div 1 = 35$

$35 \div 5 = 7$

$35 \div 7 = 5$

$35 \div 35 = 1$

∴ factors of 35 are 1, 5, 7, 35

(c) $49 \div 1 = 49$

$49 \div 7 = 49$

$49 \div 49 = 1$

∴ factors of 49 are 1, 7, 49

(d) $80 \div 1 = 80$

$80 \div 2 = 40$

$80 \div 4 = 20$

$80 \div 8 = 10$

$80 \div 10 = 8$

$80 \div 16 = 5$

$80 \div 20 = 4$

$80 \div 40 = 2$

$80 \div 80 = 1$

∴ factors of 80 are 1, 2, 4, 8, 10, 16, 20, 40, 80

4. (a)

5	25
5	5
	1

$\therefore\ 25 = 5 \times 5$

(b)

2	42
3	21
7	7
	1

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

(c)

2	120
2	60
2	30
3	15
5	5
	1

$\therefore\ 120 = 2 \times 2 \times 2 \times 3 \times 5$

(d)

2	54
3	27
3	9
3	3
	1

$\therefore\ 54 = 2 \times 3 \times 3 \times 3$

5. (a) Factors of

$18 = 1, 2, 3, 6, 9, 18$

$24 = 1, 2, 3, 4, 6, 8, 12, 24$

Common factors $= 1, 2, 3, 6$

$\therefore$ HCF $= 6$

(b) Factors of

$10 = 1, 2, 5, 10$

$30 = 1, 2, 3, 5, 6, 10, 15, 30$

Common factors $= 1, 2, 5, 10$

$\therefore$ HCF $= 10$

(c) Factors of

$27 = 1, 3, 9, 27$

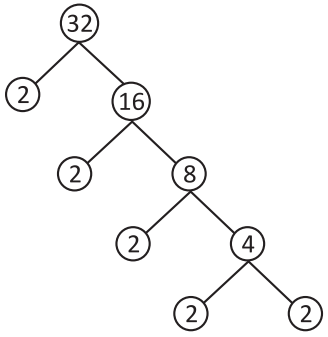
$36 = 1, 2, 3, 4, 6, 9, 12, 18, 36$

$45 = 1, 3, 5, 9, 15, 45$

Common factors $= 1, 3, 9$

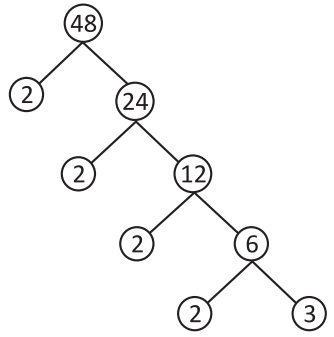
$\therefore$ HCF $= 9$

6. (a)



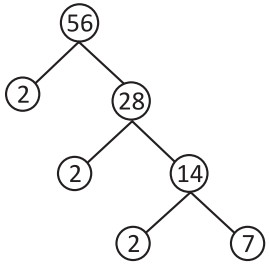
Prime factors of $32 = 2 \times 2 \times 2 \times 2 \times 2$

(b)



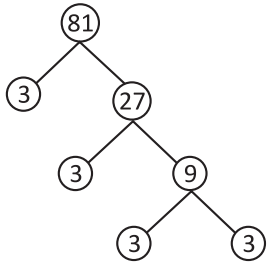
Prime factors of $48 = 2 \times 2 \times 2 \times 2 \times 3$

(c)



Prime factors of $56 = 2 \times 2 \times 2 \times 7$

(d)



Prime factors of $81 = 3 \times 3 \times 3 \times 3$

7. (a) Multiples of

6 = 6, 12, 18, 24, 30, 36, ...

12 = 12, 24, 36, 48, ...

LCM = 12

(b) Multiples of

8 = 8, 16, 24, 32, 40, 48, 56, ...

14 = 14, 28, 42, 56, 70, 84, ...

LCM of 8, 14 = 56

(c) Multiples of

4 = 4, 8, 12, 16, 20, 24, 28, ...

6 = 6, 12, 18, 24, 30, 36, ...

8 = 8, 16, 24, 32, 40, ...

LCM of 4, 6 and 8 = 24

8. Composite numbers from 1 to 20 are 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20

9. LCM of 21, 28

2	21, 28
2	21, 14
3	21, 7
7	7, 7
	1, 1

LCM of 21 and 28 is $2 \times 2 \times 3 \times 7 = 12 \times 7 = 84$

∴ 84 is smallest number which is exactly divisible by 21 and 28

10. HCF of 249 – 9, 309 – 9

240 and 300

```
240 ) 300 ( 1
    – 240
      60 ) 240 ( 4
         – 240
             0
```

∴ 60 is greatest number which divides 249 and 309 leaving remainder 9

11. (a) $\text{LCM} \times \text{HCF} = \text{I}^{st}\text{ no.} \times \text{II}^{nd}\text{ no.}$

$\text{LCM} \times 14 = 14 \times 70$

$\text{LCM} = \dfrac{14 \times 70}{14}$

$\text{LCM} = 70$

(b) $\text{LCM} \times \text{HCF} = \text{I}^{st}\text{ no.} \times \text{II}^{nd}\text{ no.}$

$80 \times 4 = \text{I}^{st}\text{ no.} \times 20$

$\dfrac{80 \times 4}{20} = \text{I}^{st}\text{ no.}$

$16 = \text{I}^{st}\text{ no.}$

(c) $\text{LCM} \times \text{HCF} = \text{I}^{st}\text{ no.} \times \text{II}^{nd}\text{ no.}$

$\text{LCM} \times 15 = 15 \times 45$

$\text{LCM} = \dfrac{15 \times 45}{15}$

$\text{LCM} = 45$

(d) $\text{LCM} \times \text{HCF} = \text{I}^{st}\text{ no.} \times \text{II}^{nd}\text{ no.}$

$144 \times 24 = 48 \times \text{II}^{nd}\text{ number}$

$\dfrac{144 \times \cancel{24}}{\underset{2}{\cancel{48}}} = \text{II}^{nd}\text{ number}$

$72 = \text{II}^{nd}\text{ number}$

(e) $\text{LCM} \times \text{HCF} = \text{I}^{st}\text{ no.} \times \text{II}^{nd}\text{ no.}$

$180 \times \text{HCF} = 36 \times 45$

$\text{HCF} = \dfrac{\cancel{36} \times 45}{\underset{5}{\cancel{180}}}$

$\text{HCF} = 9$

❍❍❍

7 Fractions

Exercise- 7.1

1. (a) $\dfrac{9}{6}$ ✗ ($\because$ denominator is smaller than numerator)

(b) $\dfrac{9}{5}$ ✗ ($\because$ denominator is smaller than numerator)

(c) $\dfrac{1}{4}$ ✓ ($\because$ denominator is greater than numerator)

(d) $\dfrac{15}{11}$ ✗ ($\because$ denominator is smaller than numerator)

2. (a) $\dfrac{10}{9}$ ✓ ($\because$ denominator is smaller than numerator)

(b) $\dfrac{12}{11}$ ✓ ($\because$ denominator is smaller than numerator)

(c) $\dfrac{6}{7}$ ✗ ($\because$ denominator is greater than numerator)

(d) $\dfrac{18}{17}$ ✓ ($\because$ denominator is smaller than numerator)

3. (a) $2\frac{1}{2} = \frac{2\times2+1}{2} = \frac{4+1}{2} = \frac{5}{2}$

(b) $4\frac{3}{8} = \frac{4\times3+3}{8} = \frac{12+3}{8} = \frac{15}{8}$

(c) $5\frac{1}{2} = \frac{5\times2+1}{2} = \frac{10+1}{2} = \frac{11}{2}$

(d) $6\frac{3}{6} = \frac{6\times6+3}{6} = \frac{36+3}{6} = \frac{39}{6}$

(e) $4\frac{1}{4} = \frac{4\times4+1}{4} = \frac{16+1}{4} = \frac{17}{4}$

(f) $3\frac{1}{2} = \frac{3\times2+1}{2} = \frac{6+1}{2} = \frac{7}{2}$

(g) $9\frac{1}{5} = \frac{9\times5+1}{5} = \frac{45+1}{5} = \frac{46}{5}$

(h) $7\frac{2}{3} = \frac{7\times3+2}{3} = \frac{21+2}{3} = \frac{23}{3}$

4. (a) $\frac{15}{8} = 1\frac{7}{8}$

$$\begin{array}{r} 1 \\ 8\overline{)15} \\ -8 \\ \hline 7 \end{array}$$

(b) $\frac{16}{7} = 2\frac{2}{7}$

$$\begin{array}{r} 2 \\ 7\overline{)16} \\ -14 \\ \hline 2 \end{array}$$

(c) $\frac{25}{6} = 4\frac{1}{6}$

$$\begin{array}{r} 4 \\ 6\overline{)25} \\ -24 \\ \hline 1 \end{array}$$

(d) $\frac{67}{12} = 5\frac{7}{12}$

$$\begin{array}{r} 5 \\ 12\overline{)67} \\ -60 \\ \hline 7 \end{array}$$

(e) $\frac{63}{13} = 4\frac{11}{13}$

$$\begin{array}{r} 4 \\ 13\overline{)63} \\ -52 \\ \hline 11 \end{array}$$

(f) $\frac{81}{18} = 4\frac{9}{18} = 4\frac{1}{2}$

$$\begin{array}{r} 4 \\ 18\overline{)81} \\ -72 \\ \hline 9 \end{array}$$

(g) $\frac{50}{17} = 2\frac{16}{17}$

$$\begin{array}{r} 2 \\ 17\overline{)50} \\ -34 \\ \hline 16 \end{array}$$

(h) $\frac{63}{8} = 7\frac{7}{8}$

$$\begin{array}{r} 7 \\ 8\overline{)63} \\ -56 \\ \hline 7 \end{array}$$

Exercise- 7.2

1. (a) $\frac{1}{4}$ (b) $\frac{3}{8}$ (c) $\frac{3}{4}$

2. (a) $\frac{3}{5} = \frac{3\times2}{5\times2} = \frac{6}{10} = \frac{3}{5}\times\frac{3}{3} = \frac{9}{15}$

$\therefore$ two equivalent fractions of $\frac{3}{5}$ are $\frac{6}{10}, \frac{9}{15}$

(b) $\frac{4}{15} = \frac{4\times2}{15\times2} = \frac{8}{30} = \frac{4\times3}{15\times3} = \frac{12}{45}$

$\therefore \frac{4}{5} = \frac{8}{30} = \frac{12}{45}$

(c) $\frac{8}{11} = \frac{8\times2}{11\times2} = \frac{16}{22} = \frac{8\times3}{11\times3} = \frac{24}{33}$

$\therefore$ two equivalent fractions of $\frac{8}{11}$ are $\frac{16}{22}, \frac{24}{33}$

(d) $\frac{7}{15} = \frac{7\times2}{15\times2} = \frac{14}{30} = \frac{7\times3}{15\times3} = \frac{21}{45}$

$\therefore$ two equivalent fractions of $\frac{7}{15}$ are $\frac{14}{30}, \frac{21}{45}$

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) $\frac{6}{8} = \frac{6 \times 3}{5 \times 3} = \frac{18}{15}$

(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) $\frac{5 \times 5}{8 \times 5} = \frac{25}{40}$

(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. (a) $\frac{8}{9} = \frac{\boxed{8 \times 4}}{36} = \frac{32}{36}$

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

(c) $\frac{13}{18} = \frac{104}{18 \times 8} = \frac{104}{144}$

(d) $\frac{12}{17} = \frac{12 \times 7}{119} = \frac{84}{119}$

(e) $\frac{1}{5} = \frac{1 \times 4}{20} = \frac{4}{20}$

(f) $\frac{2}{3} = \frac{3 \times 6}{24} = \frac{18}{24}$

(g) $\frac{2}{3} = \frac{2 \times 8}{24} = \frac{16}{24}$

(h) $\frac{1}{7} = \frac{1 \times 2}{14} = \frac{2}{14}$

(i) $\frac{4}{8} = \frac{4 \div 4}{2} = \frac{1}{2}$

(j) $\frac{24}{28} = \frac{24 \div 4}{7} = \frac{6}{7}$

(k) $\frac{15}{24} = \frac{5}{24 \div 3} = \frac{5}{8}$

(l) $\frac{9}{27} = \frac{18}{27 \times 2} = \frac{18}{54}$

(m) $\frac{33}{39} = \frac{11}{39 \div 3} = \frac{11}{13}$

(n) $\frac{5}{12} = \frac{10}{12 \times 2} = \frac{10}{24}$

(o) $\frac{20}{31} = \frac{20 \times 3}{93} = \frac{60}{93}$

(p) $\frac{7}{8} = \frac{7 \times 5}{40} = \frac{35}{40}$

Exercise- 7.3

1. (a) $\frac{65}{80} = \frac{65 \div 5}{80 \div 5} = \frac{13}{6}$

$\because$

```
65 ) 80 ( 1
   - 65
     15 ) 65 ( 4
        - 60
           5 ) 15 ( 3
             - 15
               0
```

$\because$ HCF = 5

(b) $\frac{82}{90} = \frac{82 \div 2}{90 \div 2} = \frac{41}{45}$

$\because$

```
82 ) 90 ( 1
   - 82
     8 ) 82 ( 10
       - 80
         2 ) 8 ( 4
             8
             0
```

$\because$ HCF = 2

(c) $\frac{26}{46} = \frac{26 \div 2}{46 \div 2} = \frac{13}{23}$

$\because$

```
26 ) 46 ( 1
   - 26
     20 ) 26 ( 1
        - 20
           6 ) 20 ( 3
             - 18
                2 ) 6 ( 3
                  - 6
                    0
```

$\because$ HCF = 2

(d) $\frac{18}{90} = \frac{18 \div 18}{90 \div 18} = \frac{1}{5}$

$\because$

```
18 ) 90 ( 5
     - 90
       0
```

$\because$ HCF = 18

(e) $\frac{32}{50} = \frac{32 \div 2}{50 \div 2} = \frac{16}{25}$

$\because$

```
32 ) 50 ( 1
   - 32
     18 ) 32 ( 1
        - 18
           14 ) 18 ( 1
             - 14
                4 ) 14 ( 3
                  - 12
                    2 ) 4 ( 2
                      - 4
                        0
```

$\because$ HCF = 2

(f) $\frac{75}{35} = \frac{75 \div 5}{35 \div 5} = \frac{15}{7}$

$\because$

```
35 ) 75 ( 2
   - 70
     5 ) 35 ( 7
       - 35
         0
```

$\because$ HCF = 5

(g) $\frac{112}{192} = \frac{112 \div 16}{192 \div 16} = \frac{7}{12}$

```
112 ) 192 ( 1
    - 112
      80 ) 112 ( 1
         - 80
           32 ) 80 ( 2
              - 64
                16 ) 32 ( 2
                   - 32
                     0
```

$\because$ HCF = 16

(h) $\frac{55}{100} = \frac{55 \div 5}{100 \div 5} = \frac{11}{20}$

```
55 ) 100 ( 1
   - 55
     45 ) 55 ( 1
        - 45
          10 ) 55 ( 5
             - 50
               2 ) 10 ( 2
                 - 10
                   0
```

$\because$ HCF = 5

(i) $\frac{8}{30} = \frac{8 \div 2}{30 \div 2} = \frac{4}{15}$

$\because$

```
8 ) 30 ( 1
  - 24
    6 ) 8 ( 1
      - 6
```

(j) $\frac{27}{45} = \frac{27 \div 9}{45 \div 9} = \frac{3}{5}$

$\because$

```
27 ) 45 ( 1
   - 27
     18 ) 27 ( 1
        - 18
```

2) 6 (3
− 6
0

∵ HCF = 2

(k) $\frac{68}{136} = \frac{68 \div 68}{136 \div 68} = \frac{1}{2}$

68) 136 (1
− 136
0

9) 18 (2
− 18
0

∵ HCF = 9

(l) $\frac{102}{119} = \frac{102 \div 17}{119 \div 17} = \frac{6}{7}$

∵ 102) 119 (1
− 102
17) 102 (6
− 102
0

∵ HCF = 68

(m) $\frac{153}{204} = \frac{153 \div 51}{204 \div 51} = \frac{3}{4}$

153) 204 (1
− 153
51) 153 (3
− 153
0

∵ HCF = 17

(n) $\frac{13}{65} = \frac{13 \div 13}{65 \div 13} = \frac{1}{5}$

13) 65 (5
− 65
0

∵ HCF = 51

(o) $\frac{49}{63} = \frac{49 \div 7}{63 \div 7} = \frac{7}{9}$

49) 63 (1
− 49
14) 49 (3
− 42
7) 14 (2
− 14
0

HCF = 7

∵ HCF = 13

(p) $\frac{129}{243} = \frac{129 \div 3}{243 \div 3} = \frac{43}{81}$

129) 243 (1
− 129
114) 129 (1
− 114
15) 114 (7
− 105
9) 15 (1
− 9
6) 9 (1
− 6
3) 6 (1
− 6
0

HCF = 3

Exercise- 7.4

1. (a) $\frac{3}{5} > \frac{3}{8}$ (b) $\frac{5}{14} < \frac{5}{8}$ (c) $\frac{11}{16} < \frac{11}{12}$ (d) $\frac{14}{7} < \frac{14}{15}$

(e) $\frac{15}{19} > \frac{15}{23}$ (f) $\frac{3}{5} < \frac{4}{5}$ (g) $\frac{6}{11} < \frac{5}{11}$ (h) $\frac{13}{16} > \frac{11}{16}$

(i) $\frac{23}{25} > \frac{24}{25}$ (j) $\frac{4}{5} > \frac{2}{5}$ (k) $\frac{3}{8} < \frac{4}{8}$ (*l*) $\frac{5}{6} > \frac{5}{7}$

(m) $\frac{9}{9} = \frac{6}{6}$ (n) $\frac{3}{8} < \frac{4}{7}$ (o) $2\frac{4}{9} > 1\frac{3}{12}$

$\because \; 7 \times 3 \quad 4 \times 8$

$21 < 24$

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

$4 \times 7 \quad 2 \times 5$

$\because \; 28 > 10$

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

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

$3 \times 15 \quad 9 \times 8$

$\because \; 45 < 72$

$\therefore \; \frac{3}{8} < \frac{9}{15}$

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

$7 \times 4 \quad 3 \times 8$

$\because \; 28 > 24$

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

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

$8 \times 5 \quad 3 \times 11$

$\because \; 40 > 33$

$\therefore \; \frac{8}{11} > \frac{3}{5}$

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

$3 \times 10 \quad 9 \times 4$

$\because \; 30 < 36$

$\therefore \; \frac{3}{4} < \frac{9}{10}$

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

$9 \times 18 \quad 8 \times 12$

$\because \; 162 > 96$

$\therefore \; \frac{9}{12} > \frac{8}{18}$

3. (a) $\frac{9}{7} < \frac{9}{6} < \frac{9}{5} < \frac{9}{4} < \frac{9}{3} < \frac{9}{2}$

(b) $\frac{26}{24} < \frac{26}{21} < \frac{26}{18} < \frac{26}{15} < \frac{26}{13} < \frac{26}{11}$

(c) $\frac{93}{84} < \frac{93}{52} < \frac{93}{45} < \frac{93}{36} < \frac{93}{28} < \frac{93}{7}$

(d) $\frac{3}{4}, \frac{7}{12}, \frac{5}{8}, \frac{9}{20}, \frac{1}{4}, \frac{11}{20}$

$\because$ LCM of 4, 12, 8, 20, 4, 20 = 120

$\therefore \; \frac{3 \times 30}{4 \times 30}, \frac{7 \times 10}{12 \times 10}, \frac{5 \times 15}{8 \times 15}, \frac{9 \times 6}{20 \times 6}, \frac{1 \times 30}{4 \times 30}, \frac{11 \times 6}{20 \times 6}$

$\frac{9}{120}, \frac{7}{120}, \frac{75}{120}, \frac{54}{120}, \frac{30}{120}, \frac{66}{120}$

$\therefore$ Ascending order

$\frac{30}{120} < \frac{54}{120} < \frac{66}{120} < \frac{70}{120} < \frac{75}{120} < \frac{90}{120}$

$\therefore \; \frac{1}{4} < \frac{9}{20} < \frac{11}{20} < \frac{7}{12} < \frac{5}{8} < \frac{3}{4} < \frac{11}{20}$

(e) $\frac{2}{3}, \frac{8}{15}, \frac{5}{9}, \frac{11}{27}, \frac{23}{30}, \frac{4}{9}$

LCM of 3, 15, 9, 27, 30, 9 is 270

$$\frac{2\times90}{3\times90}, \frac{8\times18}{15\times18}, \frac{5\times30}{9\times30}, \frac{11\times10}{27\times10}, \frac{23\times9}{30\times9}, \frac{4\times30}{9\times30}$$

$$\frac{180}{270}, \frac{144}{270}, \frac{150}{270}, \frac{110}{270}, \frac{207}{270}, \frac{120}{270}$$

$\therefore$ Ascending order

$$\frac{110}{270} < \frac{120}{270} < \frac{144}{270} < \frac{150}{270} < \frac{180}{270} < \frac{207}{270}$$

$$\frac{11}{27} < \frac{4}{9} < \frac{8}{15} < \frac{5}{9} < \frac{2}{3} < \frac{23}{30}$$

(f) $2\frac{3}{5}, 2\frac{4}{15}, 2\frac{7}{15}, 2\frac{9}{25}, 2\frac{1}{5}, 2\frac{11}{25}$

LCM of 5, 15, 25 = 75

$$2\frac{3\times15}{5\times15}, 2\frac{4\times5}{15\times5}, 2\frac{7\times5}{15\times5}, 2\frac{9\times3}{25\times3}, 2\frac{1\times15}{5\times15}, 2\frac{11\times3}{25\times3}$$

$$2\frac{45}{75}, 2\frac{20}{75}, 2\frac{35}{75}, 2\frac{27}{75}, 2\frac{15}{75}, 2\frac{33}{75}$$

$\therefore$ Ascending order

$$2\frac{15}{75} < 2\frac{20}{75} < 2\frac{27}{75} < 2\frac{33}{75} < 2\frac{45}{75}$$

$$2\frac{1}{5} < 2\frac{4}{5} < 2\frac{9}{25} < 2\frac{11}{25} < 2\frac{3}{5}$$

4. (a) $\frac{13}{2} > \frac{13}{5} > \frac{13}{6} > \frac{13}{8} > \frac{13}{9} > \frac{13}{11}$

(b) $\frac{61}{29} > \frac{61}{37} > \frac{61}{40} > \frac{61}{43} > \frac{61}{52} > \frac{61}{58}$

(c) $\frac{123}{47} > \frac{123}{75} > \frac{123}{82} > \frac{123}{96} > \frac{123}{111} > \frac{123}{120}$

(d) LCM of 5, 25, 5, 25, 25, 15 is 75

$$\therefore \frac{2}{2}, \frac{9}{25}, \frac{3}{5}, \frac{11}{25}, \frac{18}{25}, \frac{12}{15}$$

$$\frac{2\times15}{5\times15}, \frac{9\times3}{25\times3}, \frac{3\times15}{5\times15}, \frac{11\times3}{25\times3}, \frac{18\times3}{25\times3}, \frac{12\times5}{15\times5}$$

$$\frac{30}{75}, \frac{27}{75}, \frac{45}{75}, \frac{33}{75}, \frac{30}{75}, \frac{60}{75}$$

$$\therefore \frac{60}{75} > \frac{54}{75} > \frac{45}{75} > \frac{33}{75} > \frac{30}{75} > \frac{27}{75}$$

$$\therefore \frac{12}{15} > \frac{18}{25} > \frac{3}{5} > \frac{11}{25} > \frac{2}{5} > \frac{9}{25}$$

(e) $\frac{7}{12}, \frac{13}{36}, \frac{15}{24}, \frac{5}{12}, \frac{7}{24}, \frac{23}{36}$

LCM of 12, 36, 24, 12, 24, 36 is 72

$$\therefore \quad \frac{7\times6}{12\times6}, \quad \frac{13\times2}{36\times2}, \quad \frac{15\times3}{24\times3}, \quad \frac{5\times6}{12\times6}, \quad \frac{7\times3}{24\times3}, \quad \frac{23\times2}{36\times2}$$

$$\frac{42}{72}, \quad \frac{26}{72}, \quad \frac{45}{72}, \quad \frac{30}{72}, \quad \frac{21}{72}, \quad \frac{46}{72}$$

Descending order

$$\frac{46}{72} > \frac{45}{72} > \frac{42}{72} > \frac{30}{72} > \frac{26}{72} > \frac{21}{72}$$

$$\therefore \quad \frac{23}{36} > \frac{15}{24} > \frac{7}{12} > \frac{5}{12} > \frac{13}{36} > \frac{7}{24}$$

(f) $4\frac{2}{7}, 4\frac{8}{2}, 4\frac{11}{14}, 4\frac{3}{7}, 4\frac{13}{21}$

LCM of 7, 21, 14, 7, 21 is 42

$$\therefore \quad 4\frac{2\times6}{7\times6}, \quad 4\frac{8\times2}{4\times2}, \quad 4\frac{11\times3}{14\times3}, \quad 4\frac{3\times6}{7\times6}, \quad 4\frac{13\times2}{21\times2}$$

$$4\frac{12}{42}, \quad 4\frac{16}{42}, \quad 4\frac{33}{42}, \quad 4\frac{18}{42}, \quad 4\frac{26}{42}$$

Descending order

$$4\frac{12}{42} > 4\frac{26}{42} > 4\frac{18}{42} > 4\frac{16}{42} > 4\frac{12}{42}$$

$$\therefore \quad 4\frac{11}{14} > 4\frac{13}{21} > 4\frac{3}{7} > 4\frac{8}{21} > 4\frac{2}{7}$$

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) $\frac{8}{6}+\frac{3}{5}=\frac{8\times5}{6\times5}+\frac{3\times6}{5\times6}=\frac{40}{30}+\frac{18}{30}=\frac{40+18}{30}=\frac{58}{30}=1\frac{28}{30}=1\frac{14}{15}$

(d) $\frac{2}{5}+\frac{1}{6}=\frac{2\times6}{5\times6}+\frac{1\times5}{6\times5}=\frac{12}{30}+\frac{5}{30}=\frac{12+5}{30}=\frac{17}{30}$

(e) $\frac{5}{7}+\frac{6}{14}+\frac{11}{8}=\frac{5\times8}{7\times8}+\frac{6\times4}{14\times4}+\frac{11\times7}{8\times7}=\frac{40}{56}+\frac{24}{56}+\frac{77}{56}$

$$=\frac{40+24+77}{56}=\frac{141}{56}=2\frac{29}{56}$$

(f) $\frac{6}{17}+\frac{7}{34}+\frac{1}{17}=\frac{6\times2}{17\times2}+\frac{7\times1}{34\times1}+\frac{1\times2}{17\times2}=\frac{12}{34}+\frac{7}{34}+\frac{2}{34}=\frac{12+7+2}{34}=\frac{21}{34}$

2. (a) $\frac{9}{16}+\frac{3}{8}=\frac{9}{16}+\frac{3\times2}{8\times2}=\frac{9}{16}+\frac{6}{16}=\frac{9+6}{16}=\frac{15}{16}$

(b) $\frac{6}{16}+\frac{5}{8}=\frac{6}{16}+\frac{5\times2}{8\times2}=\frac{6}{16}+\frac{10}{16}=\frac{6+10}{16}=\frac{16}{16}=1$

(c) $\frac{1}{2}+\frac{3}{4}+\frac{5}{8}=\frac{1\times4}{2\times4}+\frac{3\times2}{4\times2}+\frac{5}{8}=\frac{4}{8}+\frac{6}{8}+\frac{5}{8}=\frac{4+6+5}{8}=\frac{15}{8}=1\frac{7}{8}$

(d) $\frac{1}{3}+\frac{2}{9}+\frac{7}{18}=\frac{1\times6}{3\times6}+\frac{2\times2}{9\times2}+\frac{7\times1}{18\times1}=\frac{6}{18}+\frac{4}{18}+\frac{7}{18}=\frac{6+4+7}{18}=\frac{17}{18}$

(e) $\frac{9}{35}+\frac{6}{7}+\frac{8}{25}=\frac{9\times5}{35\times5}+\frac{6\times25}{7\times25}+\frac{8\times7}{25\times7}=\frac{45}{175}+\frac{150}{175}+\frac{56}{175}$

$=\frac{45+150+56}{175}=\frac{251}{175}=1\frac{76}{175}$

(f) $128+\frac{3}{14}+\frac{5}{7}=\frac{128\times14}{14}+\frac{3}{14}+\frac{5\times2}{7\times2}=\frac{1792}{14}+\frac{3}{14}+\frac{10}{14}$

$=\frac{1792+3+10}{14}=\frac{1805}{14}=128\frac{15}{14}$

3. (a) $5\frac{3}{7}+6\frac{2}{7}=(5+6)+\left(\frac{3}{7}+\frac{2}{7}\right)=11+\frac{5}{7}=11\frac{5}{7}$

(b) $3\frac{1}{7}+4\frac{6}{7}+3=(3+4+3)+\left(\frac{1}{7}+\frac{6}{7}\right)=10+\frac{7}{7}=10+1=11$

(c) $7\frac{6}{9}+3\frac{1}{3}=(7+3)+\left(\frac{6}{9}+\frac{1}{3}\right)=10+\left(\frac{6}{9}+\frac{3}{9}\right)=10+\frac{9}{9}=10+1=11$

(d) $6\frac{3}{8}+4\frac{1}{16}=(6+4)+\left(\frac{3}{8}+\frac{1}{16}\right)=10+\left(\frac{6}{16}+\frac{1}{16}\right)=10+\frac{7}{16}=10\frac{7}{16}$

(e) $2\frac{1}{6}+2\frac{3}{8}=(2+2)+\left(\frac{1}{6}+\frac{3}{8}\right)=4+\left(\frac{1\times4}{6\times4}+\frac{3\times3}{8\times3}\right)=4+\left(\frac{4}{24}+\frac{9}{24}\right)$

$=4+\left(\frac{4+9}{24}\right)=4+\frac{13}{24}=4\frac{13}{24}$

(f) $1\frac{1}{2}+1\frac{3}{4}+\frac{5}{8}=(1+1)+\left(\frac{1}{2}+\frac{3}{4}+\frac{5}{8}\right)=2+\left(\frac{1\times4}{2\times4}+\frac{3\times2}{4\times2}+\frac{5}{8}\right)$

$=2+\left(\frac{4}{8}+\frac{6}{8}+\frac{5}{8}\right)=2+\left(\frac{4+6+5}{8}\right)$

$=2+\left(\frac{15}{8}\right)=2+1\frac{7}{8}=(2+1)+\frac{7}{8}=3\frac{7}{8}$

(g) $4\frac{1}{5}+3\frac{1}{10}=(4+3)+\left(\frac{1}{5}+\frac{1}{10}\right)=7+\left(\frac{1\times 2}{5\times 2}+\frac{1}{10}\right)=7+\left(\frac{2}{10}+\frac{1}{10}\right)$

$=7+\left(\frac{3}{10}\right)=7\frac{3}{10}$

(h) $3\frac{1}{10}+11\frac{1}{5}+16\frac{2}{5}=(3+11+16)+\left(\frac{1}{10}+\frac{1}{5}+\frac{2}{5}\right)=30+\left(\frac{1}{10}+\frac{1}{5}+\frac{2}{5}\right)$

$=30+\left(\frac{1}{10}+\frac{2}{10}+\frac{4}{10}\right)=30+\left(\frac{1+2+4}{10}\right)=30+\frac{7}{10}=30\frac{7}{10}$

(i) $5\frac{4}{9}+4\frac{2}{3}+1\frac{1}{6}=(5+4+1)+\left(\frac{4}{9}+\frac{2}{3}+\frac{1}{6}\right)=10+\left(\frac{8}{18}+\frac{12}{18}+\frac{3}{18}\right)$

$=10+\left(\frac{8+12+3}{18}\right)=10+\left(\frac{23}{18}\right)=10\frac{23}{18}=10\left(1\frac{5}{18}\right)=11\frac{5}{18}$

(j) $10\frac{1}{3}+\frac{2}{3}+5\frac{3}{6}=(10+5)+\left(\frac{1}{3}+\frac{2}{3}+\frac{3}{6}\right)=15+\left(\frac{2}{6}+\frac{4}{6}+\frac{3}{6}\right)=15+\left(\frac{2+4+3}{6}\right)$

$=15+\frac{9}{6}=15+1\frac{3}{6}=(15+1)+\frac{3}{6}=16\frac{1}{2}$

(k) $2\frac{1}{12}+5\frac{1}{4}+14\frac{2}{3}=(2+5+14)+\left(\frac{1}{12}+\frac{1}{4}+\frac{2}{3}\right)=21+\left(\frac{2}{24}+\frac{6}{24}+\frac{16}{24}\right)$

$=21+\left(\frac{2+6+16}{24}\right)=21+\frac{24}{24}=21+1=22$

(*l*) $6\frac{1}{12}+1\frac{2}{6}+14\frac{2}{4}=(6+1+14)+\left(\frac{1}{12}+\frac{2}{6}+\frac{2}{4}\right)=21+\left(\frac{1}{12}+\frac{2}{6}+\frac{2}{4}\right)$

$=21+\left(\frac{1}{12}+\frac{4}{12}+\frac{6}{12}\right)=21+\left(\frac{1+4+6}{12}\right)=21+\frac{11}{12}=21\frac{11}{12}$

4. (a) $3\frac{4}{7}+\frac{6}{8}=3+\frac{4}{7}+\frac{6}{8}=3+\left(\frac{4}{7}+\frac{6}{8}\right)=3+\left(\frac{4\times 8}{7\times 8}+\frac{6\times 7}{8\times 7}\right)=3+\left(\frac{32}{56}+\frac{42}{56}\right)$

$=3+\left(\frac{32+42}{56}\right)=3+\left(\frac{74}{56}\right)=3+1\frac{18}{56}=(3+1)+\frac{18}{56}=4\frac{8}{56}$

(b) $3\frac{1}{18}+\frac{2}{6}=3+\left(\frac{1}{18}+\frac{2}{6}\right)=3+\left(\frac{1}{18}+\frac{2\times 3}{6\times 3}\right)=3+\left(\frac{1}{18}+\frac{6}{18}\right)=3+\left(\frac{1+7}{18}\right)$

$=3+\frac{8}{18}=3\frac{8}{18}=3\frac{4}{9}$

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

(d) $6\frac{1}{3}+\frac{3}{10}=6+\frac{1}{3}+\frac{3}{10}=6+\left(\frac{1\times 10}{3\times 10}+\frac{3\times 3}{10\times 3}\right)$

$=6+\left(\frac{10}{30}+\frac{9}{30}\right)=6+\left(\frac{10+9}{30}\right)=6\frac{19}{30}$

(e) $2\frac{1}{6}+\frac{2}{3}=2+\frac{1}{6}+\frac{2}{3}=2+\left(\frac{1}{6}+\frac{2\times2}{3\times2}\right)=2+\left(\frac{1}{6}+\frac{4}{6}\right)=2+\left(\frac{1+4}{6}\right)=2\frac{5}{6}$

(f) $5\frac{3}{8}+\frac{4}{12}+\frac{20}{6}=5\frac{3}{8}+\frac{4}{12}+3\frac{2}{6}=(5+3)+\left(\frac{3}{8}+\frac{4}{12}+\frac{2}{6}\right)$

$$=8+\left(\frac{3\times3}{8\times3}+\frac{4\times2}{12\times2}+\frac{8}{24}\right)=8+\left(\frac{9}{24}+\frac{8}{24}+\frac{8}{24}\right)$$

$$=8+\left(\frac{9+8+8}{24}\right)=8+\left(\frac{25}{24}\right)=8+1\frac{1}{24}$$

$$=(8+1)+\frac{1}{24}=9\frac{1}{24}$$

Exercise- 7.6

1. (a) $\frac{7}{3}-\frac{2}{3}=\frac{7-2}{3}=\frac{5}{3}=1\frac{2}{3}$ (b) $\frac{16}{11}-\frac{8}{11}=\frac{16-8}{11}=\frac{8}{11}$

(c) $\frac{5}{9}-\frac{1}{9}=\frac{5-1}{9}=\frac{4}{9}$ (d) $\frac{23}{25}-\frac{19}{25}=\frac{23-19}{25}=\frac{4}{25}$

(e) $\frac{15}{29}-\frac{10}{29}=\frac{15-10}{29}=\frac{5}{29}$ (f) $\frac{14}{17}-\frac{1}{17}=\frac{14-1}{17}=\frac{13}{17}$

2. (a) $\frac{5}{7}-\frac{1}{6}=\frac{5\times6}{7\times6}-\frac{1\times7}{6\times7}=\frac{30}{42}-\frac{7}{42}=\frac{30-7}{42}=\frac{23}{42}$

(b) $\frac{7}{10}-\frac{3}{20}=\frac{7\times2}{10\times2}-\frac{3}{20}=\frac{14}{20}-\frac{3}{20}=\frac{14-3}{20}=\frac{11}{20}$

(c) $\frac{7}{13}-\frac{1}{8}=\frac{7\times8}{13\times8}-\frac{1\times13}{13\times8}=\frac{56}{104}-\frac{13}{104}=\frac{56-13}{104}=\frac{43}{104}$

(d) $\frac{7}{8}-\frac{5}{9}=\frac{7\times9}{8\times9}-\frac{5\times8}{9\times8}=\frac{63}{72}-\frac{40}{72}=\frac{63-40}{72}=\frac{23}{72}$

(e) $\frac{3}{8}-\frac{1}{6}=\frac{3\times3}{8\times3}-\frac{1\times4}{6\times4}=\frac{9}{24}-\frac{4}{24}=\frac{9-4}{24}=\frac{5}{24}$

(f) $\frac{4}{7}-\frac{11}{21}=\frac{4\times3}{7\times3}-\frac{11\times1}{21\times1}=\frac{12}{21}-\frac{11}{21}=\frac{12-11}{21}=\frac{1}{21}$

(g) $\frac{5}{12}-\frac{5}{16}=\frac{5\times4}{12\times4}-\frac{5\times3}{16\times3}=\frac{20}{48}-\frac{15}{48}=\frac{20-15}{48}=\frac{5}{48}$

(h) $\frac{8}{17}-\frac{5}{34}=\frac{8\times2}{17\times2}-\frac{5\times1}{34\times1}=\frac{16}{34}-\frac{5}{34}=\frac{16-5}{34}=\frac{11}{34}$

(i) $\frac{5}{6}-\frac{7}{9}=\frac{5\times3}{6\times3}-\frac{7\times2}{9\times2}=\frac{15}{18}-\frac{14}{18}=\frac{15-14}{18}=\frac{1}{18}$

(j) $\frac{5}{11}-\frac{4}{12}=\frac{5\times12}{11\times12}-\frac{4\times11}{12\times11}=\frac{60}{132}-\frac{44}{132}=\frac{60-44}{132}=\frac{16}{132}$

(k) $\frac{7}{15}-\frac{3}{10}=\frac{7\times2}{15\times2}-\frac{3\times3}{10\times3}=\frac{14}{30}-\frac{9}{30}=\frac{14-9}{30}=\frac{5}{30}=\frac{1}{6}$

(*l*) $\frac{23}{24}-\frac{15}{16}=\frac{23\times2}{24\times2}-\frac{15\times3}{16\times3}=\frac{46}{48}-\frac{45}{48}=\frac{46-45}{48}=\frac{1}{48}$

3. (a) $15\frac{2}{3}-7\frac{1}{2}=(15-7)+\left(\frac{2}{3}-\frac{1}{2}\right)=8+\left(\frac{4}{6}-\frac{3}{6}\right)=8+\left(\frac{4-3}{6}\right)=8+\frac{1}{6}=8\frac{1}{6}$

(b) $13\frac{1}{2}-5\frac{3}{4}=(13-5)+\left(\frac{1}{2}-\frac{3}{4}\right)=8+\left(\frac{2}{4}-\frac{3}{4}\right)=8+\left(\frac{2-3}{4}\right)$

$=8-\frac{1}{4}=\frac{32-1}{4}=\frac{31}{4}=7\frac{3}{4}$

(c) $3\frac{5}{7}-2\frac{3}{8}=(3-2)+\left(\frac{5}{7}-\frac{3}{8}\right)=1+\left(\frac{5\times8}{7\times8}-\frac{3\times7}{8\times7}\right)=1+\left(\frac{40}{56}-\frac{21}{56}\right)$

$=1+\left(\frac{40-21}{56}\right)=1+\frac{19}{56}=1\frac{19}{56}$

(d) $7\frac{5}{20}-2\frac{3}{8}=(7-2)+\left(\frac{5}{20}-\frac{3}{8}\right)=5+\left(\frac{5\times2}{20\times2}-\frac{3\times5}{8\times5}\right)=5+\left(\frac{10}{40}-\frac{15}{40}\right)$

$=5+\left(\frac{-5}{40}\right)=5-\frac{1}{8}=\frac{40-1}{8}=\frac{39}{8}=4\frac{7}{8}$

(e) $5\frac{7}{8}-1\frac{3}{8}=(5-1)+\left(\frac{7}{8}-\frac{3}{8}\right)=4+\left(\frac{7-3}{8}\right)=4+\frac{4}{8}=4+\frac{1}{2}=4\frac{1}{2}$

(f) $15\frac{1}{3}-8\frac{2}{6}=(15-8)+\left(\frac{1}{3}-\frac{2}{6}\right)=7+\left(\frac{2}{6}-\frac{2}{6}\right)=7+\frac{2-2}{6}=7+\frac{0}{6}=7+0=7$

(g) $5\frac{3}{8}-1\frac{1}{4}=(5-1)+\left(\frac{3}{8}-\frac{1}{4}\right)=4+\left(\frac{3}{8}-\frac{2}{8}\right)=4+\frac{3-2}{8}=4+\frac{1}{8}=4\frac{1}{8}$

(h) $6\frac{3}{4}-3\frac{1}{2}=(6-3)+\left(\frac{3}{4}-\frac{1}{2}\right)=3+\left(\frac{3}{4}-\frac{2}{4}\right)=3+\left(\frac{3-2}{4}\right)=3+\frac{1}{4}=3\frac{1}{4}$

(i) $11\frac{13}{16}-5\frac{5}{8}=(11-5)+\left(\frac{13}{16}-\frac{5}{8}\right)=6+\left(\frac{13}{16}-\frac{10}{16}\right)=6+\left(\frac{13-10}{16}\right)$

$=6+\frac{3}{16}=6\frac{3}{16}$

(j) $10\frac{9}{22}-8\frac{2}{11}=(10-8)+\left(\frac{9}{22}-\frac{2}{11}\right)=2+\left(\frac{9}{22}-\frac{4}{22}\right)$

$=2+\left(\frac{9-4}{22}\right)=2+\frac{5}{22}=2\frac{5}{22}$

(k) $16\frac{9}{10}-14\frac{3}{5}=(16-14)+\left(\frac{9}{10}-\frac{3}{5}\right)=2+\left(\frac{9}{10}-\frac{6}{10}\right)$

$$=2+\left(\frac{9-6}{10}\right)=2+\frac{3}{10}=2\frac{3}{10}$$

(*l*) $15\frac{3}{5}-10\frac{11}{15}=(15-10)+\left(\frac{3}{5}-\frac{11}{15}\right)=5+\left(\frac{9}{15}-\frac{11}{15}\right)=5+\left(\frac{9-11}{15}\right)$

$$=5+\left(\frac{-2}{15}\right)=\frac{75-2}{15}=\frac{73}{15}=4\frac{13}{15}$$

Exercise- 7.7

1. Cloth bought by Radha $=5\frac{1}{2}$ m

Cloth bought by Amar $=2\frac{1}{2}$ m

Total cloth bought by them $=\left(5\frac{1}{5}+2\frac{1}{2}\right)$ m

$$=(5+2)+\left(\frac{1}{5}+\frac{1}{2}\right)=7+\left(\frac{1\times2}{5\times2}+\frac{1\times5}{2\times5}\right)$$

$$=7+\left(\frac{2}{10}+\frac{5}{10}\right)=7+\left(\frac{2+5}{10}\right)=7+\frac{7}{10}=7\frac{7}{10}\text{ m}$$

2. Distance covered by bus $=2\frac{2}{12}$ km

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

Distance covered by Rickshaw $=3\frac{4}{13}$ km

Total distance covered $=2\frac{2}{13}+2\frac{5}{13}+3\frac{4}{13}=(2+2+3)+\left(\frac{2}{13}+\frac{5}{13}+\frac{4}{13}\right)$

$$=7+\left(\frac{2+5+4}{13}\right)=7+\frac{11}{13}=7\frac{11}{13}\text{ km}$$

3. Length ribbon before divided $=\left(3\frac{1}{9}+6\frac{4}{9}+1\frac{7}{9}\right)$ m

$$=(3+6+1)+\left(\frac{1}{9}+\frac{4}{9}+\frac{7}{9}\right)$$

$$=10+\left(\frac{1+4+7}{9}\right)=10+\left(\frac{12}{9}\right)=10+1\frac{3}{9}$$

$$=10+1+\frac{3}{9}=11\frac{3}{9}\text{ m}=11\frac{1}{3}\text{ m}$$

4. Time spend in studies $= \frac{3}{4}$ hours

Time spend in play $= \frac{5}{6}$ hours

Total time spend $= \left(\frac{3}{4} + \frac{5}{6}\right)$ hours

$$= \frac{3\times3}{4\times3} + \frac{5\times2}{6\times2} = \frac{9}{12} + \frac{10}{12} = \left(\frac{9+10}{12}\right) = \frac{19}{12} = 1\frac{7}{12} \text{ hours}$$

5. Deepa have $\frac{7}{10}$ of chocolate

Given to friend $\frac{2}{5}$ of chocolate

Left with Deepa $= \frac{7}{10} - \frac{2}{5} = \frac{7}{10} - \frac{2\times2}{5\times2} = \frac{7}{10} - \frac{4}{10} = \frac{7-4}{10}$

$= \left(\frac{3}{10}\right)^{th}$ part of chocolate left

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

Length of pole into the ground $= 1\frac{1}{4}$ m

Length of pole above ground $= 5\frac{1}{3} - 1\frac{1}{4} = (5-1) + \left(\frac{1}{3} - \frac{1}{4}\right)$

$$= 4 + \left(\frac{1\times4}{3\times4} - \frac{1\times3}{4\times3}\right) = 4 + \left(\frac{4}{12} - \frac{3}{12}\right)$$

$$= 4 + \left(\frac{4-3}{12}\right) = 4 + \frac{1}{12} = 4\frac{1}{12} \text{ m}$$

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

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

Weight of IInd book $= 3\frac{1}{4} - 1\frac{2}{5} = (3-1) + \left(\frac{1}{4} - \frac{2}{5}\right)$

$$= 2 + \left(\frac{1\times5}{4\times5} - \frac{2\times4}{5\times4}\right) = 2 + \left(\frac{5}{20} - \frac{8}{20}\right)$$

$$= 2 + \left(\frac{-3}{20}\right) = \frac{2\times20-3}{20} = \frac{40-3}{20} = \frac{37}{20} = 1\frac{17}{20} \text{ kg}$$

8. Perimeters of triangle $= 36\frac{4}{5}$

Length of two sides $= \left(12\frac{7}{10} + 8\frac{11}{15}\right) = (12+8) + \left(\frac{7}{10} + \frac{11}{15}\right)$

$$=20+\left(\frac{7\times3}{10\times3}+\frac{11\times2}{15\times2}\right)=20+\left(\frac{21}{30}+\frac{22}{30}\right)$$

$$=20+\left(\frac{21+22}{30}\right)=20+\frac{43}{30}$$

$$=20+1\frac{13}{30}=21\frac{13}{30}\text{ m}$$

Length of third side $=36\frac{4}{5}-21\frac{13}{30}=(36-21)+\left(\frac{4}{5}-\frac{13}{30}\right)$

$$=15+\left(\frac{4\times6}{5\times6}-\frac{13}{30}\right)=15+\left(\frac{24}{30}-\frac{13}{30}\right)$$

$$=15+\left(\frac{24-13}{30}\right)=15\frac{11}{30}\text{ m}$$

9. Length of blue ribbon $=5\frac{1}{5}$ m

Length of green ribbon $=2\frac{1}{2}$ m

Total length of ribbons $=5\frac{1}{5}+2\frac{1}{2}=(5+2)+\left(\frac{1}{5}+\frac{1}{2}\right)$

$$=7+\left(\frac{1\times2}{5\times2}+\frac{1\times5}{2\times5}\right)=7+\left(\frac{2}{10}+\frac{5}{10}\right)$$

$$=7+\left(\frac{2+5}{10}\right)=7+\frac{7}{10}=7\frac{7}{10}\text{ m}$$

10. Cake ate by girls $=4\frac{1}{2}$

Cake ate by boys $=3\frac{1}{2}$

Total cake eaten $=4\frac{1}{2}+3\frac{1}{2}=(4+3)+\left(\frac{1}{2}+\frac{1}{2}\right)$

$$=7+\left(\frac{1+1}{2}\right)=7+\frac{2}{2}+7+1=8\text{ cakes}$$

11. Water $=2\frac{1}{2}$ cups

Milk $=3\frac{1}{4}$ cups

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

$$=5+\left(\frac{1\times2}{2\times2}+\frac{1}{4}\right)=5+\left(\frac{2}{4}+\frac{1}{4}\right)$$

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

Exercise- 7.8

$\because$ $3\overline{)50}\,(16$
$\quad -3$
$\quad 20$
$\quad -18$
$\quad 2$

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

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

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

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

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

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

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

(b) $\frac{5}{12}\times\frac{3}{15}=\frac{\cancel{5}^{1}}{\cancel{12}_{4}}\times\frac{\cancel{3}^{1}}{\cancel{15}_{3}}=\frac{1\times 1}{4\times 3}=\frac{1}{12}$

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

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

(e) $3\frac{1}{2}\times\frac{3}{8}=\frac{7}{2}\times\frac{3}{8}=\frac{21}{16}=1\frac{5}{16}$

(f) $\frac{25}{32}\times\frac{16}{45}=\frac{\cancel{25}^{5}}{\cancel{32}_{2}}\times\frac{\cancel{16}^{1}}{\cancel{45}_{9}}=\frac{5\times 1}{2\times 9}=\frac{5}{18}$

3. (a) $\frac{1}{4}$ of ₹ $100=\frac{1}{4}\times 100$

$=$ ₹ $\frac{100}{4}=$ ₹ 25

(b) $\frac{8}{13}$ of ₹ $2600=\frac{8\times 2600}{13}$

$=$ ₹ $8\times 200=$ ₹ 1600

(c) $\frac{4}{5}$ of $300\ l=\frac{4}{5}\times 300\,l$

$=\frac{1200}{5}\,l=240\ l$

(d) $\frac{8}{9}$ of $3\frac{4}{10}$ kg $=\left(\frac{8}{9}\times\frac{34}{10}\right)$ kg

$=\left(\frac{\cancel{8}^{4}\times 34}{9\times\cancel{10}_{5}}\right)$ kg $=\frac{136}{45}$ kg $=3\frac{1}{45}$ kg

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

$=\frac{1}{5}$ pizza

(f) $\frac{6}{7}$ of ₹ $28=$ ₹ $\left(\frac{6}{7}\times 28\right)$

$=$ ₹ $6\times 4=24$

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

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

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

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

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

(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) Reciprocal of $\frac{2}{3} = \frac{3}{2}$

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

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

(d) Reciprocal of $1\frac{2}{9}$

Reciprocal of $\frac{11}{9} = \frac{9}{11}$

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

(f) Reciprocal of $2\frac{5}{16}$

Reciprocal of $\frac{37}{16} = \frac{16}{37}$

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

(b) $\frac{3}{2} \div 6 = \frac{3}{2} \times \frac{1}{6} = \frac{\cancel{3}}{\underset{4}{\cancel{12}}} = \frac{1}{4}$

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

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

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

(f) $11\frac{1}{4} \div \frac{10}{9} = \frac{45}{4} \times \frac{9}{10} = \frac{\overset{9}{\cancel{45}} \times 9}{4 \times \underset{2}{\cancel{10}}} = \frac{81}{8} = 10\frac{1}{8}$

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) $\frac{7}{8} \div \frac{1}{6} = \frac{7}{8} \times \frac{6}{1} = \frac{7 \times \overset{3}{\cancel{6}}}{\underset{4}{\cancel{8}} \times 1} = \frac{21}{4} = 5\frac{1}{4}$

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

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

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

Exercise- 7.10

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

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

$=$ ₹ $400 \div \frac{25}{9} = 400 \times \frac{9}{25} = 16 \times 9 =$ ₹ 144

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

Cost of 100 tables $=$ ₹ $50\frac{3}{20} \times 100$

$=$ ₹ $\frac{1003}{20} \times 100 = 1003 \times 5 =$ ₹ 5015

3. Length of 10 pieces of wire $=$ ₹ $12\frac{1}{2}$ m

Length of 1 piece of wire $= 12\frac{1}{2} \div 10$

$= \frac{25}{2} \times \frac{1}{10} = \frac{5 \times 1}{2 \times 2} \Rightarrow 1\frac{1}{4}$ m $\Rightarrow \frac{5}{4}$ m

4. Length of 1 piece of cloth $= \frac{3}{4}$ m

Length of 10 piece of cloth $= \frac{3}{4} \times 10 = \frac{30}{4} = 7\frac{2}{4}$ m $= 7\frac{1}{2}$ m

5. Cake $= \frac{4}{5}$

She ate $= \frac{4}{5} \times \frac{1}{2} = \frac{2}{5}$

6. Distance covered in 1 hour $= 320$ km

Distance covered in $1\frac{1}{4}$ hour $= 320 \times 1\frac{1}{4}$

$= 320 \times \frac{5}{4}$ km $= 80 \times 5 = 400$ km

7. Time taken to paint table $= \frac{1}{4}$ hour

Time taken to 24 tables $= \frac{1}{4} \times 24 = 1 \times 6 = 6$ hours

8. Money spend on dress $= \frac{2}{9} \times 180 = 2 \times 20 =$ ₹ 40

Money left $= 180 - 40 = 140$

9. Distance travelled in $2\frac{1}{5}$ hours $= 1568$

Distance travelled in 1 hour $= 1568 \div 2\frac{1}{5}$ km

$$= 1568 \div \frac{11}{5} = 1568 \times \frac{5}{11} \text{ km}$$

$$= \frac{7840}{11} \text{ km} = 712\frac{8}{11} \text{ km}$$

$\because$
$$\begin{array}{r} 712 \\ 11\,\overline{)\,7840} \\ -77 \\ \hline 14 \\ -11 \\ \hline 30 \\ -22 \\ \hline 8 \end{array}$$

10. Product of two number $= 48$

Other number $= 48 \div 4\frac{5}{9} = 48 \div \frac{41}{9}$

$$= 48 \times \frac{9}{41} = \frac{432}{41} = 10\frac{22}{41}$$

$$\begin{array}{r} 10 \\ 41\,\overline{)\,432} \\ -41 \\ \hline 22 \end{array}$$

MCQs

1. (a)

2. (a) $3\frac{2}{3} + 5\frac{1}{6} = (3+5) + \left(\frac{2}{3} + \frac{1}{6}\right) = 8 + \left(\frac{2\times 2}{3\times 2} + \frac{1}{6}\right)$

$$= 8 + \left(\frac{4}{6} + \frac{1}{6}\right) = 8 + \frac{5}{6} = 8\frac{5}{6}$$

3. (c) $3\frac{3}{10} \times 5\frac{5}{11} \times 1\frac{2}{3} = \frac{33}{10} \times \frac{60}{11} \times \frac{5}{3} = \frac{\overset{11}{\cancel{33}} \times \overset{30}{\cancel{60}} \times \cancel{5}}{\underset{2}{\cancel{10}} \times \cancel{11} \times \cancel{3}} = 30$

4. (c)

5. (c)

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

$$= 8 + \left(\frac{2\times 4}{3\times 4} + \frac{1\times 3}{4\times 3}\right) = 8 + \left(\frac{8}{12} + \frac{3}{12}\right)$$

$$= 8 + \frac{11}{12} = 8\frac{11}{12}$$

Test Exercise

1. (a) $\frac{72}{108} = \frac{72 \div 36}{108 \div 36} = \frac{2}{3}$

$\because$
$$\begin{array}{r} 72\,\overline{)\,108}\,(\,1 \\ -72 \\ \hline 36\,)\,72\,(\,2 \\ -72 \\ \hline 0 \end{array}$$

$\because$ HCF $= 36$

(b) $\frac{104}{130} = \frac{104 \div 26}{130 \div 26} = \frac{4}{5}$

$\because$
$$\begin{array}{r} 104\,\overline{)\,130}\,(\,1 \\ -104 \\ \hline 26\,)\,104\,(\,4 \\ -104 \\ \hline 0 \end{array}$$

$\because$ HCF $= 26$

(c) $\frac{80}{112} = \frac{80 \div 16}{112 \div 16} = \frac{5}{7}$

$\because$

```
80 ) 112 ( 1
     - 80
      32 ) 80 ( 2
           64
           16 ) 32 ( 2
              - 32
                 0
```

$\because$ HCF $= 16$

2. (a) $\frac{9}{10}$ $\quad \frac{3}{5}$

$\frac{9 \times 1}{10 \times 1}$ $\quad \frac{3 \times 2}{5 \times 2}$

$\frac{9}{10} > \frac{6}{10}$

$\therefore \frac{9}{10} > \frac{3}{5}$

(b) $\frac{7}{8}$ $\quad \frac{5}{6}$

$\frac{7 \times 3}{8 \times 3}$ $\quad \frac{5 \times 4}{6 \times 4}$

$\frac{21}{24} > \frac{20}{24}$

$\therefore \frac{7}{8} > \frac{20}{24}$

(c) $\frac{4}{7}$ $\quad \frac{8}{14}$

$\frac{4 \times 2}{7 \times 2}$ $\quad \frac{8}{14}$

$\frac{8}{14} = \frac{8}{14}$

$\therefore \frac{4}{7} = \frac{8}{14}$

3. (a) $\frac{7}{8} = \frac{\square}{56} = \frac{7 \times 7}{56} = \frac{49}{56}$

(b) $\frac{\square}{15} = \frac{65}{75} = \frac{65 \div 5}{15} = \frac{65}{75} = \frac{13}{15} = \frac{65}{75}$

(c) $\frac{13}{15} = \frac{\square}{45} = \frac{13}{15} = \frac{13 \times 3}{45} = \frac{13}{15} = \frac{39}{45}$

4. (a) $3\frac{4}{5} + 2\frac{7}{15} = (3+2) + \left(\frac{4}{5} + \frac{7}{15}\right) = 5 + \left(\frac{4 \times 3}{5 \times 3} + \frac{7}{15}\right) = 5 + \left(\frac{12}{15} + \frac{7}{15}\right)$

$= 5 + \left(\frac{12+7}{15}\right) = 5 + \frac{19}{15} = 5 + 1\frac{4}{15} = 6\frac{4}{15}$

(b) $4\frac{3}{4} + 2\frac{1}{6} = (4+2) + \left(\frac{3}{4} + \frac{1}{6}\right) = 6 + \left(\frac{3 \times 3}{4 \times 3} + \frac{1 \times 2}{6 \times 2}\right) = 6 + \left(\frac{9}{12} + \frac{2}{12}\right)$

$= 6 + \left(\frac{9+2}{12}\right) = 6 + \frac{11}{12} = 6\frac{11}{12}$

(c) $8\frac{1}{3} - 3\frac{7}{10} = (8-3) + \left(\frac{1}{3} - \frac{7}{10}\right) = 5 + \left(\frac{1 \times 10}{3 \times 10} - \frac{7 \times 3}{10 \times 3}\right) = 5 + \left(\frac{10}{30} - \frac{21}{30}\right)$

$$=5+\left(\frac{10-21}{30}\right)=5-\frac{11}{30}=\frac{5\times30-11}{30}=\frac{150-11}{30}=\frac{139}{30}=4\frac{19}{30}$$

(d) $4\frac{3}{4}-1\frac{2}{3}=(4-1)+\left(\frac{3}{4}-\frac{2}{3}\right)=3+\left(\frac{3\times3}{4\times3}-\frac{2\times4}{3\times4}\right)$

$$=3+\left(\frac{9}{12}-\frac{8}{12}\right)=3+\left(\frac{9-8}{12}\right)=3+\frac{1}{12}=3\frac{1}{12}$$

5. (a) $3\frac{5}{6}+2\frac{3}{4}-4\frac{1}{2}=\left(3+\frac{5}{6}\right)+\left(2+\frac{3}{4}\right)-\left(4+\frac{1}{2}\right)$

$$=(3+2-4)+\left(\frac{5}{6}+\frac{3}{4}-\frac{1}{2}\right)=1+\left(\frac{5\times2}{6\times2}+\frac{3\times3}{4\times3}-\frac{1\times6}{2\times6}\right)$$

$$=1+\left(\frac{10}{12}+\frac{9}{12}-\frac{6}{12}\right)=1+\left(\frac{10+9-6}{12}\right)=1+\frac{13}{12}$$

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

(b) $7\frac{2}{3}-5\frac{4}{9}+2\frac{1}{6}=\left(7+\frac{2}{3}\right)-\left(5+\frac{4}{9}\right)+\left(2+\frac{1}{6}\right)=7+\frac{2}{3}-5-\frac{4}{9}+2+\frac{1}{6}$

$$=(7-5+2)+\left(\frac{2}{3}-\frac{4}{9}+\frac{1}{6}\right)=(9-5)+\left(\frac{2}{3}+\frac{1}{6}-\frac{4}{9}\right)$$

$$=4+\left(\frac{2\times6}{3\times6}+\frac{1\times3}{6\times3}-\frac{4\times2}{9\times2}\right)=4+\left(\frac{12}{18}+\frac{3}{18}-\frac{8}{18}\right)$$

$$=4+\left(\frac{12+3-8}{18}\right)=4+\left(\frac{15-8}{18}\right)=4+\frac{7}{18}=4\frac{7}{18}$$

6. (a) $\frac{5}{9}\times45=\frac{5\times\overset{5}{\cancel{45}}}{\cancel{9}}=5\times5=25$

(b) $\frac{840}{21}\times\frac{39}{40}=\frac{84\cancel{0}\times\overset{13}{\cancel{39}}}{\cancel{21}\times4\cancel{0}}=\frac{\overset{21}{\cancel{84}}\times13}{7\times\underset{1}{\cancel{4}}}=\frac{\overset{3}{\cancel{21}}\times13}{\cancel{7}}=3\times13=39$

(c) $\frac{9}{16}\div\frac{6}{24}=\frac{9}{16}\times\frac{24}{6}=\frac{\overset{3}{\cancel{9}}\times\overset{3}{\cancel{24}}}{\underset{2}{\cancel{16}}\times\underset{2}{\cancel{6}}}=\frac{3\times3}{2\times2}=\frac{9}{4}=2\frac{1}{4}$

(d) $5\frac{3}{7}\div1\frac{5}{14}=\frac{38}{7}\div\frac{19}{14}=\frac{38}{7}\times\frac{14}{19}=\frac{\overset{2}{\cancel{38}}\times\overset{2}{\cancel{14}}}{\cancel{7}\times\underset{1}{\cancel{19}}}=2\times2=4$

7. (a) Reciprocal of $\frac{7}{9}=\frac{9}{7}$

(b) Reciprocal of $1\frac{2}{9}$

Reciprocal of $\frac{11}{9}=\frac{9}{11}$

(c) Reciprocal of $15=\frac{1}{15}$

(d) Reciprocal of $1=1$

8. $56 \div \frac{7}{8} = 56 \times \frac{8}{7} = 8 \times 8 = 64$

$\therefore$ $\frac{7}{8}$ are there in 56

9. Distance travel in 1 week (7 days) $= \left(2\frac{3}{7} \times 7\right)$ km $= \frac{17}{7} \times 7 = 17 \times 1 = 17$ km

10. Number of packets can be made from 40 kg of chips $= 40 \div 2\frac{1}{2} = 40 \div \frac{5}{2}$

$= 40 \times \frac{2}{5} = 8 \times 2 = 16$

❍❍❍

8 Decimals

Exercise- 8.1

1. (a) 7.4 = seven point four
(b) 53.08 = fifty three point zero eight
(c) 66.77 = sixty six point seven seven
(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) 34.067 (b) 80.966 (c) 53.628 (d) 227.123
(e) 942.623 (f) 75.349

3.

S.No.	Whole number part				Decimal	Decimal part		
	Thousands	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths
(a)			1	6	•	$\frac{2}{10}$		
(b)		2	8	4	•	$\frac{2}{10}$	$\frac{3}{100}$	
(c)		7	6	8	•	0	0	$\frac{3}{1000}$
(d)		3	8	4	•	$\frac{6}{10}$	$\frac{3}{100}$	$\frac{4}{1000}$
(e)		4	5	3	•	$\frac{8}{10}$	$\frac{4}{100}$	$\frac{7}{1000}$
(f)	2	2	2	3	•	$\frac{1}{10}$	0	$\frac{7}{1000}$

4. (a) 9 (b) 0.7 (c) 0.04 (d) 5
(e) 0.9 (f) 0.002

5. (a) $9.256 = 9 + 0.2 + 0.05 + 0.006$
(b) $35.08 = 30 + 5 + 0.0 + 0.08$
(c) $247.108 = 200 + 40 + 7 + 0.1 + 0 + 0.008$
(d) $0.875 = 0.8 + 0.07 + 0.005$
(e) $999.639 = 900 + 90 + 9 + 0.6 + 0.03 + 0.009$
(f) $86.007 = 80 + 6 + 0.0 + 0.00 + 0.007$

6. (a) (ii) (b) (i) (c) (iv) (d) (iii)

7. (a) 865.276 (b) 776.123 (c) 965.379 (d) 398.496
(e) 236.156 (f) 965.767 (g) 119.634 (h) 67.69
(i) 8325.758

Exercise- 8.2

1. (a) $\frac{6454}{10} = 645.4$ (b) $\frac{69}{1000} = 0.069$

(c) $\frac{18}{10000} = 0.0018$ (d) $\frac{384}{10} = 3.84$

(e) $\frac{979}{1000} = 0.979$ (f) $\frac{3846}{100} = 38.46$

2. (a) $10.67 = \frac{1067}{100}$ (b) $0.459 = \frac{459}{1000}$

(c) $118.35 = \frac{11835}{1000}$ (d) $2416.25 = \frac{241625}{100}$

(e) $38.290 = \frac{38290}{1000}$ (f) $79.0087 = \frac{790087}{10000}$

3. (a) $9.8 = 9.80 = \mathbf{9.800}$ (b) $42.5 = \mathbf{42.50} = 42.500$

(c) $\mathbf{6.7} = 6.70 = 6.700$ (d) $85.7 = \mathbf{85.70} = \mathbf{85.700}$

(e) $0.4 = \mathbf{0.40} = 0.400$ (f) $\mathbf{5.1} = \mathbf{5.10} = 5.100$

Exercise- 8.3

1. (a) 0.63 $>$ 0.48 (b) 0.75 $<$ 0.90

2. (a) 24.710, 319.200, 38.500, 0.943 are like decimals
(b) 83.440, 96.300, 101.432, 19.180 are like decimals
(c) 90.12, 41.50, 62.30 are like decimals
(d) 100.00, 500.600, 6.800, 19.800 are like decimals

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) 10.634 < 12.623 < 16.46 < 91.2 (b) 0.0846 < 10.008 < 18.46 < 84.6

(c) 0.323 < 3.23 < 6.66 < 26.62 (d) 0.254 < 2.54 < 25.4 < 254

(e) 0.695 < 7.914 < 8.72 < 9.2 < 10.896 < 12.01

(f) 5.009 < 5.08 < 5.29 < 5.3 < 5.7 < 5.91

5. (a) 9.36 > 9.236 > 9.06 > 0.096 (b) 16.38 > 16.234 > 16.22 > 13.146

(c) 0.534 > 0.453 > 0.354 > 0.345 (d) 39.563 > 27.963 > 25.963 > 25.369

(e) 101.2 > 80.05 > 48.05 > 39.276 > 12.97

(f) 7.81 > 7.63 > 7.594 > 7.2 > 7.05

Exercise- 8.4

1. (a)

```
   8 . 2 5
 + 3 . 1 8
 ---------
 1 1 . 4 3
```

(b)

```
 1 6 9 . 8
 + 4 7 . 4
 ---------
 2 1 7 . 2
```

(c)

```
   2 0 . 9 3
 + 9 6 . 3 2
 -----------
 1 1 7 . 2 5
```

(d)

```
   0 . 8 2 1
 + 7 . 4 7 9
 -----------
   8 . 3 0 0
```

(e)

```
       4 . 0 6 2
 + 2 6 . 5 3 8
 -------------
   3 0 . 6 0 0
```

(f)

```
   7 6 . 0 9
 + 5 7 . 4 6
 -----------
 1 3 3 . 5 5
```

2. (a)

```
   1 6 . 3 5
 + 1 3 . 2 0
 -----------
   2 9 . 5 5
```

(b)

```
   1 2 . 4 8 0
 + 1 8 . 2 8 7
 -------------
   3 0 . 7 6 7
```

(c)

```
   2 1 6 . 4 6 8
 + 1 3 1 . 0 3 0
 ---------------
   3 4 7 . 4 9 8
```

(d)

```
 3 2 5 . 8 1 0
   8 9 . 0 9 7
 +   0 . 7 8 0
 -------------
 4 1 5 . 6 8 7
```

(e)

```
 3 3 1 . 3 3 1
   3 3 . 3 1 0
       3 . 1 0 0
 +     0 . 0 0 1
 -----------------
 3 6 7 . 7 4 2
```

(f)

```
   5 3 . 6 0 0
   9 6 . 8 7 0
       8 . 9 7 4
 +     0 . 1 0 0
 -----------------
 1 5 9 . 5 4 4
```

(g)
```
  30.20
   9.15
+ 52.40
 91.75
```

(h)
```
 172.500
   0.638
+ 43.070
 216.208
```

(i)
```
  29.010
   7.812
+ 10.600
  47.422
```

(j)
```
  92.10
  87.01
+ 63.89
 243.00
```

(k)
```
     7.006
  70.060
+ 700.600
 777.666
```

(l)
```
  92.10
  87.01
+ 63.89
 243.00
```

(m)
```
  40.17
  70.06
+ 700.60
  810.83
```

(n)
```
   1.685
   0.920
+ 38.700
  41.305
```

(o)
```
  326.90
  263.75
+ 143.00
  733.65
```

(p)
```
  40.06
  31.50
+ 500.04
  571.60
```

(q)
```
 17.820
  6.931
+ 0.900
 25.651
```

(r)
```
 234.50
   2.35
+ 23.45
 260.30
```

3. (a)
```
  9.728
- 5.305
  4.423
```

(b)
```
  65.49
- 21.34
  44.15
```

(c)
```
  896.7
- 372.6
  524.1
```

(d)
```
  24.1
- 12.6
  11.5
```

(e)
```
  45.62
- 19.28
  26.34
```

(f)
```
  310.4
- 123.7
  186.7
```

4. (a)

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

(b)

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

(c)

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

(d)

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

(e)

$$\begin{array}{r} 33.600 \\ -\ 3.637 \\ \hline 29.963 \end{array}$$

(f)

$$\begin{array}{r} 500.000 \\ -\ 386.713 \\ \hline 113.287 \end{array}$$

5. (a)

$$\begin{array}{r} 315.8 \\ -\ 158.7 \\ \hline 157.1 \end{array}$$

(b)

$$\begin{array}{r} 8.147 \\ -\ 3.528 \\ \hline 4.619 \end{array}$$

(c)

$$\begin{array}{r} 23.06 \\ -\ 14.19 \\ \hline 8.87 \end{array}$$

(d)

$$\begin{array}{r} 52.604 \\ -\ 29.389 \\ \hline 13.215 \end{array}$$

(e)

$$\begin{array}{r} 730.4 \\ -\ 452.8 \\ \hline 277.6 \end{array}$$

(f)

$$\begin{array}{r} 91.301 \\ -\ 72.956 \\ \hline 18.345 \end{array}$$

(g)

$$\begin{array}{r} 620.50 \\ -\ 136.25 \\ \hline 484.25 \end{array}$$

(h)

$$\begin{array}{r} 7.428 \\ -\ 4.570 \\ \hline 2.858 \end{array}$$

(i)

$$\begin{array}{r} 5.200 \\ -\ 1.438 \\ \hline 3.762 \end{array}$$

6. (a)

$$\begin{array}{r} 6.219 \\ -\ 3.800 \\ \hline 2.419 \end{array}$$

(b)

$$\begin{array}{r} 10.500 \\ -\ 4.185 \\ \hline 6.315 \end{array}$$

(c)

$$\begin{array}{r} 82.41 \\ -\ 49.73 \\ \hline 33.68 \end{array}$$

(d)

$$\begin{array}{r} 17.90 \\ -\ 8.64 \\ \hline 9.26 \end{array}$$

(e)
$$\begin{array}{r} 100.00 \\ -\ 50.45 \\ \hline 49.55 \\ \hline \end{array}$$

(f)
$$\begin{array}{r} 250.00 \\ -\ 125.75 \\ \hline 124.25 \\ \hline \end{array}$$

(g)
$$\begin{array}{r} 512.87 \\ -\ 304.92 \\ \hline 207.95 \\ \hline \end{array}$$

(h)
$$\begin{array}{r} 13.140 \\ -\ 7.826 \\ \hline 5.314 \\ \hline \end{array}$$

(i)
$$\begin{array}{r} 83.005 \\ -\ 39.173 \\ \hline 43.822 \\ \hline \end{array}$$

(j)
$$\begin{array}{r} 630.12 \\ -\ 285.67 \\ \hline 344.45 \\ \hline \end{array}$$

(k)
$$\begin{array}{r} 90.01 \\ -\ 58.45 \\ \hline 31.56 \\ \hline \end{array}$$

(*l*)
$$\begin{array}{r} 48.12 \\ -\ 29.50 \\ \hline 18.62 \\ \hline \end{array}$$

7. Let x should be subtracted

$$60 - x = 25.56$$
$$60 - 25.56 = x$$
$$34.44 = x$$

$$\begin{array}{r} 60.00 \\ -25.00 \\ \hline 34.44 \\ \hline \end{array}$$

∴ 34.44 should be subtracted from 60 to get 25.45

8.
$$\begin{array}{r} 67.570 \\ +\ 93.055 \\ \hline 160.625 \\ \hline \end{array}$$

Exercise- 8.5

1. Cost of Ist watch = ₹ 136.50
Cost of IInd watch = ₹ 134.60
Total cost =
$$\begin{array}{r} 136.75 \\ +134.60 \\ \hline ₹271.35 \\ \hline \end{array}$$

2. Total distance = 236.5 km
Covered distance = 127.8 km
Distance still to cover =
$$\begin{array}{r} 236.5 \\ -127.5 \\ \hline 108.7 \\ \hline \end{array} \text{km}$$

3. Height of plant on Tuesday = 75.5 cm
Height increased on Thursday = 23.8 cm
Total height on thursday =
$$\begin{array}{r} 75.5 \\ +23.8 \\ \hline 99.3 \\ \hline \end{array} \text{cm}$$

4. Distance covered on Monday = 123.8 km
Distance covered on Tuesday = 189.8 km
Distance covered on Wednesday = 99.76 km
Total distance covered =

```
  123.80
  189.90
 +99.76
 413.46 km
```

5. Rinku is faster by

```
 102.1
 -98.5
   3.6 seconds
```

Exercise- 8.6

1. (a) $6.5 \times 5 = 32.5$

```
   6 . 5
     × 5
 -------
 3 2 . 5
```

(b) $5.21 \times 19 = 98.99$

```
   5 . 2 1
       × 1 9
 ---------
   4 6 8 9
   5 2 1 ×
 ---------
 9 8 . 9 9
```

(c) $3.7 \times 12 = 44.4$

```
     3 . 7
     × 1 2
 ---------
       7 4
     3 7 ×
 ---------
   4 4 . 4
```

(d) $2.5 \times 11 = 27.5$

```
     2 . 5
     × 1 1
 ---------
       2 5
     2 5 ×
 ---------
   2 7 . 5
```

(e) $3.6 \times 12 = 43.2$

```
     3 . 6
     × 1 2
 ---------
       7 2
     3 6 ×
 ---------
   4 3 . 2
```

(f) $8.7 \times 14 = 121.8$

```
     8 . 7
     × 1 4
 ---------
     3 4 8
     8 7 ×
 ---------
 1 2 1 . 8
```

2. (a) $16.25 \times 10 = 162.5$
(b) $13.836 \times 100 = 1383.6$
(c) $28.6251 \times 1000 = 28625.1$
(d) $6234.5 \times 10 = 62345$
(e) $30.50 \times 100 = 3050$
(f) $4.909 \times 1000 = 4909$
(g) $3.61 \times 10 = 36.1$
(h) $3.25 \times 10 = 22.5$
(i) $3.761 \times 10 = 37.61$

3. (a) $0.7 \times 1.2 = 0.84$

```
    0 . 7
  × 1 . 2
  -------
      1 4
      7 ×
  -------
  0 . 8 4
```

(b) $1.5 \times 6.5 = 9.75$

```
    1 . 5
  × 6 . 5
  -------
      7 5
    9 0 ×
  -------
  9 . 7 5
```

(c) $6.7 \times 1.9 = 12.73$

```
    6 . 7
  × 1 . 9
  -------
    6 0 3
    6 7 ×
  -------
1 2 . 7 3
```

(d) $1.33 \times 1.4 = 1.862$

```
  1 . 3 3
  × 1 . 4
  -------
    5 3 2
  1 3 3 ×
  -------
1 . 8 6 2
```

(e) $1.023 \times 1.4 = 1.4$

```
  1 . 0 2 3
      × 1 . 4
  ---------
    4 0 9 2
  1 0 2 3 ×
  ---------
1 . 4 3 2 2
```

(f) $2.379 \times 2.2 = 5.2338$

```
  2 . 3 7 9
      × 2 . 2
  ---------
    4 7 5 8
  4 7 5 8 ×
  ---------
5 . 2 3 3 8
```

(g) $4.365 \times 4.4 = 19.2060$

```
        4 . 3 6 5
          × 4 . 4
  -----------------
      1 7 4 6 0
  + 1 7 4 6 0 ×
  -----------------
  1 9 . 2 0 6 0
```

(h) $7.013 \times 1.3 = 9.1169$

```
  7 . 0 1 3
      × 1 . 3
  ---------
  2 1 0 3 9
+ 7 0 1 3 ×
  ---------
9 . 1 1 6 9
```

(i) $6.312 \times 1.6 = 10.0492$

```
        6 . 3 1 2
          × 1 . 6
  -----------------
      3 7 8 7 2
  + 6 3 1 2 ×
  -----------------
  1 0 . 0 9 9 2
```

4. $16.9354 \times 4.70 = 79.596380$

```
          1 6 . 9 3 5 4
              × 4 . 7 0
  -------------------
              0 0 0 0
        1 1 8 5 4 7 8 ×
      6 7 7 4 1 6 × ×
  -------------------
  7 9 . 5 9 6 3 8 0
```

Exercise- 8.7

1. (a) $20.4 \div 3 = 6.8$

```
      6.8
3 ) 20.4
   −18
    24
   −24
     0
```

(b) $4.235 \div 25 = 0.1694$

```
      0.1694
25 ) 4.235
    −25
     173
    −150
      235
     −225
       100
      −100
         0
```

(c) $243.18 \div 63 = 3.86$

```
       3.86
63 ) 243.18
    −189
      541
     −504
       378
      −378
         0
```

(d) $0.108 \div 9 = 0.012$

```
      0.012
9 ) 0.108
     −9
      18
     −18
       0
```

(e) $10.4192 \div 32 = 0.3256$

```
      0.3256
32 ) 10.4192
    −96
     081
     −64
      179
     −160
       192
      −192
         0
```

(f) $204.4 \div 35 = 5.84$

```
       5.84
35 ) 204.4
    −175
     294
    −280
      140
     −140
        0
```

(g) $4.27 \div 7 = 0.61$

```
      0.61
7 ) 4.27
    −42
     07
     −7
      0
```

(h) $112.5 \div 15 = 7.5$

```
       7.5
15 ) 112.5
    −105
      75
     −75
       0
```

(i) $0.192 \div 12 = 0.016$

```
      0.016
12 ) 0.192
     −12
      72
     −72
       0
```

2. (a) $75.75 \div 10 = 7.575$ (b) $167.8 \div 10 = 16.78$

(c) $6079 \div 1000 = 6.079$ (d) $180.75 \div 100 = 1.8075$

(e) $615.4 \div 1000 = 0.6154$ (f) $10.9 \div 10 = 1.09$

3. (a) $\frac{16.9}{1.3} = \frac{16.9 \times 10}{1.3 \times 10} = \frac{169}{13} = 13$

```
      13
13 ) 169
     −13
      39
     −13
       0
```

(b) $\frac{9.69}{1.9} = \frac{9.69 \times 10}{1.9 \times 10} = \frac{96.9}{19} = 5.1$

```
      5.1
19 ) 196.9
     −95
      19
     −19
       0
```

(c) $\frac{4.41}{2.1} = \frac{4.41 \times 10}{2.1 \times 10} = \frac{44.1}{21} = 2.1$

```
      2.1
21 ) 44.1
     −42
      21
     −21
       0
```

(d) $\frac{23.6}{0.26} = \frac{23.6 \times 100}{0.26 \times 100} = \frac{2360}{26} = 90.77$ (App.)

```
26 ) 2360 ( 90.7692307692
     −234
       200
     − 182
        180
     − 156
         240
     − 234
          60
      − 52
           80
         −78
           200
         −182
            180
```

(e) $\frac{0.441}{21} = 0.021$

```
      0.021
21 ) 0.441
     −42
      21
     −21
       0
```

(f) $\frac{11.47}{0.031} = \frac{11.47 \times 1000}{0.031 \times 1000} = \frac{11470}{31} = 370$

```
      370
31 ) 11470
     −93
      217
     −217
        0
```

(g) $\frac{31.696}{0.28} = \frac{31.696 \times 100}{0.28 \times 100} = \frac{3169.6}{28} = 113.2$

```
      113.2
28 ) 3169.6
     −28
       36
     −28
        89
     −84
         56
        −56
          0
```

(h) $\frac{0.792}{0.8} = \frac{0.792 \times 10}{0.8 \times 10} = \frac{7.92}{8} = 0.99$

```
      0.99
8 ) 7.92
    −72
     72
    −72
      0
```

(i) $\frac{1.25}{2.5} = \frac{1.25 \times 10}{2.5 \times 10} = \frac{12.5}{25} = 0.5$

```
      0.5
25 ) 12.5
     −125
        0
```

Exercise- 8.8

1. Cost of 12 bananas = ₹ 40.50

Cost of 1 banana = 40.50 ÷ 12 = ₹ 3.375

```
      3.375
12 ) 40.50
     −36
      45
     −36
       90
     −84
        60
       −60
         0
```

2. Weight of 1 bag = 131.5 kg

Weight of 16 bags = 131.5 × 16 kg = 2104.0 kg

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

3. Fat in 1 litre of milk = 0.245 kg

Fat in 15.4 litre of milk = 0.245 × 15.4 = 3.773 kg

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

4. Cost of 12.5 kg of rice = 291.25

Cost of 1 kg of rice $= \frac{291.25}{12.5} =$ ₹ $\frac{291.25 \times 10}{12.5 \times 10} = \frac{2912.5}{125.0} =$ ₹ 23.3

$$\begin{array}{r} 23.3 \\ 125\,\overline{)\,2912.5} \\ -250 \\ \hline 412 \\ -375 \\ \hline 375 \\ -375 \\ \hline 0 \\ \hline \end{array}$$

Cost of 3.5 kg of rice 23.3 × 3.5 = ₹ 81.55

$$\begin{array}{r} 23.3 \\ \times\ 3.5 \\ \hline 1165 \\ 699\ \times \\ \hline 81.55 \\ \hline \end{array}$$

5. 5 km covered in 1 litre 157.6 ÷ 16 = 9.85 km

$$\begin{array}{r} 9.85 \\ 16\,\overline{)\,157.6} \\ -144 \\ \hline 136 \\ -128 \\ \hline 80 \\ -80 \\ \hline 0 \\ \hline \end{array}$$

6. Cost of 1 litre milk = ₹ 14.50
Cost of 125 litre milk = ₹ 14.50 × 125 = ₹ 1812.50

```
      1 4 . 5 0
        × 1 2 5
    ---------------
        7 2 5 0
      2 9 0 0 ×
    1 4 5 0 × ×
  -----------------
  1 8 1 2 . 5 0
```

7. Cost of 16 kg potatoes = ₹ 18.75
Cost of 1 kg potatoes = 18.75 ÷ 6 = ₹ 3.125

```
      3.125
  6 ) 18.75
     −18
     -----
       7
     −6
     -----
      15
     −12
     -----
       30
      −30
     -----
        0
```

8. Sugar in 100 bags 97.60 kg × 100 = 9760 kg

9. Cost of 30 metres cloth = ₹ 1210.50
Cost of 1 metre cloth = ₹ 1210.50 ÷ 30 = 40.335

```
      40.355
 30 ) 1210.50
     −120
     -------
       100
      −90
     -------
        105
       −90
     -------
         150
       −150
     -------
           0
```

10. Soda water in 1 bottle = 0.47 L
Soda water in 200 bottle = 0.47 × 200 = 47 × 2 = 94 *l*

11. Each child get (19 ÷ 8) chocolate = 2.375 chocolate

```
      2.375
  8 ) 19
     −16
     -----
       30
     −24
     -----
        60
      −56
     -----
        40
```

12. Cost of 1 litre Petrol = ₹ 29.05

Cost of 50 litres Petrol = ₹ 29.05 × 50

= ₹ 1452.50

$$\begin{array}{r} 29.05 \\ \times\ 50 \\ \hline 0000 \\ 14525\times \\ \hline 1452.50 \end{array}$$

13. In 0.5 metres step = 1

In 1 metre step $= \frac{1}{0.5}$

In 20 metres steps $= \frac{20}{0.5}$

$= \frac{200}{5} = 40$ steps

14. In 1 hour distance covered 60.5 km

In 10 hours distance covered (60.5 × 10) km = 605 km

15. Tin requires to hold 465 litres of petrol = 465 ÷ 15.5

$= \frac{465 \times 10}{15.5 \times 10} \times 10 = \frac{4650}{155} = 30$ tins

$$\begin{array}{r} 30 \\ 155\overline{)4650} \\ -465 \\ \hline 00 \end{array}$$

16. Cost of 1 metre cloth = ₹ 45.75

Cost of 20 metres cloth = ₹ 45.75 × 20 = 457.5 × 2 = ₹ 915.0

MCQs

1. (a)
$$\begin{array}{r} 29.3 \\ +\ 3.5 \\ \hline 32.8 \end{array}$$

2. (a)
$$\begin{array}{r} 7.2 \\ -\ 1.5 \\ \hline 5.7 \end{array}$$

3. (c)

4. (b) Weight of 1 shop = 6.682 ÷ 13

= 0.514

$$\begin{array}{r} 0.514 \\ 13\overline{)6.682} \\ -65 \\ \hline 18 \\ -13 \\ \hline 52 \\ -52 \\ \hline 0 \end{array}$$

Exercise- 9.1

1. (a) $26 \div 2 + 7 = 13 + 7 = 19$ (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) $27 \div 3 + 5 \times 3 - 10 = 9 + 5 \times 3 - 10 = 9 + 15 - 10 = 24 - 10 = 14$

(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) $12 - 21 \div 7 + 4 \times 2 = 12 - 3 + 4 \times 2 = 12 - 3 + 8 = 12 + 8 - 3 = 20 - 3 = 17$

(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) $6.7 \times 8 + 2 \times 5.1 \times 2.5 = 53.6 + 10.2 \times 2.5 = 53.6 + 25.50 = 79.10$

(b) $9 + 8.2 + 5.8 + 3 \times 2.8 = 9 + 8.2 + 5.8 + 8.4$

$$\begin{array}{r} 9.00 \\ 8.2 \\ 5.8 \\ 8.4 \\ \hline 31.4 \\ \hline \end{array}$$

(c) $29.2 - 3.6 + 2.1 \times 1 + 6.8 = 29.2 - 3.6 + 2.1 + 6.8$

$= 29.2 - 3.6 + 8.9 = 25.6 + 8.9 = 34.5$

(d) $18.7 + 14 - 5.14 = 32.7 - 5.14 = 27.56$

(e) $35.4 - 13.3 + 2.9 \times 4.7 = 35.4 - 13.3 + 13.63 = 22.10 + 13.63 = 35.73$

$$\begin{array}{r} 2.9 \\ \times 4.7 \\ \hline 203 \\ 116\times \\ \hline 13.63 \\ \hline \end{array}$$

(f) $17.2 - 6.9 + 1 \times 4.1 + 2.1 = 17.2 - 6.9 + 4.1 + 2.1 = 10.3 + 6.2 = 16.5$

4. (a) $\frac{4}{5} \div \frac{7}{15}$ of $\frac{8}{9} = \frac{4}{5} \div \frac{56}{135} = \frac{\cancel{4}}{\cancel{5}} \times \frac{\overset{27}{\cancel{135}}}{\underset{14}{\cancel{56}}} = \frac{27}{14} = 1\frac{13}{14}$

(b) $\frac{4}{5} \div \frac{7}{15} \times \frac{8}{9} = \frac{4}{\cancel{5}} \times \frac{\overset{3}{\cancel{15}}}{7} \times \frac{8}{9} = 4 \times \frac{\cancel{3}}{7} \times \frac{8}{\underset{3}{\cancel{9}}} = \frac{4 \times 8}{7 \times 3} = \frac{32}{21} = 1\frac{11}{21}$

(c) $5\frac{1}{4} \div \frac{3}{7} \times \frac{1}{2} = \frac{\overset{7}{\cancel{21}}}{4} \times \frac{7}{\underset{1}{\cancel{3}}} \times \frac{1}{2} = \frac{7 \times 7}{4 \times 1 \times 2} = \frac{49}{8} = 6\frac{1}{8}$

(d) $5\frac{1}{4} \div \frac{3}{7} \text{ of } \frac{1}{2} = \frac{21}{4} \div \frac{3}{14} = \frac{\overset{7}{\cancel{21}}}{\underset{2}{\cancel{4}}} \times \frac{\overset{7}{\cancel{14}}}{\underset{1}{\cancel{3}}} = \frac{7 \times 7}{2} = \frac{49}{2} = 24\frac{1}{2}$

(e) $3\frac{3}{4} \div \frac{7}{8} \times 4\frac{1}{6} \times 1\frac{13}{15} = \frac{15}{4} \div \frac{7}{8} \times \frac{25}{6} \times \frac{28}{15}$

$= \frac{\cancel{15}}{\cancel{4}} \times \frac{\overset{2}{\cancel{8}}}{7} \times \frac{25}{6} \times \frac{\overset{4}{\cancel{28}}}{\cancel{15}} = \frac{2 \times 25 \times 4}{\underset{3}{\cancel{6}}} = \frac{100}{3} = 33\frac{1}{3}$

(f) $\frac{7}{8} + 2\frac{5}{6} - \frac{11}{12} \times 3\frac{3}{11} = \frac{7}{8} + \frac{17}{6} - \frac{11}{12} \times \frac{36}{11} = \frac{7}{8} + \frac{17}{6} - \frac{\cancel{11}}{\cancel{12}} \times \frac{\overset{3}{\cancel{36}}}{\cancel{11}}$

$= \frac{7}{8} + \frac{17}{6} - \frac{3}{1} = \frac{7 \times 3}{8 \times 3} + \frac{17 \times 4}{6 \times 4} - \frac{3 \times 24}{1 \times 24} = \frac{21}{24} + \frac{68}{24} - \frac{72}{24}$

$= \frac{21 + 68 - 72}{24} = \frac{89 - 72}{24} = \frac{17}{24}$

(g) $\frac{1}{2} + 1\frac{1}{2} \div 1\frac{1}{2} \times \frac{2}{3} - \frac{1}{4} = \frac{1}{2} + \frac{3}{2} \div \frac{3}{2} \times \frac{2}{3} - \frac{1}{4} = \frac{1}{2} + \frac{3}{2} \times \frac{2}{3} \times \frac{2}{3} - \frac{1}{4}$

$= \frac{1}{2} + 1 \times \frac{2}{3} - \frac{1}{4} = \frac{1}{2} + \frac{2}{3} - \frac{1}{4} = \frac{1 \times 6}{2 \times 6} + \frac{2 \times 4}{3 \times 4} - \frac{1 \times 3}{4 \times 3}$

$= \frac{6}{12} + \frac{8}{12} - \frac{3}{12} = \frac{6 + 8 - 3}{12} = \frac{14 - 3}{12} = \frac{11}{12}$

(h) $1\frac{4}{5} - 2\frac{3}{4} \text{ of } \frac{8}{11} + \frac{3}{8} \div \frac{9}{10} = \frac{9}{5} - \frac{11}{4} \text{ of } \frac{8}{11} + \frac{3}{8} \div \frac{9}{10} = \frac{9}{5} - \frac{88}{44} + \frac{3}{8} \times \frac{10}{9}$

$= \frac{9}{5} - \frac{2}{1} + \frac{3}{8} \times \frac{10}{9} = \frac{9}{5} - \frac{2}{1} + \frac{30}{72} = \frac{9}{5} - \frac{2}{1} + \frac{10}{24}$

$= \frac{9 \times 24 - 2 \times 120 + 10 \times 5}{120} = \frac{216 - 240 + 50}{120}$

$= \frac{266 - 240}{120} = \frac{26}{120} = \frac{13}{60}$

(i) $9\frac{1}{3} \div \frac{3}{5} \text{ of } \frac{7}{9} \times \frac{4}{5} = \frac{28}{3} \div \frac{21}{45} \times \frac{4}{5} = \frac{28}{3} \times \frac{45}{21} \times \frac{4}{5}$

$= \frac{\overset{4}{\cancel{28}}}{\cancel{3}} \times \frac{\overset{15}{\cancel{45}}}{\underset{3}{\cancel{21}}} \times \frac{4}{5} = \frac{4 \times \overset{5}{\cancel{15}} \times 4}{\cancel{3} \times 5} = \frac{4 \times 5 \times 4}{5} = 4 \times 4 = 16$

(j) $4\frac{3}{7} \text{ of } 2\frac{5}{8} \times 2\frac{2}{7} \div 4\frac{2}{15} = \frac{31}{7} \text{ of } \frac{21}{8} \times \frac{16}{7} \div \frac{62}{15} = \frac{31 \times 21}{7 \times 8} \times \frac{16}{7} \times \frac{15}{62}$

$= \frac{\cancel{31} \times \overset{3}{\cancel{21}} \times \overset{2}{\cancel{16}} \times 15}{\cancel{7} \times \cancel{8} \times 7 \times \underset{2}{\cancel{62}}} = \frac{3 \times \cancel{2} \times 15}{7 \times \cancel{2}} = \frac{3 \times 15}{7} = \frac{45}{7} = 6\frac{3}{7}$

(k) $\frac{3}{5}$ of $1\frac{3}{7} \div \frac{2}{5} - \frac{1}{2} + \frac{2}{3} \times \frac{6}{7} = \frac{3}{5}$ of $\frac{10}{7} \div \frac{2}{5} - \frac{1}{2} + \frac{2}{3} \times \frac{6}{7}$

$$= \frac{30}{35} \div \frac{2}{5} - \frac{1}{2} + \frac{2}{3} \times \frac{6}{7} = \frac{30}{35} \times \frac{5}{2} - \frac{1}{2} + \frac{4}{7}$$

$$= \frac{15}{7} - \frac{1}{2} + \frac{4}{7} = \frac{15 \times 2}{7 \times 2} - \frac{1 \times 7}{2 \times 7} + \frac{4 \times 2}{7 \times 2}$$

$$= \frac{30}{14} - \frac{7}{14} + \frac{8}{14} = \frac{30 - 7 + 8}{14} = \frac{23 + 8}{14} = \frac{31}{14} = 2\frac{3}{14}$$

(*l*) 25 of $\frac{3}{5} \div 1\frac{2}{3} + 3$ of $\frac{1}{3} \div 10 = \frac{75}{5} \div \frac{5}{3} + \frac{3}{3} \div 10 = \frac{75}{5} \times \frac{3}{5} + \frac{3}{3} \times \frac{1}{10}$

$$= \frac{75}{5} \times \frac{3}{5} + \frac{3}{30} = \frac{45}{5} + \frac{1}{10} = \frac{45 \times 2}{5 \times 2} + \frac{1}{10}$$

$$= \frac{90}{10} + \frac{1}{10} = \frac{90 + 1}{10} = \frac{91}{10} = 9\frac{1}{10}$$

(m) $7\frac{1}{3} \div 3\frac{2}{3}$ of $2 + 4\frac{1}{2} \div 2\frac{1}{4} - 2\frac{1}{2} = \frac{22}{3} \div \frac{11}{3}$ of $2 + \frac{9}{2} \div \frac{9}{4} - \frac{5}{2}$

$$= \frac{22}{3} \div \frac{22}{3} + \frac{\cancel{9}}{\cancel{2}} \times \frac{\overset{2}{\cancel{4}}}{\cancel{9}} - \frac{5}{2} = 1 + 2 - \frac{5}{2} = 3 - \frac{5}{2} = \frac{3 \times 2}{2} - \frac{5}{2} = \frac{6 - 5}{2} = \frac{1}{2}$$

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) $100 - [7\{3 + (5 \times 9 - 3) \div 6\}] = 100 - [7\{3 + (45 - 3) \div 6\}]$

$$= 100 - [7\{3 + 42 \div 6\}] = 100 - [7\{3 + 7\}]$$

$$= 100 - [7\{10\}] = 100 - 70 = 30$$

(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) $75 - 31 + (1.2 + 4.12) = 44 + (5.32) = 49.32$

(*l*) $(8.6 + 26 + 34.3) - 53.31 = (34.6 + 34.3) - 53.31 = 68.9 - 53.31 = 15.59$

2. (a) $\left(\frac{4}{9} + \frac{7}{9}\right) \times 2\frac{1}{2} = \left(\frac{4 + 7}{9}\right) \times \frac{5}{2} = \frac{11}{9} \times \frac{5}{2} = \frac{55}{18} = 3\frac{1}{18}$

(b) $\frac{3}{8}\div\left(1\frac{7}{8}-\frac{3}{4}\right)=\frac{3}{8}\div\left(\frac{15}{8}-\frac{3}{4}\right)=\frac{3}{8}\div\left(\frac{15}{8}-\frac{3\times2}{4\times2}\right)=\frac{3}{8}\div\left(\frac{15-6}{8}\right)$

$$=\frac{3}{8}\div\frac{9}{8}=\frac{3}{8}\times\frac{8}{9}=\frac{3}{9}=\frac{1}{3}$$

(c) $6+\left\{1+\frac{1}{2}+\left(\frac{3}{4}-\frac{1}{2}\right)\right\}=6+\left\{1+\frac{1}{2}+\left(\frac{3}{4}-\frac{1\times2}{2\times2}\right)\right\}$

$$=6+\left\{1+\frac{1}{2}+\left(\frac{3}{4}-\frac{2}{4}\right)\right\}=6+\left\{1+\frac{1}{2}+\left(\frac{3-2}{4}\right)\right\}$$

$$=6+\left\{1+\frac{1}{2}+\frac{1}{4}\right\}=6+\left\{\frac{1\times4}{4}+\frac{1\times2}{2\times2}+\frac{1}{4}\right\}$$

$$=6+\left\{\frac{4}{4}+\frac{2}{4}+\frac{1}{4}\right\}=6+\left\{\frac{4+2+1}{4}\right\}$$

$$=6+\frac{7}{4}=6+1\frac{3}{4}=7\frac{3}{4}$$

(d) $\left\{\left(13\frac{1}{3}-12\frac{1}{2}\right)\div\frac{5}{6}\right\}\text{ of }\frac{3}{8}=\left\{\left(\frac{40}{3}-\frac{25}{2}\right)\div\frac{5}{6}\right\}\text{ of }\frac{3}{8}$

$$=\left\{\left(\frac{40\times2}{3\times2}-\frac{25\times3}{2\times3}\right)\div\frac{5}{6}\right\}\text{ of }\frac{3}{8}$$

$$=\left\{\left(\frac{80}{6}-\frac{75}{6}\right)\div\frac{5}{6}\right\}\text{ of }\frac{3}{8}=\left\{\left(\frac{80-75}{6}\right)\div\frac{5}{6}\right\}\text{ of }\frac{3}{8}$$

$$=\left(\frac{5}{6}\div\frac{5}{6}\right)\text{of }\frac{3}{8}=1\text{ of }\frac{3}{8}=\frac{3}{8}$$

(e) $2\frac{1}{2}-\left\{\frac{13}{4}-\left(3\frac{1}{2}-1\frac{3}{4}\right)\right\}=\frac{5}{2}-\left\{\frac{13}{4}-\left(\frac{7}{2}-\frac{7}{4}\right)\right\}=\frac{5}{2}-\left\{\frac{13}{4}-\left(\frac{7\times2}{2\times2}-\frac{7}{4}\right)\right\}$

$$=\frac{5}{2}-\left\{\frac{13}{4}-\left(\frac{14}{4}-\frac{7}{4}\right)\right\}=\frac{5}{2}-\left\{\frac{13}{4}-\left(\frac{14-7}{4}\right)\right\}$$

$$=\frac{5}{2}-\left\{\frac{13}{4}-\frac{7}{4}\right\}=\frac{5}{2}-\left\{\frac{13-7}{4}\right\}=\frac{5}{2}-\frac{6}{4}$$

$$=\frac{5\times2}{2\times2}-\frac{6}{4}=\frac{10}{4}-\frac{6}{4}=\frac{10-6}{4}=\frac{4}{4}=1$$

(f) $125-4+\{12\times(7-5)\}=125-4+\{12\times2\}$

$$=125-4+24=125+24-4=149-4=145$$

(g) $4\frac{1}{2}-\left[1+\left\{2\frac{1}{2}-\left(\frac{1}{3}-\frac{1}{4}\right)\right\}\right]=\frac{9}{2}-\left[1+\left\{\frac{5}{2}-\left(\frac{1\times4}{3\times4}-\frac{1\times3}{4\times3}\right)\right\}\right]$

$$=\frac{9}{2}-\left[1+\left\{\frac{5}{2}-\left(\frac{4}{12}-\frac{3}{12}\right)\right\}\right]$$

$$=\frac{9}{2}-\left[1+\left\{\frac{5}{2}-\left(\frac{4-3}{12}\right)\right\}\right]=\frac{9}{2}-\left[1+\left\{\frac{5}{2}-\frac{1}{12}\right\}\right]$$

$$=\frac{9}{2}-\left[1+\left\{\frac{5\times6}{2\times6}-\frac{1}{12}\right\}\right]=\frac{9}{2}-\left[1+\left\{\frac{30}{12}-\frac{1}{12}\right\}\right]$$

$$=\frac{9}{2}-\left[1+\frac{30-1}{12}\right]=\frac{9}{2}-\left[1+\frac{29}{12}\right]$$

$$=\frac{9}{2}-\left[\frac{1\times12}{12}+\frac{29}{12}\right]=\frac{9}{2}-\left[\frac{12}{12}+\frac{29}{12}\right]$$

$$=\frac{9}{2}-\left(\frac{12+29}{12}\right)=\frac{9}{2}-\frac{41}{12}=\frac{9\times6}{2\times6}-\frac{41}{12}$$

$$=\frac{54-41}{12}=\frac{13}{12}=1\frac{1}{12}$$

(h) $3\frac{1}{3}\text{ of }\frac{1}{2}+2\div\left[2\times\left\{2-\left(2-\frac{1}{5}\right)\right\}\right]=\frac{1}{3}\text{ of }\frac{1}{2}+2\div\left[2\times\left\{2-\left(\frac{2\times5}{5}-\frac{1}{5}\right)\right\}\right]$

$$=\frac{10}{3}\text{ of }\frac{1}{2}+2\div\left[2\times\left\{2-\left(\frac{10-1}{5}\right)\right\}\right]$$

$$=\frac{10}{6}+2\div\left[2\times\left\{2-\frac{9}{5}\right\}\right]$$

$$=\frac{10}{6}+2\div\left[2\times\left\{\frac{2\times5}{5}-\frac{9}{5}\right\}\right]$$

$$=\frac{10}{6}+2\div\left[2\times\left\{\frac{10}{5}-\frac{9}{5}\right\}\right]$$

$$=\frac{10}{6}+2\div\left[2\times\frac{10-9}{5}\right]=\frac{10}{6}+2\div\left[2\times\frac{1}{5}\right]$$

$$=\frac{10}{6}+2\div\frac{2}{5}=\frac{10}{6}+2\times\frac{5}{2}=\frac{10}{6}+5$$

$$=\frac{10+5\times6}{6}=\frac{10+30}{6}=\frac{40}{6}=6\frac{4}{6}=6\frac{2}{3}$$

(i) $3\frac{1}{12}-\left[1\frac{3}{4}+\left\{2\frac{1}{2}-\left(1\frac{1}{2}-\frac{1}{3}\right)\right\}\right]=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\left(\frac{5}{2}-\frac{1}{3}\right)\right\}\right]$

$$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\left(\frac{3\times3}{2\times3}-\frac{1}{3}\times\frac{2}{2}\right)\right\}\right]$$

$$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\left(\frac{9}{6}-\frac{2}{6}\right)\right\}\right]$$

$$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\left(\frac{9-2}{6}\right)\right\}\right]$$

$$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5}{2}-\frac{7}{6}\right\}\right]$$

$$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{5\times3}{2\times3}-\frac{7}{6}\right\}\right]$$

$$=\frac{37}{12}-\left[\frac{7}{4}+\left\{\frac{15}{6}-\frac{7}{6}\right\}\right]=\frac{37}{12}-\left[\frac{7}{4}+\frac{15-7}{6}\right]$$

$$=\frac{37}{12}-\left[\frac{7}{4}+\frac{8}{6}\right]=\frac{37}{12}-\left[\frac{7\times3}{4\times3}+\frac{8\times2}{6\times2}\right]$$

$$=\frac{37}{12}-\left[\frac{21}{12}+\frac{16}{12}\right]=\frac{37}{12}-\left[\frac{37}{12}\right]=0$$

(j) $$\left[2+5\times\left\{1\frac{1}{2}+\left(\frac{3}{4}-\frac{1}{10}\right)\right\}\right]+1\frac{1}{2}=\left[2+5\times\left\{\frac{3}{2}+\left(\frac{3\times5}{4\times5}-\frac{1\times2}{10\times2}\right)\right\}\right]+\frac{3}{2}$$

$$=\left[2+5\times\left\{\frac{3}{2}+\left(\frac{15}{20}-\frac{2}{20}\right)\right\}\right]+\frac{3}{2}$$

$$=\left[2+5\times\left\{\frac{3}{2}+\left(\frac{15-2}{20}\right)\right\}\right]+\frac{3}{2}$$

$$=\left[2+5\times\left\{\frac{3\times10}{2\times10}+\frac{13}{20}\right\}\right]+\frac{3}{2}$$

$$=\left[2+5\times\left\{\frac{30+13}{20}\right\}\right]+\frac{3}{2}$$

$$=\left[2+5\times\left\{\frac{43}{20}\right\}\right]+\frac{3}{2}$$

$$=\left[2+\cancel{5}\times\frac{43}{\cancel{20}_{4}}\right]+\frac{3}{2}=\left[\frac{2\times4}{4}+\frac{43}{4}\right]+\frac{3}{2}$$

$$=\left[\frac{8}{4}+\frac{43}{4}\right]+\frac{3\times2}{2\times2}=\frac{8+43}{4}+\frac{6}{4}$$

$$=\frac{51}{4}+\frac{6}{4}=\frac{57}{4}=14\frac{1}{4}$$

(k) $$5\frac{1}{2}-\left[2\frac{1}{3}\div\left\{\frac{3}{4}-\frac{1}{2}\times\left(\frac{2}{3}-\frac{1}{24}\right)\right\}\right]=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{3}{4}-\frac{1}{2}\left(\frac{2\times8}{3\times8}-\frac{1}{24}\right)\right\}\right]$$

$$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{3}{4}-\frac{1}{2}\left(\frac{16}{24}-\frac{1}{24}\right)\right\}\right]$$

$$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{3}{4}-\frac{1}{2}\left(\frac{16-1}{24}\right)\right\}\right]$$

$$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{3}{4}-\frac{1}{2}\times\frac{15}{24}\right\}\right]$$

$$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{3}{4}-\frac{15}{48}\right\}\right]$$

$$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{3\times12}{4\times12}-\frac{15}{48}\right\}\right]$$

$$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{36-15}{48}\right\}\right]$$

$$=\frac{11}{2}-\left[\frac{7}{3}\div\left\{\frac{21}{48}\right\}\right]=\frac{11}{2}-\left\{\frac{\cancel{7}}{\cancel{3}}\times\frac{\overset{16}{\cancel{48}}}{\underset{3}{\cancel{21}}}\right\}$$

$$=\frac{11}{2}-\left[\frac{16}{3}\right]=\frac{11\times3}{2\times3}-\frac{16\times2}{3\times2}=\frac{33-32}{6}=\frac{1}{6}$$

(*l*) $5\frac{3}{4}-\left[3\frac{1}{8}\div\left\{5-\left(4\frac{2}{3}-\frac{11}{12}\right)\right\}\right]=\frac{23}{4}-\left[\frac{25}{8}\div\left\{5-\left(\frac{14}{3}-\frac{11}{12}\right)\right\}\right]$

$$=\frac{23}{4}-\left[\frac{25}{8}\div\left\{5-\left(\frac{14\times4}{3\times4}-\frac{11}{12}\right)\right\}\right]$$

$$=\frac{23}{4}-\left[\frac{25}{8}\div\left\{5-\left(\frac{56-11}{12}\right)\right\}\right]$$

$$=\frac{23}{4}-\left[\frac{25}{8}\div\left\{5-\frac{45}{12}\right\}\right]$$

$$=\frac{23}{4}-\left[\frac{25}{8}\div\left\{\frac{5\times12}{12}-\frac{45}{12}\right\}\right]$$

$$=\frac{23}{4}-\left[\frac{25}{8}\div\left\{\frac{60}{12}-\frac{45}{12}\right\}\right]$$

$$=\frac{23}{4}-\left[\frac{25}{8}\div\left\{\frac{60-45}{12}\right\}\right]$$

$$=\frac{23}{4}-\left[\frac{25}{8}\div\frac{15}{12}\right]$$

$$=\frac{23}{4}-\left[\frac{\overset{5}{\cancel{25}}}{\underset{2}{\cancel{8}}}\times\frac{\overset{4}{\cancel{12}}}{\underset{3}{\cancel{15}}}\right]=\frac{23}{4}-\left[\frac{5}{2}\right]=\frac{23}{1}-\frac{5\times2}{2\times2}$$

$$=\frac{23-10}{4}=\frac{13}{4}=3\frac{1}{4}$$

MCQs

1. (a) $6+9-7=15-7=8$

2. (c)

3. (a) $9\times3\times(6\div2)-8+7=27\times(3)-8+7$

$$=81-8+7=73+7=80$$

4. (c) $3\frac{2}{5}\times\frac{1}{17}\div\frac{1}{5}=\frac{17}{5}\times\frac{1}{17}\times\frac{5}{1}=\frac{\cancel{17}}{\cancel{5}}\times\frac{1}{\cancel{17}}\times\frac{\cancel{5}}{1}=1$

Test Exercise

1. $1.2 \div 8 \times 6 + 5.7 = 0.15 \times 6 + 5.7 = 0.90 + 5.7 = 6.60$

$$\begin{array}{r} 0.15 \\ 8\,\overline{)\,1.2} \\ -8 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

2. $3.7 + 4.2 \text{ of } 0.6 \times 7 \div 3.5 = 3.7 + 2.52 \times 7 \div 3.5$

$$= 3.7 + 2.52 \times \frac{7}{3.5}$$

$$= 3.7 + 2.52 \times \frac{70}{35}$$

$$= 3.7 + 2.52 \times 2$$

$$= 3.7 + 5.04 = 8.74$$

$$\begin{array}{r} 4.2 \\ \times\ 0.6 \\ \hline 2.52 \\ \hline \end{array} \qquad \begin{array}{r} 3.7 \\ +\ 5.4 \\ \hline 8.74 \\ \hline \end{array}$$

3. $4.5 \text{ of } 9 \div 0.03 \times 0.02 = 40.5 \div 0.03 \times 0.02$

$$= \frac{40.5}{0.03} \times 0.02$$

$$= \frac{40.5 \times 100}{0.03 \times 100} \times 0.02$$

$$= \frac{4050}{3} \times 0.02$$

$$= 1350 \times 0.02 = 27.00$$

$$\begin{array}{r} 1350 \\ 3\,\overline{)\,4050} \\ -3 \\ \hline 10 \\ -9 \\ \hline 15 \\ -15 \\ \hline 0 \end{array}$$

4. $(6.8 - 4.2) \div (2 + 3.5) \times 11.2 = (2.6) \div (5.5) \times 11.2$

$$= \frac{2.6}{5.5} \times 11.2 = \frac{26 \times 10}{5.5 \times 10} \times 11.2$$

$$= \frac{26}{55} \times 11.2 = \frac{26 \times 11.2}{55} = \frac{291.2}{55} = 5.294545...$$

5. $\left(1\frac{3}{8} \div 1\frac{2}{3}\right) \text{of} \left(4\frac{2}{3} \div 1\frac{1}{3}\right) = \left(\frac{11}{8} \div \frac{5}{3}\right) \text{of} \left(\frac{14}{3} \div \frac{4}{3}\right)$

$$= \left(\frac{11}{8} \times \frac{3}{5}\right) \text{of} \left(\frac{14}{3} \times \frac{3}{4}\right)$$

$$= \frac{33}{40} \text{ of } \frac{14}{4} = \frac{33}{\cancel{40}_{20}} \times \frac{\cancel{14}^{7}}{4} = \frac{231}{80} = 2\frac{71}{80}$$

6. $3\frac{1}{4} + \left(5\frac{1}{4} \div \frac{3}{4}\right) + \left(2\frac{1}{7} \text{of} \frac{3}{11}\right) \div 1\frac{4}{7} = \frac{13}{4} + \left(\frac{21}{4} \div \frac{3}{4}\right) + \left(\frac{15}{7} \text{of} \frac{3}{11}\right) \div 1\frac{4}{7}$

$$= \frac{13}{4} + \left(\frac{21}{4} \times \frac{4}{3}\right) + \left(\frac{45}{77}\right) \div \frac{11}{7}$$

$$=\frac{13}{4}+\left(\frac{84}{12}\right)+\left(\frac{45}{\underset{11}{\cancel{77}}}\times\frac{\cancel{7}}{11}\right)$$

$$=\frac{13}{4}+\frac{84}{12}+\frac{45}{121}=\frac{13}{4}+\frac{21}{3}+\frac{45}{121}$$

$$=\frac{13\times3}{4\times3}+\frac{21\times4}{3\times4}+\frac{45}{121}=\frac{39}{12}+\frac{84}{12}+\frac{45}{121}$$

$$=\frac{39+84}{12}+\frac{45}{121}=\frac{123}{12}+\frac{45}{121}=10\frac{3}{12}+\frac{45}{121}$$

$$=10+\left(\frac{3}{12}+\frac{45}{121}\right)=10+\left(\frac{3\times121+45\times12}{12\times121}\right)$$

$$=10+\left(\frac{363+540}{12\times121}\right)=10+\frac{903}{12\times121}$$

$$=10+\frac{76}{121}=10\frac{76}{121}$$

7. $\left(\frac{1}{3}-\frac{1}{4}\right)\text{of}\left(\frac{2}{3}-\frac{2}{5}\right)\div\left(\frac{2}{3}+\frac{1}{8}-\frac{3}{5}\right)$

$$=\left(\frac{1\times4}{3\times4}-\frac{1\times3}{4\times3}\right)\text{of}\left(\frac{2\times5}{3\times5}-\frac{2\times3}{5\times3}\right)\div\left(\frac{2\times40}{3\times40}+\frac{1\times15}{8\times15}-\frac{3\times24}{5\times24}\right)$$

$$=\left(\frac{4}{12}-\frac{3}{12}\right)\text{of}\left(\frac{10}{15}-\frac{6}{15}\right)\div\left(\frac{80}{120}-\frac{15}{120}-\frac{72}{120}\right)$$

$$=\left(\frac{4-3}{12}\right)\text{of}\left(\frac{10-6}{15}\right)\div\left(\frac{80+15-72}{120}\right)$$

$$=\frac{1}{12}\text{ of }\frac{4}{15}\div\left(\frac{95-87}{120}\right)=\frac{4}{12\times15}\div\left(\frac{95-72}{120}\right)$$

$$=\frac{4}{12\times15}\div\left(\frac{23}{120}\right)=\frac{\cancel{4}}{\underset{3}{\cancel{12}}\times\cancel{15}}\times\frac{\overset{8}{\cancel{120}}}{23}=\frac{8}{69}$$

8. $\frac{3}{4}\times3\frac{5}{7}\div1\frac{3}{4}\text{ of }3\frac{5}{7}-1\frac{3}{10}+3\frac{1}{5}=\frac{3}{4}\times\frac{26}{7}\div\frac{\cancel{7}}{4}\text{ of }\frac{26}{\cancel{7}}-\frac{13}{10}+\frac{16}{5}$

$$=\frac{3}{4}\times\frac{26}{7}\div\frac{26}{4}-\frac{13}{10}+\frac{16}{5}=\frac{3}{4}\times\frac{\cancel{26}}{7}\times\frac{4}{\cancel{26}}-\frac{13}{10}+\frac{16}{5}$$

$$=\frac{3}{\cancel{4}}\times\frac{\cancel{4}}{7}-\frac{13}{10}+\frac{16}{5}=\frac{3}{7}-\frac{13}{10}+\frac{16}{5}$$

$$=\frac{3\times10}{7\times10}-\frac{3\times7}{10\times7}+\frac{16\times14}{5\times14}=\frac{30}{70}-\frac{91}{70}+\frac{224}{70}$$

$$=\frac{30-91+224}{70}=\frac{254-91}{70}=\frac{163}{70}=2\frac{23}{70}$$

9. $6-[6-\{6-(6-3)\}]=6-[6-\{6-3\}]=6-[6-3]=6-3=3$

10. $8-[8-\{(8-\overline{8-8})\}]=8-[8-\{8-0\}]=8-[8-8]=8-0=8$

11. $9-[8-\{7-5-\overline{3-2}\}]=9-[8-\{7-5-1\}]=9-[8-\{7-6\}]=9-[8-1]=9-7=2$

12. $4-[6-\{5-\overline{6-9}\}]=4-[6-\{5-6+9\}]=4-[6-\{14-6\}]$

$=4-[6-8]=4-6+8=12-6=6$

13. $0.8 \text{ of } \{2.75 \div (3.67-\overline{6.04-3.62})\}=0.8 \text{ of } [2.75 \div (3.67-2.42)]$

$=0.8 \text{ of } [2.75 \div 1.25]=0.8 \text{ of } \left[\frac{2.75}{1.25}\right]$

$=0.8 \text{ of } \frac{275}{125}=\frac{8}{10} \text{ of } \frac{275}{125}$

$=\frac{8}{10} \text{ of } \frac{11}{5}=\frac{88}{50}=1.76$

14. $9-[8-\{2-(8-(\overline{7-2})\}]=9-[8-\{2-(8-5)\}]$

$=9-[8-\{2-3\}]=9-[8-2+3]=9-[11-2]=9-9=0$

15. $8.5+[13.5-\{8.7-[5.4-(\overline{8.8+3.6})\}]=8.5+[13.5-\{8.7-(5.4-12.4)\}]$

$=8.5+[13.5-\{8.7-(-7)\}]$

$=8.5+[13.5-\{8.7+7\}]$

$=8.5+[13.5-15.7]$

$=8.5+(-02.2]=8.5-02.2=6.3$

16. $0.09+[8.2-\{5.8-(7.3-\overline{10.5-3.6})\}]=0.09+[8.2-\{5.8-(7.3-(6.9)\}]$

$=0.09+[8.2-\{5.8-0.4\}]$

$=0.09+[8.2-5.4]=0.09+2.8=2.89$

17. $7.5+[6.3-\{2.8+(6.2-4.5)\}]=7.5+[6.3-\{2.8+1.7\}]$

$=7.5+[6.3-4.5]=7.5+1.8=8.3$

18. $3\frac{4}{5}\div\left\{3\frac{1}{3}-(6-\overline{4+3})\right\}-2\frac{1}{2}=\frac{19}{5}\div\left\{\frac{10}{3}-(6-7)\right\}-\frac{5}{2}$

$=\frac{19}{5}\div\left\{\frac{10}{3}-6+7\right\}-\frac{5}{2}=\frac{19}{5}\div\left[\frac{10}{3}+1\right]-\frac{5}{2}$

$=\frac{19}{5}\div\left(\frac{10+3}{3}\right)-\frac{5}{2}=\frac{19}{5}\div\frac{13}{3}-\frac{5}{2}$

$=\frac{19}{5}\times\frac{3}{13}-\frac{5}{2}=\frac{57}{65}-\frac{5}{2}=\frac{57\times 2}{65\times 2}-\frac{5}{2}\times\frac{65}{65}$

$=\frac{114}{130}-\frac{325}{130}=\frac{114-325}{130}=-\frac{211}{130}=-1\frac{81}{130}$

19. $\frac{5}{7}\left[1\frac{8}{9}-\left\{\frac{7}{8}+\left(3\frac{5}{8}+2\frac{3}{4}\right)\right\}\right]=\frac{5}{7}\left[\frac{17}{9}-\left\{\frac{7}{8}+\left(\frac{29}{8}+\frac{11}{4}\right)\right\}\right]$

$=\frac{5}{7}\left[\frac{17}{9}-\left\{\frac{7}{8}+\left(\frac{29}{8}+\frac{22}{8}\right)\right\}\right]=\frac{5}{7}\left[\frac{17}{9}-\left\{\frac{7}{8}+\frac{51}{8}\right\}\right]$

$=\frac{5}{7}\left[\frac{17}{9}-\frac{58}{8}\right]=\frac{5}{7}\left[\frac{17\times 8}{9\times 8}-\frac{58\times 9}{8\times 9}\right]=\frac{5}{7}\left[\frac{136}{72}-\frac{522}{72}\right]$

$=\frac{5}{7}\times\frac{-386}{72}=\frac{-1930}{504}=-3\frac{498}{504}=-3\frac{249}{252}$

20. $2\frac{3}{8}\left[3\frac{1}{8}\div\left\{5-\left(4\frac{2}{3}-\frac{11}{12}\right)\right\}\right]=\frac{19}{8}\left[\frac{25}{8}\div\left\{5-\left(\frac{14}{3}-\frac{11}{12}\right)\right\}\right]$

$$=\frac{19}{8}\left[\frac{25}{8}\div\left\{5-\left(\frac{14\times4}{3\times4}-\frac{11}{12}\right)\right\}\right]$$

$$=\frac{19}{8}\left[\frac{25}{8}\div\left\{5-\left(\frac{56}{12}-\frac{11}{12}\right)\right\}\right]$$

$$=\frac{19}{8}\left[\frac{25}{8}\div\left\{5-\left(\frac{56-11}{12}\right)\right\}\right]$$

$$=\frac{19}{8}\left[\frac{25}{8}\div\left\{5-\frac{45}{12}\right\}\right]=\frac{19}{8}\left[\frac{25}{8}\div\left\{\frac{12\times5-45}{12}\right\}\right]$$

$$=\frac{19}{8}\left[\frac{25}{8}\div\left\{\frac{60-45}{12}\right\}\right]=\frac{19}{8}\left[\frac{25}{8}\div\frac{15}{12}\right]$$

$$=\frac{19}{8}\left[\frac{\overset{5}{\cancel{25}}}{\underset{2}{\cancel{8}}}\times\frac{\overset{3}{\cancel{12}}}{\underset{3}{\cancel{15}}}\right]=\frac{19}{8}\times\frac{5}{2}\times\frac{3}{3}=\frac{19}{8}\times\frac{5}{2}=\frac{95}{16}=5\frac{15}{16}$$

21. $2\frac{4}{5}\text{ of }2\frac{4}{7}\div\left(2\frac{3}{7}-1\frac{1}{2}\right)=\frac{14}{5}\text{ of }\frac{18}{7}\div\left(\frac{17}{7}-\frac{3}{2}\right)$

$$=\left(\frac{14}{5}\times\frac{18}{7}\right)\div\left(\frac{17\times2}{7\times2}-\frac{3\times7}{2\times7}\right)=\frac{36}{5}\div\left(\frac{34}{14}-\frac{21}{14}\right)$$

$$=\frac{36}{5}\div\left(\frac{34-21}{14}\right)=\frac{36}{5}\div\frac{13}{14}=\frac{36}{5}\times\frac{14}{13}=\frac{504}{65}=7\frac{49}{45}$$

22. $3\frac{4}{7}+\left[2\frac{3}{4}+\left\{1\frac{2}{3}\left(2\frac{3}{5}\div\overline{26+\frac{1}{5}\text{of}15}\right)\right\}\right]=\frac{25}{7}+\left[\frac{11}{4}+\left\{\frac{5}{3}\left(\frac{13}{5}\div\overline{26+3}\right)\right\}\right]$

$$=\frac{25}{7}+\left[\frac{11}{4}+\left\{\frac{5}{3}\left(\frac{13}{5}\div29\right)\right\}\right]$$

$$=\frac{25}{7}+\left[\frac{11}{4}+\left\{\frac{5}{3}\left(\frac{13}{5}\times\frac{1}{29}\right)\right\}\right]$$

$$=\frac{25}{7}+\left[\frac{11}{4}+\frac{\cancel{5}}{3}\times\frac{13}{\cancel{5}}\times\frac{1}{29}\right]$$

$$=\frac{25}{7}+\left[\frac{11}{4}+\frac{13}{87}\right]=\frac{25}{7}+\left[\frac{11\times87}{4\times87}+\frac{13\times4}{87\times4}\right]$$

$$=\frac{25}{7}+\left(\frac{957}{348}+\frac{52}{348}\right)=\frac{25}{7}+\left(\frac{957+52}{348}\right)$$

$$=\frac{25}{7}+\frac{1009}{348}=\frac{25\times348+1009\times7}{7\times348}$$

$$=\frac{8700+7063}{2436}=\frac{15763}{2436}=6\frac{1147}{2436}$$

23. $8.2 \div \left[3.8 + \left\{10.6 - \left(30 - 25 + \frac{4}{5} \text{ of } 3.5 + 4.0\right)\right\}\right]$

$$= 8.2 \div [3.8 + \{10.6 - (30 - 25 - 2.8 + 4.0)\}]$$
$$= 8.2 \div [3.8 + \{10.6 - (9 - 2.8)\}]$$
$$= 8.2 \div [3.8 + \{10.6 - 6.2\}]$$
$$= 8.2 \div [3.8 + \{4.4\}]$$
$$= 8.2 \div [8.2] = 8.2 \div 8.2 = 1$$

24. $3\frac{1}{2} - \left[4\frac{3}{4} - \left\{1\frac{2}{3} + \left(4\frac{1}{3} - \overline{3\frac{3}{5} - 1\frac{1}{3}} \times \frac{3}{4} \text{ of } \frac{30}{44}\right)\right\}\right]$

$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{13}{3} - \overline{\frac{18}{5} - \frac{4}{3}} \times \frac{90}{176}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{13}{3} - \frac{54-20}{15} \times \frac{90}{176}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{13}{3} - \frac{34}{15} \times \frac{90}{176}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{13}{3} - \frac{34 \times 6}{176}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{13}{3} - \frac{34 \times 3}{88}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{13}{3} - \frac{17 \times 3}{44}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{13 \times 44 - 17 \times 3 \times 3}{3 \times 44}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{572 - 153}{3 \times 44}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5}{3} + \left(\frac{419}{3 \times 44}\right)\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{5 \times 44 + 419}{3 \times 44}\right\}\right] = \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{220 + 419}{132}\right\}\right]$$
$$= \frac{7}{2} - \left[\frac{19}{4} - \left\{\frac{639}{132}\right\}\right] = \frac{7}{2} - \left[\frac{19 \times 33 - 639}{132}\right]$$
$$= \frac{7}{2} - \left[\frac{627 - 639}{132}\right] = \frac{7}{2} - \left[\frac{-12}{132}\right] = \frac{7}{2} - \left[-\frac{1}{11}\right] = \frac{7}{2} + \frac{1}{11}$$
$$= \frac{7 \times 11 + 1 \times 2}{22} = \frac{77 + 2}{22} = \frac{79}{22} = 3\frac{13}{22}$$

Exercise- 10

1. In 8 months savings = ₹ 48000
In 1 month savings = ₹ 48000 ÷ 8 = ₹ 6000

2. Cost of 5 dozen banana = ₹ 265
Cost of 1 dozen banana = ₹ 265 ÷ 5 = ₹ 53

3. In 30 days toys produced = 82440

In 1 day toys produced $= \frac{82440}{30}$

$= \frac{8244}{3}$

$= 2748$

In 7 days toys produced = 2748 × 7 = 19236

```
      2738
3 ) 8244
   –6
    22
   –21
     14
    –12
      24
     –24
       0
```

4. In 1 truck bricks carried = 4550
In 25 trucks bricks carried = 4550 × 25 = 1,13,750

```
        4 5 5 0
          × 2 5
    2 2 7 5 0
    9 1 0 0 ×
  1 1 3 7 5 0
```

5. In 30 days Ankur walk 165 km
In 1 day Ankur walk 165 ÷ 30 = 5.5 km
In 105 days Ankur walk = 5.5 × 105 = 577.5 km

```
        1 0 5
      × 5 . 5
        5 2 5
      5 2 5 ×
    5 7 7 . 5
```

```
      5.5
30 ) 165
    –150
      150
     –150
        0
```

6. In 19 bottles water = 570 litres
In 1 bottle water = 570 ÷ 19 = 30 litres

```
      30
19 ) 570
    –57
      0
```

7. Cost of 18 books = ₹ 8100

Cost of 1 book = ₹ 8100 ÷ 18 = ₹ 450

Cost of 36 books = ₹ 450 × 36 = ₹ 16200

```
      4 5 0
      × 3 6
  -----------
    2 7 0 0
  1 3 5 0 ×
  -----------
  1 6 2 0 0
```

```
      450
18 ) 8100
     −72
      90
     −90
       0
```

8. For 5 kg sugar bag needed = 1

For 1 kg sugar bag needed = $\frac{1}{5}$

For 235 kg sugar bag needed = $\frac{235}{5}$ = 47 bags

9. Cost of 25 computers = ₹ 3,75,000

Cost of 1 computer = ₹ $\frac{375000}{25}$ = ₹ 15000

```
      15000
25 ) 375000
     −25
      125
     −125
        0
```

10. In 5 days watches made = 1785

In 1 day watches made = $\frac{1785}{5}$ = 357

In 2 days watches made = 357 × 2 = 714

```
      357
5 ) 1785
    −15
     28
    −25
      35
    − 35
       0
```

11. Cost of 39 bats = ₹ 39000

Cost of 1 bat = ₹ 39000 ÷ 39 = ₹ 1000

12. Cost of 36 books = ₹ 6480

Cost of 1 book = ₹ 6480 ÷ 36 = ₹ 180

```
      180
36 ) 6480
     −36
      288
     −288
        0
```

13. Weight of 1 bag is 451 kg

Weight of 125 bags is 451×125 kg $= 56{,}375$ kg

$$\begin{array}{r} 4\ 5\ 1 \\ \times\ 1\ 2\ 5 \\ \hline 2\ 2\ 5\ 5 \\ 9\ 0\ 2\ \times \\ 1\ 5\ 1\ \times\ \times \\ \hline 5\ 6\ 3\ 7\ 5 \\ \hline \end{array}$$

14. Money spend in 12 months = ₹ 1, 27,200

Money spend in 1 month = ₹ $127200 \div 12$ = ₹ 10,600

Money spend in 8 months $= 10600 \times 8$ = ₹ 84,800

$$\begin{array}{r} 10600 \\ 12\,\overline{)\,127200} \\ -12 \\ \hline 72 \\ -\ 72 \\ \hline 0 \end{array}$$

15. In 8 minutes distance covered = 480 metres

In 1 minute distance covered $= 480 \div 8 = 60$ metres

In 20 minute distance covered $= 60 \times 20 = 1200$ metres

16. In 30 days bottles produced = 82440

In 1 day bottles produced $= 82440 \div 30 = 8244 \div 3 = 2748$

In 25 days bottles produced $= 2748 \times 25 = 68{,}900$

$$\begin{array}{r} 2\ 7\ 4\ 8 \\ \times\ 2\ 5 \\ \hline 1\ 3\ 9\ 4\ 0 \\ 5\ 4\ 9\ 6\ \times \\ \hline 6\ 8\ 9\ 0\ 0 \\ \hline \end{array}$$

$$\begin{array}{r} 2748 \\ 3\,\overline{)\,8244} \\ -6 \\ \hline 22 \\ -21 \\ \hline 14 \\ -\ 12 \\ \hline 24 \\ -\ 24 \\ \hline 0 \end{array}$$

17. For ₹ 1791 trousers bought = 9

For ₹ 1 trousers bought $= \dfrac{9}{1791}$

For ₹ 5373 trousers bought $= \dfrac{\cancel{9} \times 5373}{\underset{199}{\cancel{1791}}} = \dfrac{5373}{199} = 27$

$$\begin{array}{r} 27 \\ 199\,\overline{)\,5373} \\ -398 \\ \hline 1393 \\ -1393 \\ \hline 0 \end{array}$$

18. For ₹ 6,36,000 computers bought $= 24$

For ₹ 1 computer bought $= \dfrac{24}{636000}$

For ₹ 14,57,500 computers bought $= \dfrac{\cancel{24} \times 1457500}{\underset{265}{\cancel{6360}}} = \dfrac{14575}{265} = 55$

$$\begin{array}{r} 55 \\ 265\overline{)14575} \\ -1325 \\ \hline 1325 \\ -1325 \\ \hline 0 \end{array}$$

19. In 9 months Azad saves $=$ ₹ 63000

In 1 month Azad saves $=$ ₹ $\dfrac{63000}{9}$

$=$ ₹ 7000

20. In 1 box spoons fitted $= 1250$

In 35 boxes spoons fitted $= 1250 \times 35 = 43750$

$$\begin{array}{r} 1\ 2\ 5\ 0 \\ \times\ 3\ 5 \\ \hline 6\ 2\ 5\ 0 \\ 3\ 7\ 5\ 0\ \times \\ \hline 4\ 3\ 7\ 5\ 0 \\ \hline \end{array}$$

MCQs

1. (a) Cost of 12 pencils $=$ ₹ 72

Cost of 1 pencil $=$ ₹ $72 \div 12 =$ ₹ 6

Cost of 18 pencil $= 6 \times 18 =$ ₹ 108

2. (b) Cost of 6 chocolates $= 25 \times 6 =$ ₹ 150

3. (a) Cost of 1 pen $= 80 \div 16 =$ ₹ 5

4. (b) Cost of 6 apples $= 12 \times 6 =$ ₹ 72

5. (c) Cost of 8 chocolates $= 4.56 \times 8 =$ ₹ 36.48

6. (c) Cost of 1 watch $= 2775 \div 15 =$ ₹ 185

$$\begin{array}{r} 185 \\ 15\overline{)2775} \\ -15 \\ \hline 127 \\ -120 \\ \hline 75 \\ -75 \\ \hline 0 \end{array}$$

7. (a) Cost of 9 fans $=$ ₹ 7875

Cost of 1 fan $=$ ₹ $7875 \div 9 = 875$

Cost of 15 fans $=$ ₹ $875 \times 15 =$ ₹ 13125

Mental Maths

I

1. For 156 peoples bread rolls needed $= 156$

2. Slice of cucumber used $= 5 \times 28 = 140$

3. No

4. Cheese saved $= (18) \times 2 = 36$

II

1. Noodles needed $= 12 \times 100 = 1200$ gram

2. Chef use cabbage the most

3. $(150 \div 50)$ for 3 people 150 gram of tomatoes enough

4. $25 \times 4 = 100$ gram of mushroom need for 4 people

❍❍❍

11 Average

Exercise-11

1. (a) $\text{Average} = \dfrac{\text{Sum of observations}}{\text{Number of observations}}$

$$= \frac{18+13+14+18+21+28}{6} = \frac{112}{6} = 18.67$$

(b) $\text{Average} = \dfrac{20.5+70.06+57.2+18.03+59.1}{5} = \dfrac{224.89}{5} = 44.98$

(c) $\text{Average} = \dfrac{18+39+0+3+16+31+43+19}{8} = \dfrac{169}{8} = 21.125$

(d) $\text{Average} = \dfrac{30.85+25.30+86.25+38}{4} = \dfrac{180.4}{4} =$ ₹ 45.1

(e) $\text{Average} = \dfrac{326\text{cm}+1220\text{cm}+606\text{cm}+2586\text{cm}}{4} = \dfrac{4738}{4}\text{ cm} = 1184.5\text{ cm}$

$= 11$ m 84 cm 5 mm

2. (a) I^{st} four whole numbers $= 0, 1, 2, 3$

$$\text{Average} = \frac{0+1+2+3}{4} = \frac{6}{4} = 1.5$$

(b) I^{st} 6 prime number $= 2, 3, 5, 7, 11, 13$

$$\text{Average} = \frac{2+3+5+7+11+13}{6} = \frac{41}{6} = 6.8$$

(c) I^{st} three composite number $= 4, 6, 8$

$$\text{Average} = \frac{4+6+8}{3} = \frac{18}{3} = 6$$

(d) I^{st} eight multiples of 7 are $= 7, 14, 21, 28, 35, 42, 49, 56$

$$\text{Average} = \frac{7+14+21+28+35+42+49+56}{8} = \frac{252}{8} = 31.5$$

(f) Factors of $64 = 1, 2, 4, 8, 16, 32, 64$

$$\text{Average} = \frac{1+2+4+8+16+32+64}{7} = \frac{127}{7} = 18.14$$

3. (a) $$\text{Average} = \frac{3+4\frac{2}{5}+8\frac{1}{3}+3\frac{3}{10}}{4}$$

$$\text{Sum} = 3+4\frac{2}{5}+8\frac{1}{3}+3\frac{3}{10} = 3+\frac{22}{5}+\frac{25}{3}+\frac{33}{10}$$

$$= \frac{3\times30+22\times6+25\times10+33\times3}{30} = \frac{90+132+250+99}{30} = \frac{571}{30}$$

$$\text{Average} = \frac{\frac{571}{30}}{4} = \frac{571}{120} = 4\frac{91}{120}$$

(b) $$\text{Sum} = 3\frac{1}{5}+2\frac{3}{4}+4\frac{1}{2}+8\frac{7}{10}+\frac{3}{5}$$

$$= (3+2+4+8)+\left(\frac{1}{5}+\frac{3}{4}+\frac{1}{2}+\frac{7}{10}+\frac{3}{5}\right)$$

$$= 17+\left(\frac{1\times4}{5\times4}+\frac{3\times5}{4\times5}+\frac{1\times10}{2\times10}+\frac{7\times2}{10\times2}+\frac{3\times4}{5\times4}\right)$$

$$= 17+\left(\frac{4}{20}+\frac{15}{20}+\frac{10}{20}+\frac{14}{20}+\frac{12}{20}\right) = 17+\left(\frac{55}{20}\right)$$

$$= 17+2\frac{15}{20} = 19\frac{15}{20}$$

$$\text{Average} = \frac{\text{Sum}}{\text{Number of observation}} = \frac{19\frac{15}{20}}{5} = \frac{\frac{395}{20}}{5}$$

$$= \frac{395}{20}\times\frac{1}{5} = \frac{79}{20} = 3\frac{19}{20}$$

(c) $$\text{Sum} = 3+0+2\frac{3}{4}+3\frac{2}{3} = 3+(2+3)+\frac{3}{4}+\frac{2}{3} = 8+\frac{3\times3}{4\times3}+\frac{2\times4}{3\times4}$$

$$= 8+\frac{9}{12}+\frac{8}{12} = 8+\frac{17}{12} = 8+1\frac{5}{12} = 9\frac{5}{12} = \frac{113}{12}$$

$$\text{Average} = \frac{\frac{113}{12}}{4} = \frac{113}{12}\times\frac{1}{4} = \frac{113}{48} = 2\frac{17}{48}$$

(d) Sum $= \frac{7}{8}+\frac{3}{5}+\frac{7}{15}+\frac{9}{10}+\frac{4}{5}=\frac{7\times15}{8\times15}+\frac{3\times24}{5\times24}+\frac{7\times8}{15\times8}+\frac{9\times12}{10\times12}+\frac{4\times24}{5\times24}$

$$=\frac{105}{120}+\frac{72}{120}+\frac{56}{120}+\frac{108}{120}+\frac{96}{120}$$

$$=\frac{105+72+56+108+96}{120}=\frac{437}{120}$$

Average $= \frac{\frac{437}{120}}{5}=\frac{437}{120}\times\frac{1}{5}=\frac{437}{600}$

(e) Sum of observations $=3\frac{1}{2}+2\frac{2}{3}+0+1\frac{4}{3}+\frac{1}{12}$

$$=\left(3+\frac{1}{2}\right)+\left(2+\frac{2}{3}\right)+\left(1+\frac{4}{3}\right)+\frac{1}{12}$$

$$=(3+2+1)+\frac{1}{2}+\frac{2}{3}+\frac{4}{3}+\frac{1}{12}$$

$$=6+\frac{1\times30}{2\times30}+\frac{2\times20}{3\times20}+\frac{4\times20}{3\times20}+\frac{1\times5}{12\times5}$$

$$=6+\left(\frac{30}{60}+\frac{40}{60}+\frac{80}{60}+\frac{50}{60}\right)$$

$$=6+\left(\frac{30+40+80+5}{60}\right)=6+\frac{155}{60}$$

$$=\frac{6\times60+155}{60}=\frac{360+155}{60}=\frac{515}{60}$$

Average $= \frac{\frac{515}{60}}{5}=\frac{515}{60\times5}=\frac{103}{60}=1\frac{43}{60}$

4. (a) Average $=\frac{8+16+24+32+40+48+56}{7}=\frac{228}{7}=32.57$

(b) Average $=\frac{0+1+2+3+4}{5}=\frac{10}{5}=2$

(c) Average $=\frac{1+2+3+4+5+6}{6}=\frac{21}{6}=3.5$

(d) Average $=\frac{5+7+9}{3}=\frac{21}{3}=7$

(e) Average $=\frac{2+3+5+7+11+13}{6}=\frac{41}{6}=6.83$

5. (a) True

(b) False $\because \frac{0.3+0.003}{2}=\frac{0.303}{2}=0.151$

(c) False $\because$ Average $=\frac{1+2+3+4}{4}=\frac{10}{4}=2.5$

(d) False

(e) True

6. Average age $= \frac{2+18+9+15+21+7}{6} = \frac{72}{6} = 12$ years

7. Average speed $= \frac{23+33+36}{3} = \frac{92}{3} = 30\frac{2}{3}$ km/hr

8. Average score of 5 players $= \frac{46+81+0+64+95}{5} = \frac{286}{5} = 57.2$

Average runs in 50 overs $= \frac{46+81+0+64+95}{50}$

$= \frac{286}{50} = 5.72$

9. Lowest temperature on Sunday

(a) Highest temperature on tuesday

(b) Average maximum temperature

$= \frac{35.6+36.5+30.1+32.6+36+33.26+32}{7}$

$= \frac{236}{7} = 33.7$

Average minimum temperature $= \frac{26.2+25.3+26+23.7+25+23.36+22}{7}$

$= \frac{174.56}{7} = 24.93$

10. Average minimum temperature $= \frac{19+20.3+22+18.9+21.4+18.8+19}{7}$

$= \frac{139.4}{7} = 19.91$

11. Average price of chairs $= \frac{362+294+305+325}{4}$

$= \frac{1286}{4} =$ ₹ 321.50

12. Total age

Years	Month
1 2	3
1 3	1 0
1 1	8
1 3	0 0
9	6
+ 1 4	2
7 2 years	2 8 months

72 years + 2 years 4 months = 74 years 4 month

$74 \times 12 + 4 = 888 + 4 = 892$ months

Average age $= \frac{892}{6} = 148$ months $= 12$ years 4 months

13. Even numbers $= 22, 24, 26 + 28, 30, 32$

Average of even numbers $= \frac{22+24+26+28+30+32}{6} = \frac{162}{6} = 27$

Average of odd numbers $= \frac{21+23+25+27+29+31+33}{7} = \frac{189}{7} = 27$

Average of both are same

14. Average of given numbers $= \frac{68+54+46+12+15+38}{6} = \frac{233}{6} = 38.83$

New numbers are $= 68-7, 54-7, 46-7, 12-7, 15-7, 38-7$

61, 47, 39, 5, 8, 31

Average of new numbers $= \frac{61+47+39+5+8+31}{6} = \frac{191}{6} = 31.83$

Difference between them =

$$\begin{array}{r} 38.83 \\ -\ 31.83 \\ \hline 7.0 \end{array}$$

16. Total temperature of Monday to Friday $= 39.8 \times 5 = 199°C$

Total temperature of Sunday to Friday $= 38.2 \times 6 = 229.2$

Temperature of Sunday $= 229.2 - 199 = 30.2°C$

17. Average age after 5 years $= \frac{(12+5)+(15+5)+(13+5)+(14+5)}{4}$

$= \frac{17+20+18+19}{4} = \frac{74}{4} = 18.5$ years

18. Sum of 10 numbers $= 10 \times 62 = 620$

Sum of 9 numbers $= 63 \times 9 = 567$

$$\begin{array}{r} 620 \\ -567 \\ \hline 53 \end{array}$$

10th number is 53

MCQs

1. (b) Average $= \frac{16+14+10+15+25}{5} = \frac{80}{5} = 16$

2. (c) Total of numbers $= 10 \times 72 = 720$

3. (b) Total of 4 numbers $= 4 \times 36 = 144$

Total of 3 numbers $= 38 + 44 + 42 = 124$

4th number $= 144 - 124 = 20$

4. (a) Average $= \frac{80+7.5+25}{3} = \frac{180}{3} = 60$

5. (b) Average $= \frac{40+50+28+62}{4} = \frac{180}{4} = 45$ /

12 Percentage

Exercise- 12.1

1. (a) Fraction $= \frac{28}{100}$

Percentage $= 28\%$

(b) Fraction $= \frac{70}{100}$

Percentage $= 70\%$

(c) Fraction $= \frac{20}{100}$

Percentage $= 20\%$

(d) Fraction $= \frac{25}{100}$

Percentage $= 25\%$

Exercise- 12.2

1. (a) $\frac{6}{10} \times 100\% = 60\ \%$

(b) $\frac{1}{5} \times 100\% = \frac{100}{5}\% = 20\%$

(c) $\frac{4}{6} \times 100\% = \frac{400}{6}\% = 66\frac{4}{6}\% = 66\frac{2}{3}\%$

(d) $\frac{5}{8} \times 100\% = \frac{500}{8}\% = 62.5\ \%$

(e) $\frac{5}{12} \times 100\% = \frac{500}{12}\% = 41\frac{8}{12}\% = 41\frac{2}{3}\%$

(f) $\frac{2}{5} \times 100\% = \frac{200}{5}\% = 40\%$

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

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

(c) $2\frac{13}{25} \times 100\% = \frac{63}{25} \times 100\% = 63 \times 4\% = 252\%$

(d) $2\frac{13}{25} \times 100\% = \frac{38}{20} \times 100\% = 38 \times 5\% = 190\%$

(e) $\frac{9}{50} \times 100\% = 9 \times 2\% = 18\%$

(f) $9\frac{4}{25} \times 100\% = \frac{229}{25} \times 100\% = 229 \times 4\% = 916\%$

3. (a) $4 \times 100\% = 400\%$ (b) $6 \times 100\% = 600\%$
(c) $25 \times 100\% = 2500\%$ (d) $7 \times 100\% = 700\%$
(e) $8 \times 100\% = 800\%$ (f) $16 \times 100\% = 1600\%$

4. (a) $5.36 \times 100\% = 536\ \%$ (b) $4.6 \times 100\% = 460\ \%$
(c) $0.158 \times 100\% = 15.8\ \%$ (d) $0.7 \times 100\% = 70\ \%$
(e) $0.037 \times 100\% = 3.7\ \%$ (f) $0.43 \times 100\% = 43\ \%$

5. (a) $75\ \% = \frac{75}{100} = 0.75$ (b) $31\% = \frac{31}{100} = 0.31$

(c) $225\ \% = \frac{225}{100} = 2.25$ (d) $54\% = \frac{5.4}{100} = 0.054$

(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) $6.5\ \% = \frac{6.5}{100} = \frac{65}{1000} = \frac{13}{200}$

(c) $8\ \% = \frac{8}{100} = \frac{2}{25}$

(d) $1.32\% = \frac{1.32}{100} = \frac{132}{10000} = \frac{66}{5000} = \frac{33}{2500}$

(e) $7\frac{1}{2}\% = \frac{15}{2}\% = \frac{15}{2 \times 100} = \frac{3}{2 \times 20} = \frac{3}{40}$

(f) $0.5\ \% = \frac{0.5}{100} = \frac{5}{1000} = \frac{1}{200}$

Exercise- 12.3

1. (a) $20\ \%\ \text{of}\ 60 = \frac{20}{100} \times 60 = 2 \times 6 = 12$

(b) $25\ \%\ \text{of}\ 48 = \frac{\cancel{25}}{\underset{4}{\cancel{100}}} \times 48 = \frac{48}{4} = 12$

(c) $80\ \%\ \text{of}\ 150 = \frac{80}{100} \times 150 = 8 \times 15 = 120$

(d) $125\ \%\ \text{of}\ 10 = \frac{125}{100} \times 10 = \frac{125}{10} = 12.5$

(e) $175\ \%\ \text{of}\ 3000 = \frac{175}{100} \times 3000 = 175 \times 30 = 5250$

(f) $50\ \%\ \text{of}\ 1000 = \frac{50}{100} \times 1000 = 50 \times 10 = 500$

(g) $25\ \%\ \text{of}\ 100 = \frac{25}{100} \times 100 = 25$

(h) $230\ \%\ \text{of}\ 100 = \frac{230}{100} \times 100 = 230$

(i) $70\ \%\ \text{of}\ 50 = \frac{70}{100} \times 50 = 7 \times 5 = 35$

2. (a) $33\%\ \text{of}\ ₹\ 400 = \frac{33}{100} \times 400 = 33 \times 4 = ₹\ 132$

(b) $22\%\ \text{of}\ 400 = \frac{22}{100} \times 400 = 22 \times 4 = ₹\ 88$

(c) $80\%\ \text{of}\ 225\ \text{g} = \frac{80}{100} \times 225 = \frac{8 \times 225}{10} = \frac{1800}{1} = 180\ \text{g}$

(d) $6\%\ \text{of}\ 60\ \text{litres} = \frac{6}{100} \times 60 = \frac{36}{10} = 3.6\ \text{litres}$

(e) $20\%\ \text{of}\ 100 = \frac{20}{100} \times 100 = 20\ \text{marks}$

(f) $60\%\ \text{of}\ 100\ \text{mm} = \frac{60}{100} \times 100 = 60\ \text{mm}$

(g) $40\%\ \text{of}\ 365\ \text{days} = \frac{40}{100} \times 365\ \text{days} = \frac{4 \times 365}{10}\ \text{days} = \frac{1460}{10} = 146\ \text{days}$

(h) $2.5\%\ \text{of}\ 300 = \frac{2.5}{100} \times 300 = 2.5 \times 3\ \text{kg} = 7.5\ \text{kg}$

(i) $12\%\ \text{of}\ 9000 = \frac{12}{100} \times 9000 = 12 \times 90 = ₹\ 1080$

3. (a) $\frac{16}{80} \times 100\% = \frac{16 \times 10}{8} = 20\%$

$\therefore$ 16 is 20% of 80

(b) $\frac{20}{200} \times 100\% = 10\%$

$\therefore$ ₹ 20 is 10% ₹ 200

(c) $\frac{30}{150} \times 100\% = \frac{3000}{150} = 20\%$

$\therefore$ 30 m is 20% of 150 m

(d) $\frac{2000}{400} \times 100\% = \frac{2000}{4} = 500\%$

$\therefore$ 2 kg is 500 % of 400 g

4. Let number be x

(a) 15 % of $x = 45$

$$\frac{15x}{100} = 45$$

$$x = \frac{45 \times 100}{15}$$

$$x = 300$$

$\therefore$ 15% of $300 = 45$

(b) 20 % of $x = 18$

$$\frac{20}{100} \times x = 18$$

$$x = \frac{18 \times 100}{20}$$

$$x = 90$$

$\therefore$ 20% of $90 = 18$

(c) 25 % of $x = 8$

$$\frac{25}{100} \times x = 8$$

$$x = \frac{8 \times \cancel{100}^{4}}{\cancel{25}}$$

$$x = 32$$

$\therefore$ 25% of $32 = 8$

(d) 20 % of $x = 20$

$$\frac{20}{100} \times x = 18$$

$$x = \frac{20 \times 100}{20}$$

$$x = 100$$

$\therefore$ 20% of $100 = 20$

(e) 25 % of $x = 75$

$$\frac{25}{100} \times x = 75$$

$$x = \frac{75 \times 100}{25}$$

$$x = 3 \times 100 = 300$$

$\therefore$ 25% of $300 = 75$

(f) 16 % of $x = 72$

$$\frac{16}{100} \times x = 72$$

$$x = \frac{72 \times 100}{16}$$

$$x = 450$$

$\therefore$ 16% of $450 = 72$

Exercise- 12.4

1. Rina got $= 30\%$ of ₹ $800 = \frac{30}{1\cancel{00}} \times 8\cancel{00} =$ ₹ 240

2. Boys $= 60\%$ of $75 = \frac{60}{100} \times 75 = \frac{6 \times 75}{10} = \frac{450}{10} = 45$

Number of boys in class $= 45$

3. Broken pencils $= 12\%$ of 650

$$= \frac{12}{100} \times 650 = \frac{12 \times 65}{10} = \frac{780}{10} = 78$$

Broken pencils $= 78$

4. 20% of $400 = \frac{20}{100} \times 400 = 80$

15% of $450 = \frac{15}{100} \times 450 = \frac{15 \times 45}{10} = \frac{675}{10} = 67.5$

$\therefore$ 20% of $400 >$ 15% of 450

5. Savings $= 10000 - 6000 = 4000$

Saving % $= \frac{4000}{10000} \times 100 = 40\%$

6. $76500 = \frac{42}{100} \times 76500$

$= 42 \times 765 = 32{,}130$

$$\begin{array}{r} 765 \\ \times\ 42 \\ \hline 1530 \\ 3060\times \\ \hline 32130 \\ \hline \end{array}$$

7. % of runs made by captain $= \frac{135}{450} \times 100 = \frac{135 \times 10}{45} = 30\ \%$

8. Discount $= 18\%$ of $1000 = \frac{18}{100} \times 1000 =$ ₹ 180

$\therefore$ Sale price $= 1000 - 180 =$ ₹ 820

9. % of marks in Ist term $= \frac{320}{400} \times 100 = \frac{320}{4} = 80\%$

% of marks in IInd term $= \frac{360}{500} \times 100 = \frac{360}{5} = 72\%$

$\therefore$ She perform better in Ist term examination

10. Students comes by bicycle $= 45\%$ of 2400

$= \frac{45}{100} \times 2400 = 45 \times 24 = 1080$

$$\begin{array}{r} 45 \\ \times\ 24 \\ \hline 180 \\ 90\times \\ \hline 1080 \\ \hline \end{array}$$

11. Increase in price $= 40\%$ of $150 = \frac{40}{100} \times 150 = 60$

New price of book $= 150 + 60 =$ ₹ 210

12. Marks got by Soniya $= 90\%$ of 1050

$= \frac{90}{100} \times 1050 = 9 \times 105 = 945$

13. Yellow bulbs $= 15\%$ of 1560

$= \frac{15}{100} \times 1560 = \frac{15 \times 156}{10} = \frac{2340}{10}$

Yellow bulbs $= 234$

14. Household expenses $= 80\%$ of 7200

$$= \frac{80}{100} \times 7200 = 80 \times 72$$

Expenses $=$ ₹ 5760

Savings $= 7200 - 5760 =$ ₹ 1440

15. Arun contribute $= 15\%$ of 2500

$$= \frac{15}{100} \times 2500 = 15 \times 25 =$$ ₹ 375

16. Less weight $= 40\%$ of $40 = \frac{40}{100} \times 40 = 16$ kg

$\therefore$ Weight of suitcase $= 40 - 16 = 24$ kg

17. 10% of $150 = \frac{10}{100} \times 150 = 15$ cm

$\therefore$ Priyanka is $150 + 15 = 165$ cm tall

18. Petrol used $= 75\%$ of $32 = \frac{75}{100} \times 32 = \frac{2400}{100} = 24$ litres

$$\begin{array}{r} 7\ 5 \\ \times\ 3\ 2 \\ \hline 1\ 5\ 0 \\ 2\ 2\ 5\ \times \\ \hline 2\ 4\ 0\ 0 \\ \hline \end{array}$$

Petrol left $= 32 - 24 = 8$ litres

19. Passed % $= \frac{24}{60} \times 100 = \frac{240}{6} = 40$

Pass % $= 40\%$

Failed % $= 100 - 40 = 60\%$

20. Increase in salary $=$

$$\begin{array}{r} 1\ 7\ 5\ 0 \\ -1\ 2\ 5\ 0 \\ \hline 5\ 0\ 0 \\ \hline \end{array}$$

Increase % $= \frac{500}{1250} \times 100 = \frac{5000\cancel{0}}{125\cancel{0}} = 40\%$

21. Score % $= \frac{475}{500} \times 100 = 95\%$

MCQs

1. (c) Marks $= 80\%$ of $500 = \frac{80}{10\cancel{0}} \times 5\cancel{0}\cancel{0} = 400$

2. (a) $6\frac{1}{4}$ % of $480 = \frac{25}{4}$ % of $480 = \frac{\cancel{25}}{4 \times \underset{4}{\cancel{100}}} \times 480 = \frac{480}{16} = 30$

3. (c) Spend on food $= 20\%$ of $2400 = \frac{20}{100} \times 2400 = 480$

4. (c) **5.** (c) **6.** (b) $\because$ $0.057 \times 100\% = 5.7\%$

7. (c) $1\frac{2}{4} = \frac{6}{4} = \frac{6}{4} \times 100\% = 6 \times 25\% = 150\%$

8. (a) $\frac{40}{100} \times 100 = 40$ litre **9.** (b) $\frac{2}{100} \times 100 = 2\%$

Mental Maths

(a) Families having 4 cars $= 11\%$ of $200 = \frac{11}{100} \times 200 = 22$

Families having 3 cars $= \frac{24}{100} \times 200 = 48$

Families having 3 and more than 3 cars $= 22 + 48 = 72$

(b) Families having 2 cars $= 19\%$ of $200 = \frac{19}{100} \times 200 = 38$

Families having no cars $= 21\%$ of $200 = \frac{21}{100} \times 200 = 42$

$\therefore$ $42 - 38 = 4$

$\therefore$ 4 families

(c) Families with 1 car $= 25\%$ of $200 = \frac{25}{100} \times 200 = 50$

Families with no car $= 42$

$\therefore$ $\frac{50}{42}$ times families with 1 car than with no cars

Test Exercise

1. (a) $\frac{1}{4} \times 100\% = 25\%$ (b) $\frac{1}{5} \times 100\% = 20\%$

(c) $\frac{1}{10} \times 100\% = 10\%$ (d) $\frac{1}{50} \times 100\% = 2\%$

2. (a) $12.5 \times 100\% = 1250\%$ (b) $2.8 \times 100\% = 280\%$

(c) $0.75 \times 100\% = 75\%$ (d) $9.2 \times 100\% = 920\%$

3. (a) $\frac{60\text{paise}}{100\text{paise}} \times 100\% = 60\%$ (b) $\frac{2\text{mm}}{1\text{cm}} \times 100\% = \frac{2\text{mm}}{10\text{mm}} \times 100\% = 20\%$

(c) $\frac{250\text{m}}{1\text{km}} \times 100\% = \frac{250\text{m}}{1000\text{m}} \times 100\% = 25\%$

(d) $\frac{400\text{g}}{2\text{kg}} \times 100\% = \frac{400}{2000} \times 100\% = 20\%$

4. (a) $5\% = \frac{5}{100} = \frac{1}{20}$ (b) $15\% = \frac{15}{100} = \frac{3}{20}$

(c) $45\% = \frac{45}{100} = \frac{9}{20}$ (d) $150\% = \frac{150}{100} = \frac{3}{2}$

5. (a) $45\% = \frac{45}{100} = 0.45$ (b) $20\% = \frac{20}{100} = 0.20$

(c) $125\% = \frac{125}{100} = 1.25$ (d) $8\% = \frac{8}{100} = 0.08$

6. (a) $25\% \text{ of } 100 = \frac{25}{100} \times 100 = 25$

(b) $15\% \text{ of 1 metres} = \frac{15}{100} \times 100 \text{ cm} = 15 \text{ cm}$

(c) $50\% \text{ of 2 km} = \frac{50}{100} \times 2000 \text{ m} = 50 \times 20 = 1000 \text{ m} = 1 \text{ km}$

(d) $75\% \text{ of ₹ } 200 = \frac{75}{100} \times 200 = ₹\ 150$

7. (a) $\frac{40}{80} \times 100\% = 50\%$

(b) $\frac{75p}{₹10} \times 100\% = \frac{75p}{1000p} \times 100\% = 7.5\%$

(c) $\frac{600m}{3km} \times 100\% = \frac{6\cancel{00}m}{3\cancel{000}m} \times 100\% = 20\%$

8. $\% \text{ of seat occupied} = \frac{7500}{10000} \times 100\% = 75\%$

$\% \text{ of seat vacant} = (100 - 75)\% = 25\%$

13 Profit and Loss

Exercise- 13.1

1. (a) Loss $= 1000 - 900 =$ ₹ 100
(b) Loss $= CP - SP = 500 - 400 =$ ₹ 100
(c) Profit $= SP - CP = 700 - 600 =$ ₹ 100
(d) Profit $= SP - CP = 500 - 400 =$ ₹ 100
(e) Profit $= SP - CP = 400 - 300 =$ ₹ 100
(f) Profit $= SP - CP = 300 - 200 =$ ₹ 100
(g) Profit $= SP - CP = 900 - 700 =$ ₹ 200
(h) Loss $= CP - SP = 600 - 300 =$ ₹ 300

2. (a) Profit = SP − CP = 1200 − 1000 = ₹ 200
(b) Loss = CP − SP = 3000 − 1500 = ₹ 1500
(c) Loss = CP − SP = 200 − 100 = ₹ 100
(d) Profit = SP − CP = 400 − 300 = ₹ 100
(e) Loss = CP − SP = 700 − 500 = ₹ 200
(f) Profit = SP − CP = 900 − 600 = ₹ 300
(g) Profit = SP − CP = 625 − 365 = ₹ 260
(h) Loss = CP − SP = 470 − 300 = ₹ 170
(i) Profit = SP − CP = 490 − 390 = ₹ 100

3. CP of 10 pens = 10 × 100 = ₹ 100
SP of 10 pens = 12 × 10 = ₹ 120
Profit = SP − CP = 120 − 100 = ₹ 20

4. CP of 12 eggs = ₹ 2.5 × 12 = ₹ 30.0
SP of 12 eggs = ₹ 3 × 12 = ₹ 36
Profit = 36 − 30 = ₹ 6

5. Profit on TV = 9000 − 8300 = ₹ 700

6. Total CP of laptop =

$$\begin{array}{r} 30257 \\ +425 \\ \hline ₹\ 30,682 \\ \hline \end{array}$$

SP of laptop = ₹ 30500
Loss = SP − CP = 30682 − 30500
Loss = ₹ 182

7. CP of 20 dozen bananas = ₹ 750
CP of 1 dozen bananas = $\frac{750}{20}$ = ₹ 37.5
SP of 1 dozen bananas = ₹ 35
Loss = CP − SP = 37.5 − 35 = ₹ 2.50

8. Total CP of car =

$$\begin{array}{r} ₹\ 6,40,600 \\ +\ 20,570 \\ \hline 6,61,170 \\ \hline \end{array}$$

Profit = SP − CP = 6,87,250 − 6,61,170 = ₹ 26,080

9. CP of books = 10 × 60 = ₹ 600
CP of magazines = 60 × 40 = ₹ 2400
Total CP = 2400 + 600 = ₹ 3000
SP of 20 books and magazines = 70 × 50 = ₹ 3500

$$\begin{array}{r} 3500 \\ -3000 \\ \hline \end{array}$$

Profit = ₹ 500

Exercise- 13.2

1. (a) SP = CP − Loss = 500 − 100 = ₹ 400
(b) CP = SP + Loss = 670 + 200 = ₹ 870
(c) SP = CP + Profit = 300 + 50 = ₹ 350

(d) SP = CP + Profit = 400 + 75 = ₹ 475

(e) CP = SP + Loss = 800 + 100 = ₹ 900

(f) CP = SP − Profit = 950 − 150 = ₹ 800 (g) SP = CP − Loss = 650 − 200 = ₹ 450

2. (a) CP = SP + Loss = 900 + 331.40 = ₹ 1231.40

(b) CP = SP − Profit = 3691 − 690.95 = ₹ 3000.05

$$\begin{array}{r} 3\ 6\ 9\ 1\ .\ 0\ 0 \\ -\ 6\ 9\ 0\ .\ 9\ 5 \\ \hline 3\ 0\ 0\ 0\ .\ 0\ 5 \\ \hline \end{array}$$

(c) CP = SP + Loss = 10,000 + 88.80 = ₹ 10088.80

(d) CP = SP − Profit = 6900 − 100 = ₹ 6800

(e) CP = SP + Loss = 875 + 35 = ₹ 910

(f) CP = SP + Loss = 755.00 + 501.25 = ₹ 7556.25

$$\begin{array}{r} 7\ 0\ 5\ 5\ .\ 0\ 0 \\ +\ 5\ 0\ 1\ .\ 2\ 5 \\ \hline 7\ 5\ 5\ 6\ .\ 2\ 5 \\ \hline \end{array}$$

(g) CP = SP − Profit = 835.65 − 12.75 = ₹ 822.90

$$\begin{array}{r} 8\ 3\ 5\ .\ 6\ 5 \\ -\ 1\ 2\ .\ 7\ 5 \\ \hline 8\ 2\ 2\ .\ 9\ 0 \\ \hline \end{array}$$

(h) CP = SP − Profit = 8050.25 − 80.25 = ₹ 7970.00

3. (a) SP = CP + Profit = 2235.25 + 30.75 = ₹ 2266.00

(b) SP = CP + Profit = 475.00 + 18.00 = ₹ 493.00

(c) SP = CP − Loss = 825.50 − 7.50 = ₹ 818.00

(d) SP = CP − Loss = 925.25 − 3.35 = ₹ 921.90

(e) SP = CP + Profit = ₹ 12000 + ₹ 125.50 = ₹ 12125.50

(f) SP = CP + Profit = ₹ 630 + ₹ 18.30 = ₹ 648.30

(g) SP = CP − Loss = ₹ 9756 − ₹ 385.90 = ₹ 9370.10

$$\begin{array}{r} 9\ 7\ 5\ 6\ .\ 0\ 0 \\ -\ 3\ 8\ 5\ .\ 9\ 0 \\ \hline 9\ 3\ 7\ 0\ .\ 1\ 0 \\ \hline \end{array}$$

(h) SP = CP − Loss = ₹ 3875.50 − ₹ 489.45 = ₹ 3386.05

$$\begin{array}{r} 3\ 8\ 7\ 5\ .\ 5\ 0 \\ -\ 4\ 8\ 9\ .\ 4\ 5 \\ \hline 3\ 3\ 8\ 6\ .\ 0\ 5 \\ \hline \end{array}$$

4. Profit on chair = SP − CP = 900 − 810 = ₹ 90

5. Total CP of scooter =

$$\begin{array}{r} 3\ 4\ 5\ 3\ 7 \\ +\ 8\ 3\ 5 \\ \hline 3\ 5,\ 3\ 7\ 2 \\ \hline \end{array}$$

SP = 38430

Profit = SP − CP = 38,430 − 35,372 = ₹ 3058

6. Total CP of car = 3,20,000
+ 30,000
₹ 3,50,000

SP = ₹ 310455

Loss on car = CP − SP = 3,50,000 − 3,10,455 = ₹ 39,545

7. CP of 10 dozen bananas = ₹ 650

SP of 1 dozen banana = ₹ 8.30

SP of (10 dozens) 120 bananas = ₹ 8.30 × 120 = ₹ 996

Profit = SP − CP = 996 − 650 = ₹ 346

8. SP of watch = CP + Profit = 1550 + 120 = ₹ 1670

9. SP of Refrigerator = CP + Profit = 9990 + 450 = ₹ 10440

10. SP of mobile = CP − Loss = 12250 − 200 = ₹ 12050

11. CP of television = SP + Loss = 5625 + 475 = ₹ 6100

Exercise- 13.3

1. (a) L = CP − SP = 360 − 240 = ₹ 120

$$L\% = \frac{L}{CP} \times 100 = \frac{120}{360} \times 100 = \frac{12000}{360} = \frac{1200}{36}\% = 33.33\%$$

(b) P = SP − CP = 3600 − 3000 = ₹ 600

$$P\% = \frac{P}{CP} \times 100 = \frac{600}{3000} \times 100 = 20\%$$

(c) P = SP − CP = 300 − 250 = 50

$$P\% = \frac{P}{CP} \times 100 = \frac{50}{250} \times 100 = 20\%$$

(d) L = CP − SP = 2250 − 1795 = ₹ 455

$$L\% = \frac{L}{CP} \times 100 = \frac{455}{2250} \times 100 = 20.22\%$$

(e) L = CP − SP = 3856 − 2642 = ₹ 1214

$$L\% = \frac{L}{CP} \times 100 = \frac{1214}{3856} \times 100\% = \frac{121400}{3856}\% = 31.48\%$$

(f) P = SP − CP = 900 − 675 = ₹ 225

$$P\% = \frac{P}{CP} \times 100 = \frac{225}{675} \times 100 = \frac{1}{3} \times 100\% = 33\frac{1}{3}\%$$

2. (a) Profit = 5% of 750 $= \frac{5}{10\emptyset} \times 75\emptyset = \frac{375}{10}$ = ₹ 37.5

(b) Profit = 10% of 1500 $= \frac{10}{100} \times 1500$ = ₹ 150

(c) Loss $= 15\%$ of $800 = \frac{15}{100} \times 800 =$ ₹ 120

(d) Loss $= 30\%$ of $10500 = \frac{30}{100} \times 10500 = 30 \times 105 =$ ₹ 3150

(e) Profit $= 75\%$ of $775 = \frac{75}{100} \times 775 = \frac{3}{4} \times 775 = \frac{2325}{4} =$ ₹ 581.25

(f) Loss $= 12\%$ of $25000 = \frac{12}{100} \times 25000 = 12 \times 250 =$ ₹ 3000

3. (a) Profit $= 2\%$ of $400 = \frac{2}{100} \times 400 =$ ₹ 8

SP = CP + Profit $= 400 + 8 =$ ₹ 408

(b) Loss $= 5\%$ of $750 = \frac{\cancel{5}}{\cancel{100}_{2}} \times 75\cancel{0} = 37.5$

SP = CP − Loss $= 750 - 37.5 =$ ₹ 712.5

(c) Profit $= 10\%$ of $200 = \frac{10}{100} \times 200 =$ ₹ 20

SP = CP + Profit $= 200 + 20 =$ ₹ 220

(d) Loss $= 20\%$ of $500 = \frac{20}{100} \times 500 =$ ₹ 100

SP = CP − Loss $= 500 - 100 =$ ₹ 400

(e) Profit $= 12\%$ of $800 = \frac{12}{100} \times 800 = 12 \times 8 =$ ₹ 96

SP = CP + Profit $= 800 + 96 =$ ₹ 896

(f) Profit $= 17\%$ of $450 = \frac{17}{100} \times 450 = \frac{7650}{100} = 76.50$

SP = CP + Profit $= 450 + 76.50 =$ ₹ 526.50

4. (a) Let CP $= x$

Gain $= 8\%$ of $x = \frac{8}{100}x$

SP = CP + gain

$135 = x + \frac{8x}{100}$

$135 = \frac{100x + 8x}{100}$

$13500 = 108x$

$x = \frac{13500}{108}$

CP = ₹ 125

(b) Let CP $= x$

Gain $= 12\%$ of $x = \frac{12x}{100}$

SP = CP + gain

$336 = x + \frac{12x}{100}$

$336 = \frac{100x + 12x}{100}$

$336 \times 100 = 112x$

$\frac{33600}{112} = x$

$300 = x$

$\therefore$ CP = ₹ 300

(c) Let CP $= x$

$$\text{Loss} = 7\% \text{ of } x = \frac{7x}{100}$$

$$\text{SP} = \text{CP} - \text{Loss}$$

$$1302 = x - \frac{7x}{100}$$

$$1302 = \frac{100x - 7x}{100}$$

$$1302 = \frac{93x}{100}$$

$$\frac{130200}{93} = x$$

$$= ₹\ 1400 = \text{CP}$$

(d) Let CP $= x$

$$\text{Loss} = 5\frac{1}{2}\% \text{ of } x$$

$$= \frac{11}{2}\% \text{ of } x$$

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

$$\text{SP} = \text{CP} - \text{Loss}$$

$$330 = x - \frac{11x}{200}$$

$$330 = \frac{200x - 11x}{200}$$

$$330 \times 200 = 189x$$

$$\frac{330 \times 200}{189} = x$$

$$\frac{66000}{189} = x$$

$$= ₹\ 349.20 = \text{CP}$$

5. Let CP of car $= x$

$$\text{Loss} = 4\frac{1}{2}\% \text{ of } x = \frac{9}{2}\% \text{ of } x = \frac{9x}{2 \times 100} = \frac{9x}{200}$$

$$\text{SP} = \text{CP} - \text{Loss}$$

$$91680 = x - \frac{9x}{200}$$

$$91680 = \frac{200x - 9x}{200}$$

$$91680 = \frac{191x}{200}$$

$$x = \frac{91680 \times 200}{191} = \frac{18336000}{191}$$

$$\text{CP} = ₹\ 96000$$

6. Let CP of bat $= ₹\ x$

$$\text{Gain} = 6\frac{1}{2}\% \text{ of } \frac{13}{2}\% \text{ of } x = \frac{13x}{200}$$

$$\text{SP} = \text{CP} + \text{Gain}$$

$$25.56 = x + \frac{13x}{200}$$

$$25.56 = \frac{200x + 13x}{200}$$

$$25.56 \times 200 = 213x$$

$$\frac{5112}{213} = x$$

$$= ₹\ 24 = \text{CP of bat}$$

7. Let CP of goods $= x$

$$\text{Gain} = \frac{1}{5}x$$

$$\text{SP} = \text{CP} + \text{gain}$$

$$3840 = x + \frac{1}{5}x$$

$$3840 = \frac{5x + x}{5}$$

$$3840 \times 5 = 6x$$

$$19200 = 6x$$

$$\frac{19200}{6} = x$$

$$= ₹\ 3200 = \text{CP of goods}$$

8. Profit $= 80 - 75 =$ ₹ 5

$$\text{Profit } \% = \frac{\text{P}}{\text{CP}} \times 100 = \frac{5}{75} \times 100 = \frac{1}{15} \times 100\% = 6\frac{10}{15} = 6\frac{2}{3}\%$$

9. Loss $= \text{CP} - \text{SP} = 5000 - 4500 =$ ₹ 500

$$\text{Loss}\% = \frac{\text{L}}{\text{CP}} \times 100 = \frac{500}{5000} \times 100$$

On Saree $= 10\%$

10. CP of ordinary rice $= 30 \times 20 =$ ₹ 600

CP of Basmati rice $= 80 \times 50 =$ ₹ 4000

Total CP $= 600 + 4000 =$ ₹ 4600

SP $= 110 \times 45$ kg $=$ ₹ 4950

Profit $= 4950 - 4600 =$ ₹ 350

$$\text{Profit } \% = \frac{\text{P}}{\text{CP}} \times 100 = \frac{350}{4600} \times 100\% = \frac{35000}{4600}\% = 7.6\%$$

11. Total CP of bicycle $= 1250 + 250 =$ ₹ 1500

$$\text{Profit} = 5\% \text{ of } 1500 = \frac{5}{100} \times 1500 = ₹\ 75$$

$\therefore$ SP of bicycle $= 1500 + 75 =$ ₹ 1575

12. CP of 10 dozen eggs $= 9.60 \times 10 =$ ₹ 96.00

SP of $(120 - 6 = 114)$ eggs $= 0.70 \times 114 =$ ₹ 79.80

Loss $= 96 - 79.80 =$ ₹ 16.20

$$\text{L}\% = \frac{\text{L}}{\text{CP}} \times 100 = \frac{16.20}{96} \times 100\% = 16\frac{7}{8}\% \text{ or } 16.88\%$$

13. Profit $= \text{SP} - \text{CP} = 650 - 600 = 50$

$$\text{P}\% = \frac{\text{P}}{\text{CP}} \times 100 = \frac{50}{600} \times 100 = \frac{50}{6} = 8\frac{2}{6}\% = 8\frac{1}{3}\%$$

14. Loss $= \text{CP} - \text{SP} = 2500 - 2000 =$ ₹ 500

$$\text{Loss}\% = \frac{\text{L}}{\text{CP}} \times 100 = \frac{500}{2500} \times 100$$

Loss $= 20\%$

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

SP of Saree $=$ CP $+$ Profit $= 1500 + 150 =$ ₹ 1650

MCQs

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

14 Speed, Distance and Time

Exercise- 14.1

1. (a) Speed $= \frac{d}{t} = \frac{1600}{80} = 20$ m/s (b) $t = \frac{d}{s} = \frac{420}{14} = 30$ seconds

(c) $d = s \times t = 85 \times 8 = 680$ km

(d) speed $= \frac{d}{t} = \frac{325}{13}$ km/hr $= 25$ km/hr

(e) $t = \frac{d}{s} = \frac{500}{50} = 10$ hour (f) $d = s \times t = 62 \times 12 = 744$ m

2. (a) Speed $= \frac{d}{t} = \frac{75}{3}$ km/hr $= 25$ km/hr

(b) Speed $= \frac{d}{t} = \frac{120}{4} = 30$ km/hr

(c) Speed $= \frac{d}{t} = \frac{300}{15} = 20$ km/hr

(d) Speed $= \frac{d}{t} = \frac{400}{2} = 200$ km/hr

3. (a) Speed $= \frac{d}{t} = \frac{600}{4}$ km/hr $= 150$ km/hr

(b) Speed $= \frac{d}{t} = \frac{8}{2} = 4$ km/hr

(c) Speed $= \frac{d}{t} = \frac{225}{5} = 45$ km/hr

(d) Speed $= \frac{d}{t} = \frac{35}{5} = 7$ km/hr

4. (a) Distance $=$ Speed $\times$ Time $= 70 \times 8$ $= 560$ km (b) Distance $=$ Speed $\times$ Time $= 85 \times 7$ $= 595$ km

5. Time $= \frac{d}{s} = \frac{382.5}{85}$ hours $= 4.5$ hours

6. Distance travelled by aeroplane

$$S \times \text{time} = 840 \times 3.5 = 2940 \text{ km}$$

$$\begin{array}{r} 840 \\ \times\ 3.5 \\ \hline 4200 \\ 2520\times \\ \hline 2940.0 \\ \hline \end{array}$$

7. Speed of train $= \dfrac{d}{t} = \dfrac{1638}{15} = 91$ km/hr

$$\begin{array}{r} 91 \\ 18\overline{)1638} \\ -162 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$$

8. Speed of car $= \dfrac{d}{t} = \dfrac{204}{4} = 51$ km/hr

Exercise- 14.2

1. (a) 1 km/ hr $= \dfrac{5}{18}$ m/s

(b) 45 km/hr $= 45 \times \dfrac{5}{18}$ m/s $= 15 \times \dfrac{5}{6} = \dfrac{75}{6} = 12\dfrac{3}{6} = 12\dfrac{1}{2}$ m/s

(c) 50 m/s $= 50 \times \dfrac{18}{5}$ km/hr $= 10 \times 18$ km/hr $= 180$ km/hr

(d) 120 m/s $= 120 \times \dfrac{18}{5}$ km/hr $= 24 \times 18$ km/hr $= 432$ km/hr

2. (a) 90 km/ hr $= 90 \times \dfrac{5}{18}$ m/s $= 5 \times 5$ m/s $= 25$ m/s

(b) 72 km/ hr $= 72 \times \dfrac{5}{18}$ m/s $= 4 \times 5$ m/s $= 20$ m/s

(c) 36 m/hr $= 36 \times \dfrac{5}{18}$ m/s $= 2 \times 5$ m/s $= 10$ m/s

(d) 45 km/hr $= 45 \times \dfrac{5}{18}$ m/s $= 15 \times \dfrac{5}{6} = \dfrac{75}{6}$ m/s $= 12\dfrac{3}{6}$ m/s $= 12\dfrac{1}{2}$ m/s

(e) 144 km/hr $= \overset{24}{\cancel{144}} \times \dfrac{5}{\underset{3}{\cancel{18}}}$ m/s $= 24 \times \dfrac{5}{3} = 8 \times 5 = 40$ m/s

3. (a) 25 m/s $= 25 \times \dfrac{18}{5}$ km/hr $= 5 \times 18$ km/hr $= 90$ km/hr

(b) $95 \text{ m/s} = 95 \times \frac{18}{5} \text{ km/hr} = 19 \times 18 \text{ km/hr} = 342 \text{ km/hr}$

(c) $100 \text{ m/s} = 100 \times \frac{18}{5} \text{ km/hr} = 20 \times 18 \text{ km/hr} = 360 \text{ km/hr}$

(d) $45 \text{ m/s} = 45 \times \frac{18}{5} \text{ km/hr} = 9 \times 18 \text{ km/hr} = 162 \text{ km/hr}$

(e) $35 \text{ m/s} = 35 \times \frac{18}{5} \text{ km/hr} = 7 \times 18 \text{ km/hr} = 126 \text{ km/hr}$

4. Speed $= \frac{d}{t} = \frac{360}{5} \text{ km/hr} = 72 \text{ km/hr} = 72 \times \frac{5}{18} \text{ m/s} = 4 \times 5 \text{ m/s}$

Speed of truck $= 20$ m/s

5. Speed $= \frac{d}{t} = \frac{24000}{300} \text{ m/s} = 80 \text{ m/s}$

Speed of train $= 80 \times \frac{18}{5} \text{ km/hr} = 16 \times 18 = 288 \text{ km/hr}$

MCQs

1. (a)

2. (c) $s = \frac{d}{t} = \frac{500}{25} = 20 \text{ m/s}$

3. (b) $s = \frac{d}{t} = \frac{12}{2} = 6 \text{ km/hr}$

4. (c)

5. (d)

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15 Simple Interest

Exercise- 15.1

1. (a) $I = \frac{P \times r \times t}{100} = \frac{5250 \times 10 \times 4}{100} = 525 \times 4 = ₹\ 2100$

(b) $I = \frac{P \times r \times t}{100} = \frac{1250 \times 12 \times 2}{100} = \frac{30000}{100} = ₹\ 300$

(c) $I = \frac{P \times r \times t}{100} = \frac{4500 \times 15 \times 7}{100} = 45 \times 15 \times 7 = ₹\ 4725$

(d) $I = \frac{P \times r \times t}{100} = \frac{3000 \times 9 \times 8}{100} = 30 \times 9 \times 8 = ₹\ 2160$

(e) $I = \frac{P \times r \times t}{100} = \frac{5500 \times 6 \times 8}{100} = 55 \times 6 \times 3 = ₹\ 990$

(f) $I = \frac{P \times r \times t}{100} = \frac{400 \times 5 \times 9}{100} = 40 \times 5 \times 9 =$ ₹ 1800

(g) $I = \frac{P \times r \times t}{100} = \frac{900 \times 12 \times 12}{100} = 9 \times 12 \times 12 =$ ₹ 1296

(h) $I = \frac{P \times r \times t}{100} = \frac{3675 \times 10 \times 6}{100} = \frac{3675}{10} = \frac{22050}{10} =$ ₹ 2205

(i) $I = \frac{P \times r \times t}{100} = \frac{6800 \times 12 \times 5}{100} = 68 \times 12 \times 5 =$ ₹ 4080

(j) $I = \frac{P \times r \times t}{100} = \frac{16500 \times 8 \times 3}{100} = 165 \times 8 \times 3 =$ ₹ 3960

(k) $I = \frac{P \times r \times t}{100} = \frac{25100 \times 4 \times 4}{100} = 251 \times 4 \times 4 =$ ₹ 4016

(l) $I = \frac{P \times r \times t}{100} = \frac{50350 \times 2 \times 15}{100} = \frac{5035 \times 2 \times 15}{10} =$ ₹ 15105

2. (a) $I = \frac{P \times r \times t}{100} = \frac{3000 \times 5 \times 2}{100} = 30 \times 10 =$ ₹ 300

(b) $I = \frac{P \times r \times t}{100} = \frac{5000 \times 10 \times 5}{100} = 50 \times 10 \times 5 =$ ₹ 2500

(c) $I = \frac{P \times r \times t}{100} = \frac{2600 \times 8 \times 3}{100} = 26 \times 8 \times 3 =$ ₹ 624

(d) $I = \frac{P \times r \times t}{100} = \frac{1800 \times 5\frac{1}{2} \times 2\frac{1}{2}}{100} = \frac{1800 \times \frac{11}{2} \times \frac{5}{2}}{100}$

$= \cancel{18}^{9} \times \frac{11}{\cancel{2}} \times \frac{5}{2} = 9 \times 11 \times \frac{5}{2} = \frac{495}{2}$ I = 247.50

(e) $I = \frac{P \times r \times t}{100} = \frac{10000 \times 8 \times 2\frac{1}{2}}{100} = 100 \times 8 \times \frac{5}{2} = 50 \times 8 \times 5 = 400 \times 5$ I = ₹ 2000

(f) P = ₹ 8000, t = 2 year 4 months $= 2\frac{4}{12}$ years $= 2\frac{1}{3}$ years $= \frac{7}{3}$ years

$I = \frac{P \times r \times t}{100} = \frac{8000 \times 7 \times \frac{7}{3}}{100} = 80 \times 7 \times \frac{7}{3} = \frac{3920}{3} =$ ₹ 1306.66

3. P = ₹ 18000

r = 4%, t = 5 years

$I = \frac{P \times r \times t}{100} = \frac{18000 \times 4 \times 5}{100} = 180 \times 4 \times 5 = 3600$

Jagdish will get ₹ 3600 as interest

4. $P = ₹\ 4000, \quad r = 12\%, \quad t = 4$ years

$$I = \frac{P \times r \times t}{100} = \frac{4000 \times 12 \times 4}{100} = 40 \times 12 \times 4 = ₹\ 1920$$

$\therefore$ Shivani will get ₹ 1920 as interest

5. $P = ₹\ 1000, \quad r = 3\%, \quad t = 4\frac{1}{2}$ years $= \frac{9}{2}$ years

$$I = \frac{P \times r \times t}{100} = \frac{1000 \times 3 \times \frac{9}{2}}{100} = 10 \times 3 \times \frac{9}{2} = 5 \times 3 \times 9 = ₹\ 135$$

$\therefore$ Manjeet will get ₹ 135 as interest

6. $P = ₹\ 1000, \quad r = 8\%, \quad t = 3\frac{1}{2}$ years $= \frac{7}{2}$ years

$$I = \frac{P \times r \times t}{100} = \frac{18000 \times 8 \times \frac{7}{2}}{100} = 180 \times 8 \times \frac{7}{2} = 180 \times 4 \times 7 = ₹\ 5040$$

$\therefore$ Ajay will get ₹ 5040 as interest

7. $P = ₹\ 4000, \quad r = 4\%, \quad t = 7$ month 15 day $= 7\frac{15}{30}$ months

$= \frac{4}{12}$ % month

$= 7\frac{1}{2}$ months

$$I = \frac{P \times r \times t}{100} = \frac{4000 \times \frac{4}{12} \times 7\frac{1}{2}}{100} = 40 \times \frac{4}{12} \times \frac{15}{2} = ₹\ 100$$

$I = ₹\ 100$

8. $t = 11$ months 15 days $= 11\frac{15}{30}$ months $= 11\frac{1}{2}$ months $= \frac{23}{2}$ months

$P = ₹\ 7200 \quad r = 7\%$ p.a. $= \frac{7}{12}$ pm

$$I = \frac{P \times r \times t}{100} = \frac{7200 \times \frac{7}{12} \times \frac{23}{2}}{100} = 72 \times \frac{7}{12} \times \frac{23}{2} = \frac{11592}{24} = ₹\ 483$$

Exercise- 15.2

1. (a) $I = \frac{P \times r \times t}{100} = \frac{800 \times 6 \times 3}{100} = 8 \times 6 \times 3 = 144$

$\therefore$ Amount $= P + I = 800 + 144 = ₹\ 944$

(b) $I = \frac{P \times r \times t}{100} = \frac{2490 \times 5 \times 1\frac{1}{3}}{100} = \frac{\overset{83}{\cancel{249}} \times 5 \times \frac{4}{\cancel{3}}}{10} = \frac{83 \times 5 \times 4}{10} = ₹\ 166$

$\therefore$ Amount $= P + I = 2490 + 166 = ₹\ 2656$

(c) $I = \frac{P \times r \times t}{100} = \frac{6550 \times 2.5 \times 6}{100} = \frac{98250}{100} = 982.50$

$\therefore$ Amount $= P + I = 6550 + 982.50$

$= ₹\ 7532.5$

2. $I = \frac{P \times r \times t}{100} = \frac{5000 \times 4 \times 4}{100} = 50 \times 16 = ₹\ 800$

$\therefore$ After 4 years Ramesh will get $= P + I = 5000 + 800 = ₹\ 5800$

3. $I = \frac{P \times r \times t}{100} = \frac{48000 \times 8 \times 5}{100} = 480 \times 8 \times 5 = ₹\ 19200$

$\therefore$ Mrs Khanna will get $= P + I = 48000 + 19200 = ₹\ 67200$

4. $t = 8$ months $= \frac{8}{12}$ years

$$I = \frac{P \times r \times t}{100} = \frac{21000 \times 12\frac{1}{2} \times \frac{8}{12}}{100} = \frac{21000 \times \frac{25}{2} \times \frac{8}{12}}{100} = 210 \times \frac{25}{\cancel{2}} \times \frac{\overset{4}{\cancel{8}}}{12}$$

$$= \frac{210 \times 25 \times 4}{12} = \frac{21000}{12} = ₹\ 1750$$

Aditya have to pay back $= P + I = 21000 + 1750 = ₹\ 22750$

5. $P = 3160$, $r = 3\frac{1}{2}\%$, $t = 2$ years

$= \frac{7}{2}\%$

$$I = \frac{P \times r \times t}{100} = \frac{3160 \times \frac{7}{2} \times 2}{100} = \frac{316 \times 7}{10} = \frac{2212}{10} = ₹\ 221.20$$

Interest earned by Monika ₹ 221.20

6. $I = \frac{P \times r \times t}{100} = \frac{900 \times 5 \times 2}{100} = 9 \times 10 = ₹\ 90$

Arvind will pay back $= P + I = 900 + 90 = ₹\ 990$

7. $P = ₹\ 3600$, $r = 4\%$, $t = 2\frac{1}{2}$ years $= \frac{5}{2}$ years

$$I = \frac{P \times r \times t}{100} = \frac{3600 \times 4 \times \frac{5}{2}}{100} = 36 \times 4 \times \frac{5}{2} = 36 \times 2 \times 5 = ₹\ 360$$

Suman will get back $= P + I = 3600 + 360 = ₹\ 3960$

8. $I = \frac{P \times r \times t}{100} = \frac{10000 \times 6 \times 3}{100} = 100 \times 18 = ₹\ 1800$

Shikha will get back $= P + I = 10000 + 1800 = ₹\ 11800$

9. $I = \frac{P \times r \times t}{100} = \frac{2000 \times 6 \times 5}{100} = 20 \times 30 = ₹\ 600$

Pinki will get back $= P + I = 2000 + 600 = ₹\ 2600$

10. $I = \frac{P \times r \times t}{100} = \frac{10000 \times 10 \times \frac{22}{3}}{100}, = 100 \times 10 \times \frac{22}{3} = 7333.33$

Chintu will get back $= P + I = 10000 + 7333.33 =$ ₹ 17333.33

11. $I = \frac{P \times r \times t}{100} = \frac{5000 \times 4 \times 4}{100} = 50 \times 16 =$ ₹ 800

Rohit will receive $= P + I = 5000 + 800 =$ ₹ 5800

MCQs

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

4. (a) $I = \frac{6000 \times 6 \times 2}{100} = 60 \times 6 \times 2 =$ ₹ 720 **5.** (a)

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16 Money and Bills

Exercise- 16.1

1. (a) ₹ $0.55 = 0.55 \times 100$ p $= 55$ paise (b) ₹ $6.40 = 6.40 \times 100$ p $= 640$ paise

(c) ₹ $9.85 = 9.85 \times 100$ p $= 985$ paise (d) ₹ $0.79 = 0.79 \times 100$ p $= 79$ paise

(e) ₹ $0.89 = 0.89 \times 100$ p $= 89$ paise (f) ₹ $2.93 = 2.93 \times 100$ p $= 293$ paise

2. (a) 45 paise $=$ ₹ $\frac{45}{100} =$ ₹ 0.45 (b) 780 paise $=$ ₹ $\frac{780}{100} =$ ₹ 7.80

(c) 16 paise $=$ ₹ $\frac{16}{100} =$ ₹ 0.16 (d) 9380 paise $=$ ₹ $\frac{9380}{100} =$ ₹ 93.80

(e) 61351 paise $=$ ₹ $\frac{61351}{100} =$ ₹ 613.51

(f) 920 paise $=$ ₹ $\frac{920}{100} =$ ₹ 9.20

Exercise- 16.2

1. (a)

	₹ 357.63
+	₹ 29.89
	₹ 387.52

(b)

	₹ 56.50
+	₹ 123.90
	₹ 180.40

(c)
```
  ₹  69.39
+ ₹  45.72
  ₹ 115.11
```

(d)
```
  ₹  967.50
+ ₹  216.75
  ₹ 1184.25
```

(e)
```
  ₹ 126.50
+ ₹ 675.15
  ₹ 801.65
```

(f)
```
  ₹ 371.70
+ ₹ 145.75
  ₹ 517.45
```

2. (a)
```
  ₹ 225.65
– ₹  65.63
  ₹ 160.02
```

(b)
```
  ₹ 360.20
– ₹ 284.50
  ₹  75.70
```

(c)
```
  ₹ 1000.00
– ₹  290.20
  ₹  709.80
```

(d)
```
  ₹ 110.75
– ₹  89.11
  ₹  21.65
```

(e)
```
  ₹ 400.00
– ₹ 375.20
  ₹  24.80
```

(f)
```
  ₹ 1000.00
– ₹  686.75
  ₹  313.25
```

3.
```
  ₹  25.45
– ₹ 173.89
  ₹ 199.34
```
₹ 199 and 34 paise

4.
```
  ₹ 500.00p
– ₹ 345.56p
  ₹ 154.44p
```
₹ 154 and 44 paise

5.
```
  ₹ 189.67
+ ₹ 344.20
  ₹ 533.87
```

Exercise- 16.3

1. Spend on purse = ₹607.50
Spend on card = +₹ 67.50
Total expenses = ₹ 675.00

2. Cost of Scooter = ₹5095.00
Expense on repairing = +₹ 563.50
Total amount = ₹5658.50

3. Spend on potatoes = ₹ 30.30
Spend on onions = ₹ 25.75
Spend on tomatoes = + ₹ 15.70
Total spend = ₹ 71.75

4. Rohan had = ₹ 1000.00
Spend on shoes = − ₹ 805.75
Amount left = ₹ 194.25

5. Nidhi gave = ₹ 1000.00
Cost of lamp = − ₹ 649.50
Nidhi get back = ₹ 350.50

6. Spent on belt = ₹ 277.00
Spent on wallet = + ₹ 150.75
Total expense = ₹ 427.75

₹ 500.00
− ₹ 427.75
Deepak amount left = ₹ 72.25

Exercise- 16.4

1. (a)
₹ 847.50
× 6
₹ 5085.00

(b)
₹ 760.85
× 3
₹ 2282.55

(c)
₹ 365.20
× 9
₹ 3286.80

(d)
₹ 126.90
× 15
63450
12690 ×
₹ 1903.50

(e)
₹ 655.65
× 5
₹ 3278.25

(f)
₹ 167.55
× 4
₹ 670.20

2. (a)
```
      1907.8
4 ) 7631.20
   −4
    36
   −36
     031
    − 28
      32
    − 32
       0
```
∴ ₹ 7631.20 ÷ 4 = ₹ 1907.80

(b)
```
      758.30
11 ) 8341.30
    −77
     64
    −55
      91
    − 88
      33
    − 33
       0
```
∴ ₹ 8341.31 ÷ 11 = ₹ 758.30

(c)

```
      2322.16
6 ) 13932.96
   –12
    19
   –18
     13
   – 12
      12
    – 12
       9
     – 6
      36
    – 36
       0
```

∴ ₹ 13932.96 ÷ 6 = ₹ 2322.16

(d)

```
      9.46
15 ) 141.90
   –135
     69
   –60
     90
   – 90
      0
```

∴ ₹ 141.90 ÷ 15 = ₹ 9.46

(e)

```
      189.11
5 ) 945.55
   –5
    44
   –40
     45
   – 45
       5
     – 5
       5
     – 5
       0
```

∴ ₹ 945.55 ÷ 5 = ₹ 189.11

(f)

```
      136.25
3 ) 408.75
   –3
    10
   –9
     18
   – 18
      7
    – 6
     15
   – 15
      0
```

∴ ₹ 408.75 ÷ 3 = ₹ 136.25

Exercise- 16.5

1. Cost of 1 note book = ₹ 3949.75 ÷ 7 = ₹ 564.25

```
      564.25
7 ) 3949.75
   –35
    44
   –42
     29
   – 28
      17
    – 14
      35
    – 35
       0
```

2. Cost of 8 packets = ₹ 24.50 × 8 = ₹ 196.00

```
₹   2 4 . 5 0
            × 8
₹ 1 9 6 . 0 0
```

3. Cost of 12 caps = ₹ 1095.70 × 12 = ₹ 13148.40

```
₹       1 0 9 5 . 7 0
                  × 1 2
          2 1 9 1 4 0
        1 0 9 5 7 0 ×
₹ 1 3 1 4 8 . 4 0
```

4. Number of pens = ₹ 176.20 ÷ 6

```
    29
6 ) 176.20
   −12
     56
   −54
      2.20
```

29 pens bought and ₹ 2.20 left

5. Cost of 1 kg rice 5096.25 ÷ 25 = ₹ 203.85

```
     203.85
25 ) 5096.25
    −50
      096
     −75
       212
    − 200
        125
      − 125
            0
```

6. Bangles box = ₹ 25.97
Cosmetics = + ₹ 500.00
Money spend by Neelam = ₹ 525.97

7. Cost of balls = ₹ 105.00
Cost of bats = + ₹ 630.00
Total expense = ₹ 735.50

Money given to shopkeeper = ₹ 900.00
Expenses = ₹ 735.50
Return to Pal = ₹ 164.50

8. Money taken by Neha = ₹ 800
Money given by Neha = − ₹ 355
To return = ₹ 445

9. Spend on potatoes = ₹ 18.35
Spend on onions = ₹ 30.50
Spend on tomatoes = + ₹ 25.00
Total spend = ₹ 73.85

Money given to seller = ₹ 100.00
Expenses = − ₹ 73.85
She get back = ₹ 26.15

10. Money spent on shirts = ₹ 815.00
Money spent on jeans = + ₹ 630.00
Rahul spend = ₹ 1445.00

MCQs

1. (a) **2.** (b)

3. (b)

```
   ₹ 648.20
 − ₹ 246.80
 ----------
   ₹ 401.40
```

❍❍❍

17 Measurement

Exercise- 17.1

1. (a) 3.16 m = 3.16 × 100 cm = 316 cm
(b) 3.42 m = 3.42 × 100 cm = 342 cm
(c) 7.75 m = 7.75 × 100 cm = 775 cm
(d) 27.076 m = 27.076 × 100 cm = 2707.6 cm
(e) 42.44 m = 42.44 × 100 cm = 4244 cm
(f) 75.08 m = 75.08 × 100 cm = 7508 cm
(g) 0.009 m = 0.009 × 100 cm = 0.9 cm
(h) 367.5 m = 367.5 × 100 cm = 36750 cm

2. (a) 2.355 km = 2.355 × 10 hm = 23.55 hm
(b) 47.86 km = 47.86 × 10 hm = 478.6 hm
(c) 35.250 km = 35.250 × 10 hm = 352.50 hm
(d) 9.003 km = 9.003 × 10 hm = 90.03 hm
(e) 7.075 km = 7.075 × 10 hm = 70.75 hm
(f) 7.878 km = 7.878 × 10 hm = 78.78 hm
(g) 0.9 km = 0.9 × 10 hm = 9 hm
(h) 0.104 km = 0.104 × 10 hm = 1.04 hm

3. (a) 3.127 kg = 3.127 × 100 dag = 312.7 dag
(b) 7.779 kg = 7.779 × 100 dag = 777.9 dag
(c) 96.750 kg = 96.750 × 100 dag = 9675.0 dag
(d) 0.358 kg = 0.358 × 100 dag = 35.8 dag
(e) 8.65 kg = 8.65 × 100 dag = 865 dag
(f) 84.050 kg = 84.050 × 100 dag = 8405.0 dag
(g) 7.392 kg = 7.392 × 100 dag = 739.2 dag
(h) 37.065 kg = 37.065 × 100 dag = 3706.5 dag

4. (a) 3.164 g = 3.164 × 1000 mg = 3164 mg
(b) 0.185 g = 0.185 × 1000 mg = 185 mg
(c) 9.009 g = 9.009 × 1000 mg = 9009 mg
(d) 17.006 g = 17.006 × 1000 mg = 17006 mg
(e) 5.570 g = 5.570 × 1000 mg = 5570 mg
(f) 97.450 g = 97.450 × 1000 mg = 97450 mg
(g) 0.008 g = 0.008 × 1000 mg = 8 mg

5. (a) 6.542 *l* = 6.542 × 10 d*l* = 65.42 d*l*
(b) 32.750 *l* = 32.750 × 10 d*l* = 327.50 d*l*
(c) 8.616 *l* = 8.616 × 10 d*l* = 86.16 d*l* (d) 0.5 *l* = 0.5 × 10 d*l* = 5 d*l*
(e) 38.950 *l* = 38.950 × 10 d*l* = 389.50 d*l*
(f) 0.25 *l* = 0.25 × 10 d*l* = 2.5 d*l*
(g) 9.65 *l* = 9.65 × 10 d*l* = 96.5 d*l* (h) 6.003 *l* = 6.003 × 10 d*l* = 60.03 d*l*

6. (a) 38 dam 46 cm $= \left(38 + \frac{46}{1000}\right)$ dam = 38.046 dam

(b) 8 hm 350 dm $= \left(8 + \frac{350}{1000}\right)$ dam = 8.35 hm

(c) 17 dg 6 mg $= \left(17 + \frac{6}{100}\right)$ dg = 17.06 dg

(d) 23 dag 96 cg $= \left(23 + \frac{96}{100}\right)$ dag = 23.096 dag

(e) 30 d*l* 5 m*l* $= \left(30 + \frac{5}{100}\right)$ d*l* = 30.05 d*l*

(f) 16 k*l* 35 *l* = (16 × 1000 + 35) *l* = 16035 *l*

Exercise- 17.2

1. (a)

121 m	13 cm
97 m	5 cm
+21 m	21 cm
239 m	39 cm

(b)

219.70 m
85.39 m
+ 2.73 m
307.82 m

(c)
```
 13km 583 m
 10km 005 m
+15km 026 m
 38km 614 m
```

(d)
```
  4.000 km
  8.099 km
+14.586 km
 26.685 km
```

(e)
```
 56. 7 cm
 63. 2 cm
+56. 7 cm
176. 6 cm
```

(f)
```
 25. 70 m
 13. 80 m
+14. 02 m
 53. 52 m
```

2. (a)
```
 86. 85 m
-52. 39 m
 34. 46 m
```

(b)
```
 10. 000 m
-3. 965 m
  6. 035 m
```

(c)
```
 39. 7 cm
-21. 9 cm
 17. 8 cm
```

(d)
```
 11km 527 m
-9km  75 m
 2km 452 m
```

(e)
```
 101m 19 cm
-49m 32 cm
 51m 87 cm
```

(f)
```
 19cm 0 mm
-15cm 8 mm
  3cm 2 mm
```

3. (a)
```
 6315g
 2817g
+178g
 9310g
```

$\frac{9310}{1000}$ kg = 9 kg 310 g

(b)
```
  5kg  25 g
  0kg 835 g
+12kg   5 g
 17kg 865 g
```

(c)
```
  18kg 706 g
  75kg   9 g
+ 13kg  91 g
 106kg 806 g
```

(d)
```
  13kg 325 g
  12kg 000 g
+14kg 981 g
  40kg 306 g
```

4. (a)
```
 9. 690 kg
-6. 75  kg
 2. 940 kg
```

(b)
```
 18g 690 mg
-12g 150 mg
  6g 540 mg
```

(c)
```
 18kg 500 g
-9kg 750 g
 8kg 750 g
```

(d)
```
 3kg 160 g
-      390 g
 2kg 770 g
```

5. (a)

	3 l 275 ml
	8 l 685 ml
+	14 l 500 ml
	26 l 460 ml
or	26.460 l

(b)

	1 l 450 ml
	80 l 692 ml
+	3 l 721 ml
	85 l 863 ml
or	85.863 l

(c)

	6 l 498 ml
	14 l 506 ml
+	7 l 98 ml
	28 l 102 ml

(d)

	25 l 50 ml
	7 l 9 ml
+	9 l 931 ml
	41 l 990 ml

6. (a)

	17 l 000 ml
–	15 l 396 ml
	1 l 604 ml

(b)

	2 l 630 ml
–	0 l 985 ml
	1 l 645 ml

(c)

	21 l 000 ml
–	18 l 215 ml
	2 l 785 ml

(d)

	19 l 780 ml
–	12 l 319 ml
	7 l 461 ml

Exercise- 17.3

1. Length of Ist ribbon = 60 m 65 cm
Length of IInd ribbon = 88 m 75 cm
Length of IIIrd ribbon = + 38 m 82 cm
Total length of ribbon = 188 m 22 cm

2. Weight of mangoes = 5 kg 200 g
Weight of guavas = 4 kg 800 g
Weight of watermelon = + 5 kg 750 g
Total weight of fruits = 15 kg 750 g

3. Rope = 500.00 m
Length of Ist piece = –148.94 m
Length of other piece = 351.06 m

4. Juice bought = 2.5 l
Juice consumed = –1.800 l
Juice left = 0.700 l
or 700 ml

5. Weight of dry fruits box = 12.650 kg
Weight of dry fruits = – 9.800 kg
Weight of empty box = 2.850 kg or 2 kg 850 g

6. Milk bought on Monday = 2 l 450 ml
Milk bought on Tuesday = + 3 l 140 ml
Total milk bought = 5 l 590 ml

7. Weight of Potatoes = 5 kg 500 g
Weight of Tomatoes = 2 kg 250 g
Weight of Onions = + 1 kg 000 g
Total weight of vegetables = 8 kg 750 g

8. Length of Ist cloth = 2 m 15 cm
Length of IInd cloth = 1 m 25 cm
Length of IIIrd cloth = + 0 m 90 cm
Total length of cloth = 4 m 30 cm

9. Wheat bought = 55 kg 225 g
+ 20 kg 000 g
75 kg 225 g
Wheat sold = − 60 kg 000 g
Wheat left = 15 kg 225 g

10. Raman can drink = 5 l 500 ml
Vicky can drink = − 4 l 125 ml
∴ Raman can drink more = 1 l 375 ml

11. Ist bottle cold drink = 1 l 200 ml
IInd bottle cold drink more = + 1 l 50 ml
∴ IInd bottle contain cold drink = 2 l 250 ml

12. Bucket had water = 75 l 15 ml
Water added = + 2 l 30 ml
Quantity of water in bucket = 77 l 45 ml

Exercise- 17.4

1. (a)
36.9 cm
× 5
184.5 cm

(b)
21.97 cm
× 3
65.91 cm

(c)
25.98 dm
× 3
77.94 dm

(d)
1.683 km
× 9
15.147 km

(e) 3 km 5 hm 6 dam 8 m × 11 = 3.568 km × 11

or

```
   3 . 5 6 8 k m
       × 1 1
   ---------------
     3 5 6 8
   3 5 6 8 ×
   ---------------
   3 9 2 4 8 k m
```

∴ 39248 km = 39 km 2 hm 4 dam 8 m

(f) 13 cm 8 mm ×5

or

```
   1 3 . 8 c m
       × 5
   ---------------
     6 9 0 c m
```

or 690 cm = 69 cm 0 mm

2. (a)

```
   2 0 . 8 0 6 k g
         × 1 7
   ---------------
   1 4 5 6 4 2
   2 0 8 0 6 ×
   ---------------
   3 5 3. 7 0 2 k g
```

(b)

```
   1 5 . 0 6 0 k g
         × 9
   ---------------
   1 3 5 . 5 4 0 k g
```

(c)

```
   4 k g   8 5  g
         × 1 5
   ---------------
   6 1  k g 2 7 5 g
```

(d) 4 kg 2 hg 6 dag 5g × 7

or 4.625 kg × 7

```
   4 . 2 6 5 k g
         × 7
   ---------------
   2 9 . 8 5 5 k g
```

or 29.855 kg = 29 kg 8 hg 5 dag 5 g

(e)

```
   0 . 5 3 6 k g
         × 2 1
   ---------------
       5 3 6
   1 0 7 2 ×
   ---------------
   1 1 . 2 5 6 k g
```

(f)

```
   5 k g  1 2 0  g
           × 5
   ---------------
   2 5  k g 6 0 0 g
```

3. (a)

```
   3 2 3 m l
       × 9
   ---------------
   2 9 0 7 m l
```

∴ 2907 ml = 2 l 907 ml

(b) 5 ml × 17

= 85 ml

$= \frac{85}{1000}$ l

= 0.085 l

(c)

```
      4 9 3 m l
      × 2 5
  ----------
    2 4 6 5
    9 8 6 ×
  ----------
  1 2 3 2 5 m l
  ----------
```

∴ 12325 = m*l* = 12 *l* 325 m *l*

(d)

```
   ⑦     ⑥
   1 6 l   7 5 m l
          × 1 2
  ----------------
  1 9 2 l 9 0 0 m l
  ----------------
```

(e)

```
   2 l   8 0 0 m l
         × 1 3
  ----------------
   3 6 l 4 0 0 m l
  ----------------
```

(f)

```
   1 6 2 3 m l
       × 1 8
  ----------
   1 2 9 8 4
   1 6 2 3 ×
  ----------
   2 9 2 1 4 m l
  ----------
```

or 29214 m*l* = 29 *l* 214 m *l*

4. (a) 39.4 m ÷ 4

```
      9.9
4 ) 39.6
   −36
   ----
     36
    −36
   ----
      0
   ----
```

∴ 39.4 m ÷ 4 = 9.9 m

(b) 276.3 cm ÷ 3

```
      92.1
3 ) 276.3
   −27
   ----
      6
     −6
   ----
      3
     −3
   ----
      0
   ----
```

∴ 276.3 ÷ 3 = 92.1 cm

(c) 0.01864 km ÷ 8

```
     0.00233
8 ) 0.01864
     −16
     ----
       26
      −24
     ----
       24
      −24
     ----
        0
     ----
```

∴ 0.01864 km ÷ 8 = 0.00233 km
or 2.33 m

(d) 3.762 km ÷ 10

```
      0.3762
10 ) 3.762
     −30
     ----
      76
     −70
     ----
      62
     −60
     ----
      20
     −20
     ----
       0
     ----
```

∴ 3.762 km ÷ 10 = 0.3762 km

5. (a) 56080 g ÷ 8

```
      7010
8 ) 56080
   −56
   ----
    008
     −8
   ----
      0
   ----
```

∴ 56080 g ÷ 8 = 7010 g

(b) 16.747 kg ÷ 5

```
     3.349
5 ) 16.745
   −15
    17
   −15
     24
   − 20
      45
    − 45
       0
```

∴ 16.745 kg ÷ 5 = 3.349 kg

(c) 25.209 kg ÷ 9

```
     2.801
9 ) 25.209
   −18
     72
   −72
     009
      − 9
        0
```

∴ 25.209 kg ÷ 9 = 2.801 kg

(d) 13.488 kg ÷ 12

```
     1.124
12 ) 13.488
    −12
      14
    −12
       28
     − 24
        48
      − 48
         0
```

∴ 13.488 kg ÷ 12 = 1.124 kg

6. (a) 19.275 / ÷ 5

```
     3.855
5 ) 19.275
   −15
     42
   −40
      27
    − 25
       25
     − 25
        0
```

∴ 19.275 / ÷ 5 = 3.855 /

(b) 81.312 / ÷ 11

```
      7.392
11 ) 81.312
    −77
      43
    −33
      101
     − 99
        22
      − 22
         0
```

∴ 81.312 / ÷ 11 = 7.392 /

(c) 97.0421 / ÷ 11

```
      8.8220
11 ) 97.0421
     −88
      90
     −88
       24
     − 22
        22
      − 22
          0
```

∴ 97.0421 / ÷ 11 = 8.822 /

(d) 5.895 / ÷ 3

```
      1.965
3 ) 5.895
    −3
     28
    −27
      19
    − 18
       15
     − 15
        0
```

∴ 5.895 / ÷ 3 = 1.965 /

Exercise- 17.5

1. Cloth required for 1 shirt = 24 ÷ 10 = 2.4 m

2. Each family get rice = 48 kg 700 g ÷ 5 = 9 kg 720 g

```
      9 kg 720 g
5 ) 48 kg 700 g
    −45
     37
    −35
       20
     − 20
        0
```

3. Milk required for all booths = 450.50 / × 143 = 64430.08 /

```
      4 5 0 . 5 6
            × 1 4 3
    1 3 5 1 6 8
  1 8 0 2 2 4 ×
  4 5 0 5 6 × ×
6 4 4 3 0 . 0 8
```

4. Distance covered in 23 days = 486.94 × 23 = 11199.62 km

```
      4 8 6 . 9 4 k m
            × 2 3
    1 4 0 8 2
  9 7 3 8 8 ×
1 1 1 9 9 . 6 2 k m
```

5. Weight of 17 boys = 48 kg 700 g × 17 = 827 kg 900 g

```
  4 8 k g 7 0 0 g
            × 1 7
  ---------------
    3 4 0 9 0 0
    4 8 7 0 0 ×
  ---------------
    8 2 7 9 0 0
```

6. Cloth required for 12 shirts = 2 m 40 cm × 12 = 28 m 80 cm

```
    2 m 4 0 c m
        × 1 2
  -------------
      4   8 0
    2 4   0 ×
  -------------
  2 8 m 8 0 c m
```

7. Weight of 7 tins = 1 kg 750 g × 7 = 12 kg 250 g

```
  1 k g 7 5 0 g
            × 7
  -------------
1 2 k g 2 5 0 g
```

8. Length of each piece of ribbon 8 m 54 cm ÷ 7 = 1 m 22 cm

```
      1 m 22 cm
  ---------------
7 ) 8 m 54 cm
    −7
  ---------------
      15
    −14
  ---------------
        14
      − 14
  ---------------
          0
```

9. Each person get (8 *l* 785 ml ÷ 7) soup = 1 *l* 255 m*l* soup

```
      1 l 255 ml
  ---------------
7 ) 8 l 785 ml
    −7
  ---------------
      17
    −14
  ---------------
        38
      − 35
  ---------------
          35
      − 35
  ---------------
           0
```

10. Cloth required for 17 shirts = 2.25 m × 17 = 38.25 m

```
      2 . 2 5
        × 1 7
  -----------
      1 5 7 5
      2 2 5 ×
  -----------
  3 8 . 2 5 m
```

11. Oil stored in each tank = 4242 .56 ÷ 32 = 132.58 *l*

```
        132.58
32 ) 4242.56
    −32
     104
    −96
       82
    − 64
       185
    − 160
        256
     − 256
           0
```

12. Tea in each packet = 49 kg 950 g ÷ 45 = 1 kg 110 g

```
      1 kg 110 g
45 ) 49 kg 950 g
    −45
      49
    −45
       45
    − 45
        0
```

13. Distance travelled in 1 day = 1582.4 km ÷ 4 = 395.6 km

```
      395.6
4 ) 1582.4 km
    −12
      38
    −36
       22
    − 20
        24
     − 24
         0
```

14. Weight of 25 toffees = 275 g
Weight of 1 toffee = 275 ÷ 25 = 11 g
Weight of 80 toffees = 11 × 80 g = 880 g

15. Length of 50 sarees = 5.672 m × 50 = 283.600 m

```
      5 . 6 7 2
          × 5 0
  ---------------
        0 0 0 0
    2 8 3 6 0 ×
  ---------------
  2 8 3 . 6 0 0
```

16. Length of road constructed in 1 day = 28.500 km ÷ 30 = 0.950 km or 950 m

```
      00.950
30 ) 28.500
     −270
     ------
       150
      −150
     ------
         0
```

MCQs

1. (b) **2.** (a) **3.** (b) **4.** (c)
5. (a) **6.** (a) **7.** (a)

Test Exercise

1. (a) 140 mm (b) 32 cm (c) 1.6 × 1000 m = 1600 m
(d) 2.500 kg (e) 2000 mg (f) 1.4 g
(g) 0.3 *l* (h) 2500 m*l*

2. (a)

```
      7 hm 18 m
     11 hm 21 m
+9 kmor 90 hm  4 m
-----------------
    108 hm 43 m
```

(b)

```
 23 kg  75 g
 54 kg  00 g
+18 kg 150 g
-----------
 95 kg 225 g
```

(c)

```
 82 l 125 m l
+16 l 204 m l
-------------
 98 l 329 m l
```

(d)

```
  6 dam 098 cm
+29 dam 016 cm
--------------
 35 dam 114 cm
```

3. (a)

```
104 m 20 cm
-63 m 95 cm
-----------
 40 m 25 cm
```

(b)

```
 97 g 000 mg
-82 g 415 mg
------------
 14 g 585 mg
```

(c)

```
 84 da l 0026 m l
-49 da l 0135 m l
-----------------
 34 da l 9891 m l
```

(d)

```
 75 h l 00 l
-58 h l 96 l
------------
 16 h l 04 l
```

4. (a)

```
  3 8 k m 1 2 4 m
            × 2 6
  ---------------
    2 8 8 7 4 4
  + 7 6 2 4 8 ×
  ---------------
  9 9 1 k m 2 2 4 m
```

(b)

```
  4 9 g 1 2 6 m g
            × 7 2
  ---------------
    9 8 2 5 2
  3 4 3 8 8 2 ×
  ---------------
  3 5 3 7 g 0 7 2 m g
```

(c)

```
  7 2 d a g 0 1 5 c g
              × 4 8
  -------------------
      5 7 6 1 2 0
    2 8 8 0 6 0 ×
  -------------------
  3 4 5 6 d a g 7 2 0 c g
```

(d)

```
        6953
12 ) 83 / 436 m/
     −72
     ----
       114
      −108
      ----
        63
       −60
      ----
        36
       −36
      ----
         0
```

∴ 83 / 436 m/ ÷ 12 = 6 / 953 m/

(e)

```
        1 m 92 cm
15 ) 28 m 80 cm
     −15
     ----
       138
      −135
      ----
        30
       −30
      ----
         0
```

∴ 28 m 80 cm ÷ 15 = 1 m 92 cm

(f)

```
        2 k/ 142 /
94 ) 201 k/ 348 /
     −188
     ----
       133
       −94
      ----
       394
      −376
      ----
       188
      −188
      ----
         0
```

∴ 201 k/ 348 / ÷ 94 = 2 k/ 142 /

5. Height of Sita = 1 m 7 5 c m
Height of Meena = −1 m 3 0 c m
Difference = 0 m 4 5 c m or 0.45 m or 45 cm

6. Weight of bag = 5 kg 4 5 0 g
Weight of book = +0 kg 7 5 0 g
Total weight = 6 kg 2 0 0 g

7. Total milk = 3 / 0 0 0 m /
Milk used = −1 / 4 5 0 m /
Milk left = 1 / 5 5 0 m /

8. Mehul height = 1 . 9 0 m
Paritosh height = −1 . 7 5 m
0 . 1 5 m
∴ Mehul is taller by 0.15 m or 15 cm

9. Number of jumps by frog 171 cm ÷ 3 = 57 jumps

$$\begin{array}{r} 57 \\ 3\,\overline{)\,171} \\ -15 \\ \hline 21 \\ -21 \\ \hline 0 \end{array}$$

18 Time and Temperature

Exercise- 18.1

1. (a) 0730 hours (b) 0630 hours
(c) 2:00 pm (d) 2030 hours

2. (a) 1600 hours = (12 + 4) hours = 4 pm
(b) 0700 hour = (07 + 00) hours = 7 am
(c) 1400 hours = (12 + 02) hours = 2 pm
(d) 0935 hours = (09:35 + 0) hours = 9:35 am
(e) 0100 hours = (01 + 00) hours = 1 am
(f) 1200 hours = (12 + 00) hour = 12 noon

Exercise- 18.2

1. (a) 8 minutes = 8 × 60 seconds = 480 seconds
(b) 1 hour 5 min 4 sec
1 × 60 min + 5 × 60 sec + 4 sec = 60 × 60 sec + 300 sec + 4 sec
= (3600 + 300 + 4) sec
= 3904 seconds
(c) 16 hours = 16 × 60 minutes = 960 minutes
(d) 6 hours 9 minutes = 6 × 60 minutes + 9 minutes
= (360 + 9) minutes = 369 minutes
(e) 3 days = 3 × 24 hours = 72 hours
(f) 6 days 19 hours = 6 × 24 hours + 19 hours
= (144 + 19) hours = 163 hours

2. (a) 720 second = (720 ÷ 60) minutes
= 12 minutes

(b) 8766 seconds = (8766 ÷ 60) minutes = 146 minutes 6 seconds

```
      146
60 ) 8766
     −60
      276
     −240
       366
     − 360
         6
```

(c) 480 minutes = (480 ÷ 60) hours = 8 hours

(d) 684 minutes = (684 ÷ 60) hours = 11 hours 24 minutes

```
      11
60 ) 684
     −60
      84
     −60
      24
```

(e) 960 hours = (960 ÷ 24) days = 40 days

```
      40
24 ) 960
     −96
       0
```

(f) 560 days = (560 ÷ 7) weeks = 80 weeks

Exercise- 18.3

1. (a)

	mins	secs
	①	
	15	30
+	9	40
	25 mins	10 secs

(b)

	hrs	mins
	①	
	2	45
+	4	50
	7 hrs	35 mins

(c)

	hrs	mins
	①	
	2	38
+	3	49
	6 hrs	27 mins

2. (a)

	mins	secs	
	$5\overset{2}{\cancel{3}}$	40 + 60	= 100
−	10	52	
	42 min	48 min	

(b)

	hrs	mins	
	$5\overset{1}{\cancel{2}}$	35 + 60	= 95
−	17	59	
	34 hrs	36 min	

(c)

	hrs	mins	secs
	72 ~~73~~	54 + 60 ~~55~~	30 + 60 = 90
−	18	58	51
	54 hrs	56 min	39 sec

3. (a)

	mins	secs
	1	
	26	30
+	35	46
	62 min	16 secs

(b)

	hrs	mins
	1	
	5	48
+	35	32
	41 hr	20 min

(c)

	hrs	mins
	1	
	17	45
+	46	48
	64 hrs	33 mins

(d)

	years	months
	8	7
+	2	11
	10 yrs	18 months
	= 10 yrs +	1 yr + 6 months
	= 11 yrs +	6 months

4. (a)

	mins	secs
	53 ~~54~~	34 + 60 = 96
−	45	48
	8 min	46 secs

(b)

	hrs	mins
	48	54
−	30	34
	18 hrs	20 min

(c)

	mins	secs
	48	38
−	12	36
	36 mins	02 secs

(d)

	yrs	months
	18 ~~19~~	01 + 12 = 13
−	16	8
	02 yrs	5 months

5. (a) 2:05 pm to 10:00 pm

(12 + 02:05) hours to [12 + 10] hour

1405 hours to 22 hours

	hrs	mins
	21 ~~22~~	+ 60 00
−	14	05
	7 hrs	55 mins

(b) 10:34 pm to 6:47 pm

(12 + 1034) hours to 0647 hours

2234 hours to 0647 hours Next day

(2400 − 2234) hours + 0647 hours

0126 hours + 0647 hours

1 hr 26 mins + 6 hours 47 min

	hrs	mins
	①	
	1	26
+	6	47
	8 hrs	13 mins

(c) 8:55 am to 2:35 pm

(0855) hours to (12 + 0235) hours

0855 hours to 1435 hours

	hrs	mins
	13	(35 + 60) = 95
	~~14~~	~~55~~
−	8	55
	5 hrs	40 mins

(d) 7:35 pm to 10:30 am next day

(12 + 0735) hrs to (1030 hours) next day

1935 hours to (1030 hours) next day

(2400 − 1935) hrs + 1030 hours

0425 hours to 1030 hours next day

	hrs	mins
	04	25
+	10	30
	14 hrs	55 min

6. (a)

January	=	1 4 days
February	=	2 9 days
March	=	+ 3 0 days
Total	=	7 3 days

(b)

June	=	0 3 days
July	=	+ 2 9 days
Total	=	3 2 days

(c)

November	=	1 7 days
December	=	+ 1 5 days
Total	=	3 2 days

(d)

October	=	2 1 days
November	=	3 0 days
December	=	+ 1 5 days
Total	=	6 6 days

7.

August	=	1 6 days
September	=	3 0 days
October	=	3 1 days
November	=	+ 3 0 days
Total	=	1 0 7 days

8. 0625 hours to 0735 hours

	hrs	hrs
	07	35
−	6	25
	01	10 hrs

∴ exercise duration 1 hr 10 min

9. 8:30 am + 4 hrs 30 min

	hrs	hrs
	08	30
+	4	30
	13	00 hrs

or 12 + 1 hr 00 mins

returned back at 1:00 pm

10. started at 7:55 pm reached at 8:15 pm

	hrs	mins
	7	+ 60
	~~8~~	~~15~~
−	7	55
	0 hrs	20 mins

∴ She walked for 20 minutes

11. started at 2:40 pm
last for + 20 minutes
news end at 3:00 pm

12. started at 8:30 am = 0830 hrs
came back at 2:15 pm = (12 + 0215) hrs = 1415 hours
∴ Away from home = 1415 hrs
− 830 hrs
or

	hrs	mins
	13	(35 + 60) = 95
	~~14~~	~~55~~
−	8	55
for	5 hrs	40 mins

away from home

13.

	hrs	mins
started at	6	15
walked +	1	30
	7 hrs	30 mins

or 730 hrs
or 7:30 am

14.

	hrs	mins
		+ 60
reached at	~~20~~	30
started at −	17	50
Time taken	2 hr	40 mins

15. started at 6:15 am
or 0615 hours
time taken + 530 hours
1145 hours
reached chandigarh at 1145 hours or 11:45 am

Exercise- 18.5

1. (a) $37°C = \left[\left(37 \times \frac{9}{5}\right) + 32\right]° F = 66.6 + 32 = 98.6° F$

(b) $81°C = \left[\left(81 \times \frac{9}{5}\right) + 32\right]° F = 145.6 + 32 = 177.8° F$

(c) $75°C = \left[\left(75 \times \frac{9}{5}\right) + 32\right]° F = 135 + 32 = 167° F$

(d) $130°C = \left[\left(130 \times \frac{9}{5}\right) + 32\right]° F = 234 + 32 = 260° F$

(e) $95°C = \left[\left(95 \times \frac{9}{5}\right) + 32\right]° F = 171 + 32 = 203° F$

(f) $100°C = \left[\left(100 \times \frac{9}{5}\right) + 32\right]° F = 180 + 32 = 212° F$

2. (a) $113°F = \left[(113 - 32) \times \frac{5}{9}\right]° C = 81 \times \frac{5}{9} = 45°C$

(b) $167°F = \left[(167 - 32) \times \frac{5}{9}\right]° C = 135 \times \frac{5}{9} = 75°C$

(c) $140°F = \left[(140 - 32) \times \frac{5}{9}\right]° C = \left(108 \times \frac{5}{9}\right) = 60°C$

(d) $104°F = \left[(104 - 32) \times \frac{5}{9}\right]° C = 72 \times \frac{5}{9} = 40°C$

(e) $221°F = \left[(221 - 32) \times \frac{5}{9}\right]° C = 189 \times \frac{5}{9} = 105°C$

(f) $98.6°F = \left[(98.6 - 32) \times \frac{5}{9}\right]° C = 66.6 \times \frac{5}{9} = 37°C$

3. (a) 98.6°C (b) Clinical (c) 42.3°C (d) 32°F
(e) 212°F

MCQs

1. (a) **2.** (b) **3.** (a) **4.** (a)
5. (a) **6.** (c)

Test Exercise

1. (a) 840 seconds = **14** minutes **0** seconds

```
      14
60 ) 840
     −60
     240
    −240
       0
```

(b) 1560 seconds = **26** minutes **00** seconds

```
      26
60 ) 1560
    −120
     360
    −360
       0
```

(c) 282 seconds = **4** minutes **42** seconds

```
      4
60 ) 282
    –240
      42
```

(d) 2000 seconds = **33** minutes **20** seconds

```
      33
60 ) 2000
    –180
      200
    –180
       20
```

(e) 2138 seconds = **35** minutes **38** seconds

```
      35
60 ) 2138
    –180
      338
    –300
       38
```

(f) 3200 seconds = **53** minutes **20** seconds

```
      53
60 ) 3200
    –300
      200
    –180
       20
```

2. (a) expands (b) clinical (c) 0°C (d) Fahrenheit
(e) 100°C (f) 100°C

❍❍❍

19 Lines and Angles

Exercise- 19.1

1. (a) **line** (b) **ray** (c) **no** (d) **intersecting**
(e) **parallel**

2. (a) ray $\overrightarrow{PQ}$ (b) Point X
(c) Line $\overleftrightarrow{MN}$ (d) Line segment $\overline{CD}$

3. (a) $\overline{PO}$, $\overline{ON}$, $\overline{NM}$, $\overline{PM}$ (b) $\overline{PR}$, $\overline{RQ}$, $\overline{QP}$

(c) $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, $\overline{DE}$, $\overline{EF}$, $\overline{FG}$, $\overline{GH}$, $\overline{HA}$

4. (a) Parallel lines (b) Perpendicular lines

(c) Intersecting lines

Exercise- 19.2

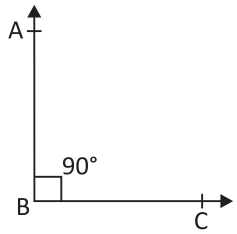
1. (a) $\angle MON$; vertex : O, arms : ON, OM (b) $\angle XYZ$; vertex : Y, arms : YZ, YX

(c) $\angle PQR$; vertex : Q, arms : QR, QP

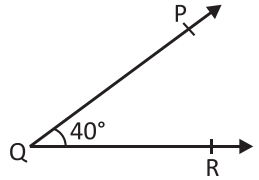
2. (a) 45° (b) 15° (c) 90° (d) 30°

(e) 70° (f) 120°

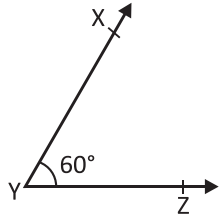
3. (a)



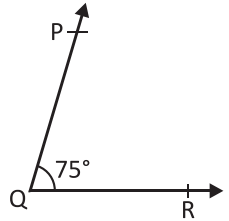
(b)



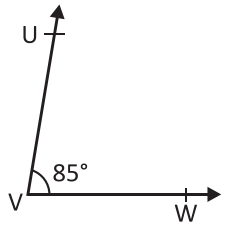
(c)



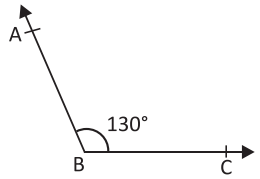
(d)



(e)



(f)



4. (a) Points J, X, Y and K (b) Points P, Q and L

(c) Points M, D, N and I

Exercise- 19.3

1. (a) obtuse angle (b) right angle

(c) acute angle (d) straight angle

(e) acute angle (f) complete angle

2. (a) obtuse angle (b) acute angle
(c) obtuse angle (f) reflex angle
(e) zero angle (f) acute angle
(g) obtuse angle (f) reflex angle

3. (a) False (b) True (c) False (d) True

4. (a) $\because$ $65+25=90$ $\therefore$ Pairs of complementary angles
(b) $\because$ $28+42=70\neq 90$ $\therefore$ Not pair of complementary angles
(c) $\because$ $80+15=95\neq 90$ $\therefore$ Not pair of complementary angles
(d) $\because$ $55+35=90$ $\therefore$ Yes pair of complementary angles

5. (a) $\because$ $95+85=180$ $\therefore$ Pairs of supplementary angles
(b) $\because$ $65+125=190\neq 180$ $\therefore$ Not pair of supplementary angles
(c) $\because$ $128+52=180$ $\therefore$ Pair of supplementary angles
(d) $\because$ $72+108=180$ $\therefore$ Pair of supplementary angles

6. (a) Complementary of $32°=90-32=58°C$
(b) Complementary of $46°=90-46=44°C$
(c) Complementary of $24°=90-24=66°C$
(d) Complementary of $17°=90-17=73°C$

7. (a) Supplementary of $124°=180-124=56°C$
(b) Supplementary of $32°=180-132=148°C$
(c) Supplementary of $90°=180-90=10°C$
(d) Supplementary of $84°=180-84=96°C$

MCQs

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

❍❍❍

20 Circles, Triangles and Quadrilaterals

Exercise- 20.1

1. (a) O (b) OQ, OP (c) PQ (d) AB
(e) ACB (f) ARB (g) O, X, S

2. (a) $d=2r \Rightarrow d=2\times 3.2\text{ cm}=6.4\text{ cm}$
(b) $d=2r \Rightarrow d=2\times 12\text{ cm}=24\text{ cm}$
(c) $d=2r \Rightarrow d=2\times 8.2\text{ cm}=16.4\text{ cm}$
(d) $d=2r \Rightarrow d=2\times 6.3\text{ cm}=12.6\text{ cm}$
(e) $d=2r \Rightarrow d=2\times 9.6\text{ cm}=19.2\text{ cm}$

3. (a) $r = \frac{d}{2} \Rightarrow r = \frac{18}{2} = 9$ cm (b) $r = \frac{d}{2} \Rightarrow r = \frac{15.2}{2} = 7.6$ cm

(c) $r = \frac{d}{2} \Rightarrow r = \frac{30.6}{2} = 15.3$ cm (d) $r = \frac{d}{2} \Rightarrow r = \frac{22}{2}$ cm $= 11$ cm

(e) $r = \frac{d}{2} \Rightarrow r = \frac{132}{2}$ cm $= 66$ cm

4. (a) $c = \pi d \Rightarrow c = \frac{22}{7} \times 63 = 22 \times 9 = 198$ cm

(b) $c = \pi d \Rightarrow c = \frac{22}{7} \times 5.6 = 22 \times 0.8 = 17.6$ cm

(c) $c = \pi d \Rightarrow c = \frac{22}{7} \times 2.8 = 22 \times 0.4 = 8.8$ cm

(d) $c = \pi d \Rightarrow c = \frac{22}{7} \times 10.5 = 22 \times 1.5 = 33.0$ cm

(e) $c = \pi d \Rightarrow c = \frac{22}{7} \times 21 = 22 \times 3 = 66$ cm

5. (a) $c = 2\pi r \Rightarrow c = \frac{22}{7} \times 2.4 = \frac{105.6}{7} = 15.08$ cm

(b) $c = 2\pi r \Rightarrow c = \frac{22}{7} \times 6.3 = 2 \times 22 \times 0.9 = 39.6$ cm

(c) $c = 2\pi r \Rightarrow c = 2 \times \frac{22}{7} \times 49.7 = 2 \times 22 \times 7.1 = 312.4$ cm

(d) $c = 2\pi r \Rightarrow c = 2 \times \frac{22}{7} \times 14.7 = 2 \times 22 \times 2.1 = 92.4$ cm

(e) $c = 2\pi r \Rightarrow c = 2 \times \frac{22}{7} \times 8.22 = \frac{361.68}{7} = 51.66$ cm

6. (a) $c = \pi d \Rightarrow d = \frac{c}{\pi} = \frac{33}{\frac{22}{7}} = \frac{33 \times 7}{22} = 10.5$ cm

(b) $c = \pi d \Rightarrow d = \frac{c}{\pi} = \frac{450}{\frac{22}{7}} = \frac{450 \times 7}{22} = 143.18$ cm

(c) $c = \pi d \Rightarrow d = \frac{c}{\pi} = \frac{26.4}{\frac{22}{7}} = \frac{26.4 \times 7}{22} = 1.2 \times 7 = 8.4$ cm

(d) $c = \pi d \Rightarrow d = \frac{c}{\pi} = \frac{21.7}{\frac{22}{7}} = \frac{21.7 \times 7}{22} = \frac{151.9}{22} = 6.90$ cm

(e) $c = \pi d \Rightarrow d = \frac{c}{\pi} = \frac{660}{\frac{22}{7}} = \frac{660 \times 7}{22} = 30 \times 7 = 210$ cm

7. (a) $c = 2\pi r \Rightarrow r = \frac{c}{2\pi} = \frac{22}{2 \times \frac{22}{7}} = \frac{22 \times 7}{2 \times 22} \Rightarrow r = \frac{7}{2}$ cm

(b) $c = 2\pi r \Rightarrow r = \frac{c}{2\pi} = \frac{44}{2\pi} = \frac{44 \times 7}{2 \times 22} \Rightarrow r = 7$ cm

(c) $c = 2\pi r \Rightarrow r = \frac{c}{2\pi} = \frac{133}{2 \times \frac{22}{7}} = \frac{132 \times 7}{2 \times 22} \Rightarrow r = 21$ cm

(d) $c = 2\pi r \Rightarrow r = \frac{c}{2\pi} = \frac{10.6}{2 \times \frac{22}{7}} = \frac{10.6 \times 7}{2 \times 22} \Rightarrow r = 1.68$ cm

(e) $c = 2\pi r \Rightarrow r = \frac{c}{2\pi} = \frac{26.4}{2 \times \frac{22}{7}} = \frac{26.4 \times 7}{44} \Rightarrow r = 4.2$ cm

8. (a) $A = \pi r^2$

$A = \frac{22}{7} \times (3.5)^2 = \frac{22}{7} \times 3.5 \times 3.5 = 22 \times 0.5 \times 3.5 = 38.5 \text{ cm}^2$

(b) $A = \pi r^2$

$A = \frac{22}{7} \times (4.9)^2 = \frac{22}{7} \times 4.9 \times 4.9 = 22 \times 0.7 \times 4.9 = 75.46 \text{ cm}^2$

(c) $r = \frac{d}{2} = \frac{6.3}{2}$ cm

$A = \pi r^2 = \frac{22}{7} \times \left(\frac{6.3}{2}\right)^2 = \frac{22}{7} \times \frac{6.3}{2} \times \frac{6.3}{2} = 22 \times \frac{0.9}{2} \times \frac{6.3}{2} = 31.85 \text{ cm}^2$

(d) $r = \frac{8.4}{2} = 4.2$

$A = \pi r^2 = \frac{22}{7} \times (4.2)^2 = \frac{22}{7} \times 4.2 \times 4.2 = 22 \times 0.6 \times 4.2 = 55.44 \text{ cm}^2$

(e) $r = 9.1$ cm

$A = \pi r^2 = \frac{22}{7} \times (9.1)^2 = \frac{22}{7} \times 9.1 \times 9.1 = 260.26 \text{ cm}^2$

(f) $r = \frac{d}{2} = \frac{11.2}{2} = 5.6$ cm

$A = \pi r^2 = \frac{22}{7} \times (5.6)^2 = \frac{22}{7} \times 5.6 \times 5.6$

$A = 22 \times 0.8 \times 5.6 = 98.56 \text{ cm}^2$

Exercise- 20.2

1. (a) AB, BC, AC are sides (b) Vertices are A, B, C

(c) Angles are $\angle ABC$, $\angle BAC$, $\angle ACB$

2. (a) Equilateral triangle (b) Isosceles triangle
(c) Scalene triangle (d) Isosceles triangle

3. (a) Obtuse angled triangle (b) Right angled triangle
(c) Acute angled triangle (d) Right angled triangle

4. (a) $\angle C = 180 - (90 + 40) = 180 - 130° = 50°$
(b) $\angle P = 180 - (110 + 30) = 180 - 140° = 40°$
(c) $\angle Z = 180 - (60 + 60) = 180 - 120° = 60°$

5. (a) $30 + 50 + 100 = 180$
$\therefore$ triangle is possible
(b) $40 + 60 + 80 = 180$
$\therefore$ triangle is possible
(c) $30 + 110 + 40 = 180$
$\therefore$ triangle is possible
(d) $90 + 20 + 80 = 190 \neq 180$
$\therefore$ triangle is not possible
(e) $130 + 20 + 30 = 180$
$\therefore$ triangle is possible
(f) $60 + 60 + 60 = 180$
$\therefore$ triangle is possible

6. (a) $\because$ $4 + 4 > 5$
$4 + 5 > 4$
$4 + 5 > 4$
$\therefore$ triangle is possible (isosceles)
(b) $\because$ $6 + 4 > 7$
$6 + 7 > 4$
$4 + 7 > 6$
$\therefore$ triangle is possible (scalene)
(c) $\because$ $7 + 7 > 9$
$7 + 9 > 7$
$7 + 9 > 7$
$\therefore$ triangle is possible (isosceles)
(d) $\because$ $9 + 9 > 9$
$9 + 9 > 9$
$9 + 9 > 9$
$\therefore$ triangle is possible (equilateral)
(e) $\because$ $5 + 12 > 13$
$5 + 13 > 12$
$12 + 13 > 5$
$\therefore$ triangle is possible (scalene)
(f) $\because$ $6 + 8 > 10$
$6 + 10 > 8$
$8 + 10 > 6$
$\therefore$ triangle is possible (scalene)

7. (a) False (b) True (c) False (d) True

8. (a) **Equal, more** (b) **Three, three**
(c) **All sides are =** (d) **Right angled**
(e) **180°** (f) **Two sides, two angles**
(g) **Acute**

Exercise- 20.3

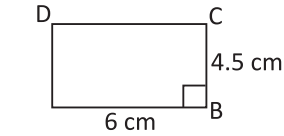
1. (a) *AB*, *BC*, *CD*, *DA* are sides of quadrilateral *ABCD*
(b) $\angle A$, $\angle B$, $\angle C$ and $\angle D$ are angles of quadrilateral *ABCD*
(c) (*AB*,*CD*) and (*AD*,*BC*) are pair of opposite sides

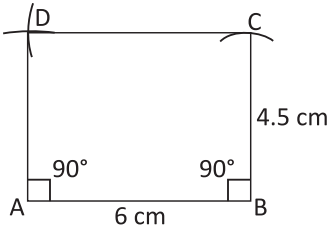
2. (a) Rhombus (b) Rectangle (c) Square

3. (a) $\angle D = 360 - (\angle A + \angle B + \angle C) = 360 - (100 + 65 + 80)$
$= 360 - (245) = 115°$
(b) $\angle S = 360 - (\angle P + \angle Q + \angle R) = 360 - (75 + 75 + 105)$
$= 360 - (255) = 105°$
(c) $\angle Z = 360 - (\angle W + \angle X + \angle Y) = 360 - (64 + 138 + 110) = 360 - 312 = 48°$

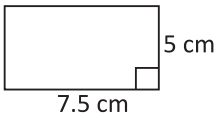
(d) $\angle O = 360 - (\angle L + \angle M + \angle N) = 360 - (90 + 90 + 90)$
$= 360 - 270 = 90°$

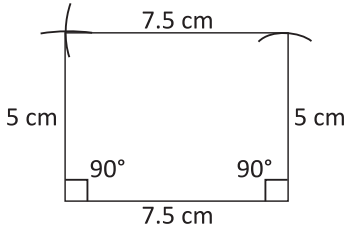
4. (a)





(b)





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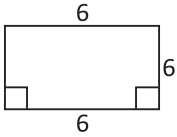
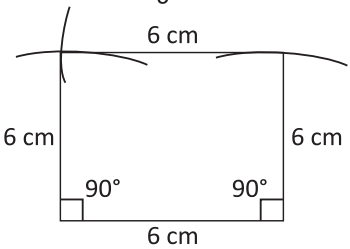
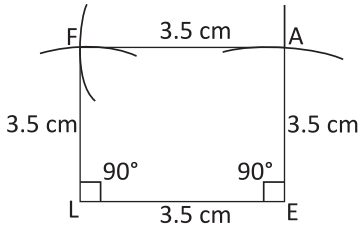




(d)



MCQs

1. (a) **2.** (c)

3. (b) **4.** (c)

❍❍❍

21 Perimeter, Area and Volume

Exercise- 21.1

1. (a) Perimeter $= 5 + 4 + 5 + 4 = 18$ cm

(b) Perimeter $= 2 + 3 + 2 + 2.5 + 2.5 = 12$ cm

(c) Perimeter $= 4 + 4 + 1.5 + 4 + 4 + 1.5 = 19$ cm

2. (a) $\overline{BC} = \text{Perimeter} - (AB + AE + DE + CD)$

$= 18.6 - (4.8 + 3.2 + 2.4 + 3.8)$

$= 18.6 - (14.2)$

$\overline{BC} = 4.4 \text{ cm}$

(b) $\overline{XZ} = \text{Perimeter} - (XY + XW + WZ)$

$= 20.1 - (3.6 + 3.6 + 4.5)$

$= 20.1 - (11.7)$

$\overline{XZ} = 8.4 \text{ cm}$

(c) $\overline{MN} = \text{Perimeter} - (ML + LN)$

$= 17 - (5.8 + 6.4)$

$= 17 - 12.2$

$\overline{MN} = 4.8 \text{ cm}$

3. (a) Perimeter $= 4 \times$ side $= 4 \times 7 = 28$ cm

(b) Perimeter $= 4 \times$ side $= 4 \times 8.3 = 33.2$ m

(c) Perimeter $= 4 \times$ side $= 4 \times 14 = 56$ cm

(d) Perimeter $= 4 \times$ side $= 4 \times 9.5 = 38$ cm

(e) Perimeter $= 4 \times$ side $= 4 \times 125 = 500$ m

(f) Perimeter $= 4 \times$ side $= 4 \times 6.4 = 25.6$ m

4. (a) Perimeter $= 2(l + b) = 2(4.5 + 6) = 2(10.5) = 21$ cm

(b) Perimeter $= 2(l + b) = 2(18 + 13) = 2(31) = 62$ cm

(c) Perimeter $= 2(l + b) = 2(6.5 + 11) = 2(17.5) = 35$ m

(d) Perimeter $= 2(l + b) = 2(11 + 21) = 2(32) = 64$ m

(e) Perimeter $= 2(l + b) = 2(8.25 + 9.50) = 2(17.675) = 35.250$ m

(f) Perimeter $= 2(l + b) = 2(65 + 35) = 2(100) = 200$ cm

5. (a) (i) Perimeter of square $= 4 \times$ side $= 4 \times 4.5 = 18$ cm

(ii) Perimeter of square $= 4 \times$ side

$624 = 4 \times \text{side}$

$\frac{624}{4} = \text{side}$

$156 \text{ m} = \text{side}$

(iii) Perimeter of square $= 4 \times$ side $= 4 \times 9.25 = 37.00$ cm

(iv) Perimeter of square $= 4 \times$ side

$216 = 4 \times \text{side}$

$\frac{216}{4} = \text{side}$

$54 \text{ m} = \text{side}$

(b) (i) Perimeter of rectangle $= 2(l + b)$

$400 = 2(140 + b)$

$\frac{400}{2} = 140 + b$

$200 - 140 = b$

$60 \text{ cm} = \text{breadth}$

(ii) Perimeter $= 2(l + b) = 2(4.3 + 2.8) = 2(7.1)$ m $= 14.2$ m

(iii) Perimeter $= 2(l + b)$

$190 = 2(l + 30)$

$\frac{190}{2} = l + 30$

$95 = l + 30$

$95 - 30 = l$

65 m = length

(iv) Perimeter $= 2(l + b)$

$68 = 2(l + 15)$

$\frac{68}{2} = l + 15$

$34 - 15 = l$

19 m = length

6. Perimeter of square $= 4 \times$ side

$64 = 4 \times$ side

$\frac{64}{4} =$ side

16 m = side

7. Perimeter of rectangle $= 2(l + b) = (25 + 16) = 2(41) = 82$ cm

8. Fence $= 4 \times$ side $= 4 \times 110 = 440$ m

Cost of fence = ₹ $15 \times 440 =$ ₹ 6600

9. Perimeter of triangle $= 25 + 25 + 36 = 86$ cm

10. Length of ribbon required $= 2(l + b) = 2\,(5.5 + 4.8)$

$= 2\,(10.3) = 20.6$ cm

Length of ribbon required for four picture $= 4 \times 20.6$

$= 82.4$ cm

Exercise- 21.2

1. (a) Area = side × side $= 2.2 \times 2.2 = 4.84$ cm^2

$$\begin{array}{r} 2\ 2 \\ \times\ 2\ 2 \\ \hline 4\ 4 \\ 4\ 4\ \times \\ \hline 4\ 8\ 4 \\ \hline \end{array}$$

(b) Area $= l \times b = 4.7 \times 2.5 = 11.75$ cm^2

$$\begin{array}{r} 4\ 7 \\ \times\ 2\ 2 \\ \hline 2\ 3\ 5 \\ 9\ 4\ \times \\ \hline 1\ 1\ 7\ 5 \\ \hline \end{array}$$

(c) Area $= \frac{1}{2} \times$ base × height $= \frac{1}{2} \times 4 \times 2.5$

$= 2 \times 2.5 = 5$ cm^2

(d) Area = side × side = 3.9 × 3.9 = 15.21 cm^2

$$\begin{array}{r} 3\ 9 \\ \times\ 3\ 9 \\ \hline 3\ 5\ 1 \\ 1\ 1\ 7\ \times \\ \hline 1\ 5\ 2\ 1 \\ \hline \end{array}$$

2. (a) Area = $l \times b$ = 20 × 16 = 320 m^2

(b) Area = $l \times b$ = 21 × 14 = 294 m^2

$$\begin{array}{r} 2\ 1 \\ \times\ 1\ 4 \\ \hline 8\ 4 \\ 2\ 1\ \times \\ \hline 2\ 9\ 4 \\ \hline \end{array}$$

(c) Area = $l \times b$ = 150 × 85 = 12750 cm^2

$$\begin{array}{r} 1\ 5\ 0 \\ \times\ 8\ 5 \\ \hline 7\ 5\ 0 \\ 1\ 2\ 0\ 0\ \times \\ \hline 1\ 2\ 7\ 5\ 0 \\ \hline \end{array}$$

(d) Area = $l \times b$ = 4 m 250 cm × 2 m

= 4250 cm × 200 cm

= 850000 cm^2 = 8.5 m^2

(e) Area = $l \times b$ = 8 km × 2 km 500 m

= 8000 m × 2500 m

= 20000000 m^2

or $\dfrac{20000000}{100 \times 100}$ km^2 = 20 km^2

3. (a) Area = $l \times b$

832 m^2 = l × 26

832 ÷ 26 = l

32 m = length

$$\begin{array}{r} 32 \\ 26\overline{)832} \\ -78 \\ \hline 52 \\ -52 \\ \hline 0 \end{array}$$

(b) Area = $l \times b$

300 = l × 15

300 ÷ 15 = l

20 m = length

(c) Area = $l \times b$

512 = l × 26

512 ÷ 16 = l

32 cm = length

$$\begin{array}{r} 32 \\ 16\overline{)512} \\ -48 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

(d) Area = $l \times b$

2688 = l × 48

2688 ÷ 48 = l

56 cm = length

$$\begin{array}{r} 56 \\ 48\overline{)2688} \\ -240 \\ \hline 288 \\ -288 \\ \hline 0 \end{array}$$

4. (a) $\text{Area} = l \times b$

$12750\text{m}^2 = 150 \times b$

$12750 \div 150 = \text{breadth}$

$85 \text{ m} = \text{breadth}$

$$\begin{array}{r} 85 \\ 150\overline{)12750} \\ -1200 \\ \hline 750 \\ -750 \\ \hline 0 \end{array}$$

(b) $\text{Area} = l \times b$

$5500 = 110 \times b$

$5500 \div 110 = \text{breadth}$

$50 \text{ m} = \text{breadth}$

(c) $\text{Area} = l \times b$

$800 = 0.4 \times b$

$\frac{800}{0.4} = b$

$\frac{8000}{4} = b$

$2000 \text{ cm} = b$

$20 \text{ m} = b$

(d) $\text{Area} = l \times b$

$1926 = 107 \times b$

$1926 \div 107 = \text{breadth}$

$18 \text{ cm} = \text{breadth}$

$$\begin{array}{r} 18 \\ 107\overline{)1926} \\ -107 \\ \hline 856 \\ -856 \\ \hline 0 \end{array}$$

5. (a) Area of square $= \text{side} \times \text{side} = 18 \times 18 = 324 \text{ m}^2$

(b) Area of square $= \text{side} \times \text{side} = 20 \times 20 = 400 \text{ cm}^2$

(c) Area of square $= \text{side} \times \text{side} = 25 \times 25 = 625 \text{ cm}^2$

(d) Area of square $= \text{side} \times \text{side} = 3 \text{ m } 40 \text{ cm} \times 3 \text{ m } 40 \text{ cm}$

$= 340 \times 340 \text{ cm}^2 = 115600 \text{ cm}^2$

$= 11.56 \text{ m}^2$

(e) Area of square $= \text{side} \times \text{side} = 5 \text{ m } 50 \text{ cm} \times 5 \text{ m } 50 \text{ cm}$

$= 5.50 \text{ m} \times 5.50 \text{ m}$

$= 30.25 \text{ m}^2$

$$\begin{array}{rrrrrr} & & 5 & . & 5 & 0 \\ & \times & 5 & . & 5 & 0 \\ \hline & & & 0 & 0 & 0 \\ & 2 & 7 & 5 & 0 & \times \\ 7 & 7 & 5 & 0 & \times & \times \\ \hline 3 & 0 & . & 2 & 5 & 0 \ 0 \\ \hline \end{array}$$

6. $l = 900 \text{ cm} = 9 \text{ m}$

$b = 400 \text{ cm} = 4 \text{ m}$

Area $= l \times b = 9 \times 4 = 36 \text{ m}^2$

7. $l = 7 \text{ m } 30 \text{ cm} = 730 \text{ cm}$

$b = 4 \text{ m } 50 \text{ cm} = 450 \text{ cm}$

Area $= l \times b = 730 \times 450 = 328500 \text{ cm}^2$

8. Side of square $= 900 \text{ cm} = 9 \text{ m}$

Area of square $= \text{side} \times \text{side} = 9 \times 9 = 81 \text{ m}^2$

9. Area of roof $= l \times b = 25\text{ m} \times 15\text{ m}$

$= 2500\text{ cm} \times 1500\text{ cm} = 3750000\text{ cm}^2$

Area of tile $= l \times b = 25 \times 10 = 250\text{ cm}^2$

Number of tiles required $= \dfrac{\text{Area of roof}}{\text{Area of 1 tile}} = \dfrac{3750000}{250} = \dfrac{375000}{25} = 15000$

Number of tile $= 15000$

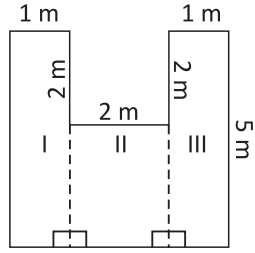
Cost of filing $=$ ₹ $3750000\text{ cm}^2 \times 0.08 =$ ₹ 3,00,000

10. (a) Area of rectangle I $= l \times b = 5 \times 1 = 5\text{ m}^2$

Area of rectangle III $= 5 \times 1 = 5\text{ m}^2$

Area of rectangle II $= (5-2) \times 2 = 3 \times 2 = 6\text{ m}^2$

Area of figure $= 5 + 5 + 6 = 16\text{ m}^2$

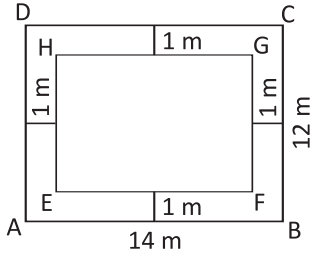


(b) $EF = 14 - (1+1) = 12\text{ m}$

$FG = 12 - (1+1) = 10\text{ m}$

Area of figure $=$ Ar $ABCD -$ Ar $EFGH = AB \times BC - EF \times FG = 14 \times 12 - 12 \times 10$

$= 168 - 120 = 48\text{ m}^2$



(c) For rectangle I

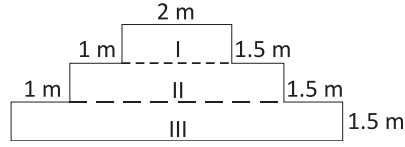
$l = 2\text{ m}, b = 1.5$

Area of I $= l \times b = 2 \times 1.5 = 3\text{ m}^2$

For rectangle II

$l = 2 + 1 + 1 = 4, b = 1.5\text{ m}$

Area of II $= l \times b = 4 \times 1.5 = 6\text{ m}^2$



For rectangle III

$l = 2 + 1 + 1 + 1 + 1 = 6, b = 1.5\text{ m}$

Area of III $= l \times b = 6 \times 1.5 = 9\text{ m}^2$

Total area $=$ Area I $+$ Area II $+$ Area III $= 3 + 6 + 9 = 18\text{ m}^2$

Exercise- 21.3

1. (a) $V = l \times b \times h = 4 \times 1 \times 2 = 8\ \text{cm}^3$

(b) $V = l \times b \times h = 5 \times 5 \times 7 = 175\ \text{cm}^3$

(c) $V = l \times b \times h = 1.5 \times 1.5 \times 1.5 = 3.375\ \text{cm}^3$

2. (a) Volume of cube $= \text{side}^3 = 5^3 = 125\ \text{cm}^3$

(b) Volume of cube $= \text{side}^3 = 4^3 = 64\ \text{m}^3$

(c) Volume of cube $= \text{side}^3 = 6^3 = 216\ \text{m}^3$

(d) Volume of cube $= \text{side}^3 = 7^3 = 343\ \text{m}^3$

(e) Volume of cube $= \text{side}^3 = 9^3 = 9 \times 9 \times 9 = 729\ \text{m}^3$

3. (a) Volume of cuboid $= l \times b \times h = 5 \times 4 \times 3 = 60\ \text{m}^3$

(b) Volume of cuboid $= l \times b \times h = 12 \times 5 \times 4 = 240\ \text{m}^3$

(c) Volume of cuboid $= l \times b \times h = 2.5 \times 2 \times 1.5 = 7.5\ \text{m}^3$

(d) Volume of cuboid $= l \times b \times h = 48 \times 36 \times 24 = 41472\ \text{cm}^3$

4. Volume of cuboid $= 3 \times$ volume of cuboid

$= 3 \times l \times b \times h = 3 \times 15 \times 12 \times 10 = 5400\ \text{cm}^3$

5. Volume of cuboid $= 5 \times$ volume of cube

$= 5 \times \text{side}^3 = 5 \times 11^3$

$= 5 \times 1331 = 6655\ \text{m}^3$

6. Volume of cube $= \text{side}^3 = 12^3 = 1728\ \text{m}^3$

Volume of cuboid $= l \times b \times h = 8 \times 6 \times 4 = 192\ \text{m}^3 = 9 \times (192) = 1728\ \text{m}^3$

$\therefore$ Volume of cube $= 9 \times$ volume of cuboid

7. Volume of cuboid $= l \times b \times h = 48 \times 32 \times 24$

Volume of cube $=$ side $\times$ side $\times$ side $= 16 \times 16 \times 16$

$$\frac{\text{Volume of cuboid}}{\text{Volume of cube}} = \frac{\overset{3}{\cancel{48}} \times \overset{2}{\cancel{32}} \times \overset{3}{\cancel{24}}}{\cancel{16} \times \cancel{16} \times \underset{8}{\cancel{16}}} = 3 \times 3 = 9$$

$\therefore$ Volume of cuboid : Volume of cube $= 9:1$

8. Volume of milk $= l \times b \times h = 8 \times 4 \times 10 = 320\ \text{cm}^3$

9. Volume of air in room $= l \times b \times h = 10 \times 6.5 \times 5 = 65 \times 5 = 325\ \text{m}^3$

10. Volume of cuboid $= l \times b \times h = 24 \times 7 \times 5 = 840\ \text{cm}^3$

11. Volume of tank $= l \times b \times h = 12 \times 8 \times 7 = 672\ \text{m}^3$

12. Dimension of wall, $l = 1000$ cm, $h = 500$ cm, $b = 64$ cm

Dimension of brick, $l = 20$ cm, $b = 16$ cm, $h = 8$ cm

$$\text{Number of bricks required} = \frac{\text{Volume of wall}}{\text{Volume of brick}}$$

$$= \frac{1000 \times 500 \times \overset{4}{\cancel{64}}}{20 \times \cancel{16} \times \underset{2}{\cancel{8}}} = \frac{50000}{40} = 12500$$

13. Volume $= 570$ litres $= 576 \times 1000$ cm^3

$$V = l \times b \times h$$
$$570 = 160 \times b \times 45$$
$$\frac{576000}{160 \times 45} = b$$
$$80\text{cm} = b \text{ (width of tank)}$$

14. Volume of metal box = Volume of n cubes

$$l \times b \times h = n \times \text{side}^3$$
$$180 \times 120 \times 100 = n \times 60^3$$
$$\frac{180 \times 120 \times 100}{60 \times 60 \times 60} = n$$
$$\frac{2160000}{216000} = n$$
$$100 = n$$

$\therefore$ 100 cubes can be made

15. Brick : $l = 18$ cm, $b = 12$ cm, $h = 10$ cm

Wall : $l = 1200$ cm, $b = 80$ cm, $h = 360$ cm

Number of bricks required $= \dfrac{\text{Volume of wall}}{\text{Volume of brick}} = \dfrac{1200 \times 80 \times 360}{18 \times 12 \times 10}$

$= \dfrac{34560000}{2160} = 16000$ bricks

Cost of 1000 bricks = ₹ 1500

Cost of 1 brick = ₹ $\dfrac{1500}{1000}$ = ₹ 1.5

Cost of 16000 bricks $= 1.5 \times 16000$

= ₹ 24000

MCQs

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

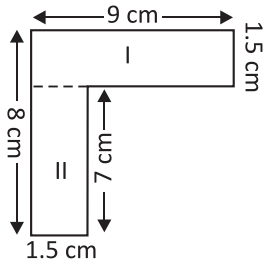
5. (c)

Test Exercise

1. (a) Area of rectangle I $= l \times b = (9 \times 1.5) = 13.5$ cm^2

Area of rectangle II $= 7 \times 1.5 = 10.5$ cm^2

Aea of figure $= 13.5 + 10.5 = 24$ cm^2

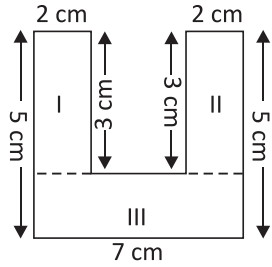


(b) Area of rectangle I $= l \times b = 3 \times 2 = 6\ \text{cm}^2$

Area of rectangle II $= l \times b = 3 \times 2 = 6\ \text{cm}^2$

Area of rectangle III $= l \times b = 7 \times (5-3) = 7 \times 2 = 14\ \text{cm}^2$

Area of figure $= 6 + 6 + 14 = 26\ \text{cm}^2$



2. Number of bricks required $= \dfrac{\text{Area of courtyard}}{\text{Area of 1 brick}} = \dfrac{(2500 \times 1600)\text{cm}^2}{20 \times 10\text{cm}^2}$

$= \dfrac{4000000}{200} = 20000$ bricks

3. Area of Ist playground $= l \times b = 120 \times 52 = 6240\ \text{m}^2$

Area of IInd playground $= l \times b = 112 \times 64 = 7168\ \text{m}^2$

Area of IInd playground is bigger

4. Area of square $= \text{side}^2 = 7.5^2 = 56.25\ \text{cm}^2$

5. Area of wall $= l \times b = 650\ \text{cm} \times 400\ \text{cm} = 260000\ \text{cm}^2$

Area of 1 tile $= \text{side}^2 = 10^2 = 100\ \text{cm}^2$

$\therefore$ Tiles required $= \dfrac{260000}{100} = 2600$

6. Number of square pieces $= \dfrac{\text{Area of sheet}}{\text{Area of 1 square piece}}$

$= \dfrac{l \times b}{\text{side}^2} = \dfrac{30 \times 20}{2^2} = \dfrac{30 \times 2}{4} = 150$

7. Volume of cube $= \text{side}^3 = 2.5^3 = 2.5 \times 2.5 \times 2.5 = 15.625\ \text{m}^3$

8. Volume of box $= l \times b \times h = 10 \times 6 \times 5\ \text{cm}^3 = 300\ \text{cm}^3$

9. Volume of log $= l \times b \times h = 250\ \text{cm} \times 50\ \text{cm} \times 25\ \text{cm} = 312500\ \text{cm}^3$

Cost of 100 cm^3 log $=$ ₹ 50

Cost of 1 cm^3 log $=$ ₹ $\dfrac{50}{100}$

Cost of 312500 cm^3 log $=$ ₹ $\dfrac{50}{100} \times 312500 =$ ₹ $50 \times 3125 =$ ₹ 156250

10. (a) Perimeter $= 2(l + b) = 2\,(12.5 + 9) = 2 \times 21.5 = 43.0$ cm

Area $= l \times b = 12.5 \times 9 = 112.5\ \text{cm}^2$

Volume $= l \times b \times h = 12.5 \times 9 \times 4 = 450\ \text{cm}^3$

(b) Perimeter $= 2(l + b) = 2\,(9 + 7) = 2 \times 16 = 320$ mm

Area $= l \times b = 9 \times 7 = 63\ mm^2$

Volume $= l \times b \times h = 9 \times 7 \times 5 = 315\ mm^3$

(c) Perimeter $= 2(l + b) = 2\ (14 + 8.5) = 2 \times 22.5 = 45$ cm

Area $= l \times b = 14 \times 8.5 = 119\ cm^2$

Volume $= l \times b \times h = 14 \times 8.5 \times 7 = 833\ cm^3$

(d) Perimeter $= 2(l + b) = 2\ (10.4 + 9) = 2 \times 19.4 = 38.8$ m

Area $= l \times b = 10.4 \times 9 = 93.6\ m^2$

Volume $= l \times b \times h = 10.4 \times 9 \times 6 = 561.6\ m^3$

(e) Perimeter $= 2(l + b) = 2\ (2.25 + 1.20) = 2\ (3.45) = 6.90$ m

Area $= l \times b = 2.25 \times 1.20 = 2.7\ cm^2$

Volume $= l \times b \times h = 2.25 \times 1.20 \times 0.80\ m = 2.16\ m^3$

❍❍❍

22 Data Handling

Exercise- 22.1

1. (a) 13 (b) Tuesday and Thursday

(c) Friday (d) $13 + 19 + 21 + 19 + 25 = 97$

2. (a)

Number of children	Tally marks	Frequency
1	卌 ||||	9
2	卌 |||	8
3	|||	3

(b) 9 children have no brother or sister

(c) 3 families has 3 children

(d) 9 families has 1 children (e) 8 families has 2 children

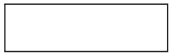
3. (a)

Name of Colours	Number of students	Tally marks
Red	18	卌 卌 卌 |||
Pink	13	卌 卌 |||
Green	10	卌 卌
Blue	9	卌 ||||
Yellow	12	| 卌 |||| ||
Orange	8	|||| |||
Black	7	|||| ||

(b)

Name of Animals	Name of Animals (F)	Tally marks
Elephant	4	||||
Lion	2	||
Dear	16	卌 卌 卌 |
Monkey	8	卌 |||
Crane	24	卌 卌 卌 卌 ||||
Crocodile	3	|||

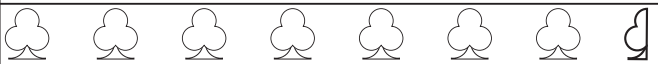
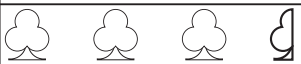
4.

Shapes	Tally marks	Frequency
	卌 ||||	9
	卌 ||||	9
	卌 卌	10
	卌 卌	10

5. (a) Least number of phones Karbon
Highest number of phones Samsung
(b) 12 (c) Micromax (d) Nokia
(e) $36+24+12+10+14+32=128$ phones

Exercise- 22.2

1.

Trees	Number of Trees
Mango	
Neem	
Banyan	
Peepal	
Palm	

2.

Days	Number of Icecreams
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

(a) Wednesday and Thursday

(b) Total $(32+48+40+40+80)=240$

(c) Friday

(d) $\frac{240}{5}=48$ (average)

3.

Subject	Marks
Hindi	
English	
Mathematics	
Science	
Social studies	

(a) Mathematics

(b) Social studies

(c) $75+80+85+75+70=385$

(d) Average $=\frac{385}{5}=77$

4. (a) $42+3=45$ students in class III

(b) $48+3=51$ students in class V

(c) In class V more students

(d) Students in class III $=$ 45

Students in class I $=$ -36

More students in class III than I $=$ 9

(e) Total strength $=36+48+45+30+51=210$

(f) Students in class V $=$ 51

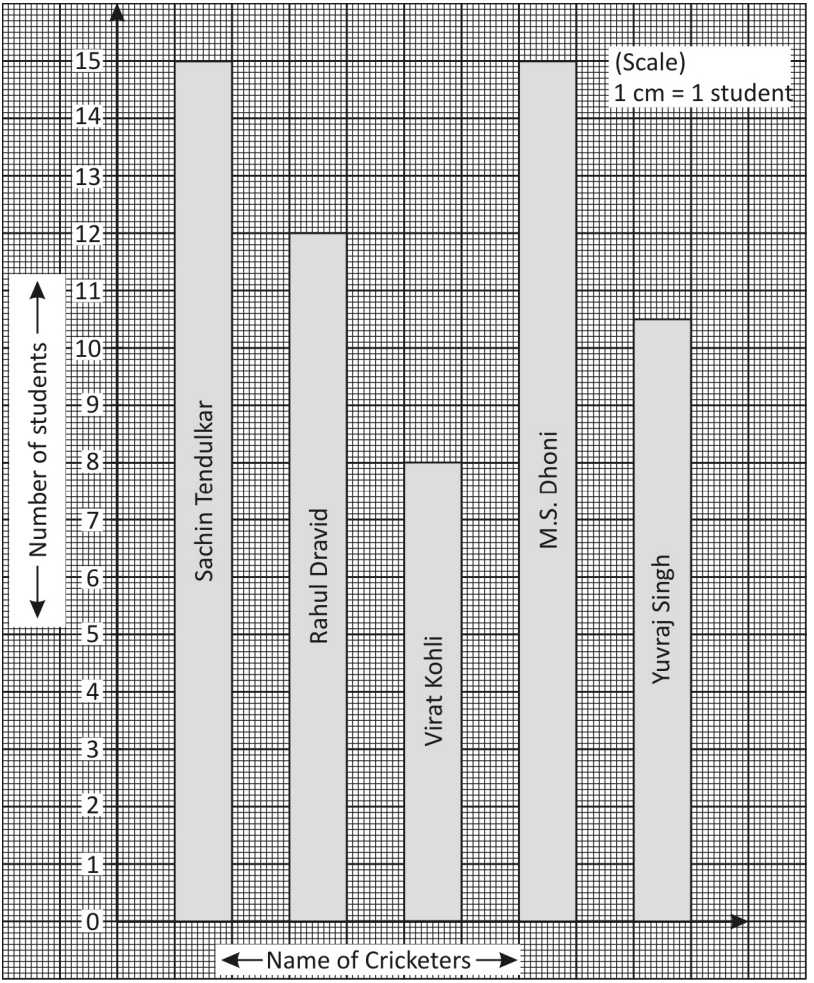
Students in class IV $=$ -30

Students in class IV $=$ 21 more than V

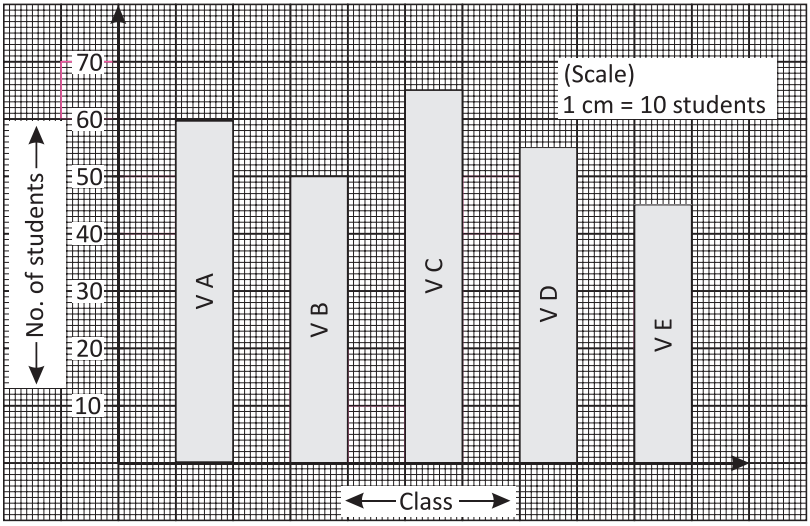
Exercise- 22.3

1. (a) Wednesday 20 students
(b) Friday 90 students
(c) Tuesday
(d) 60 students
(e) 300 students (80 + 50 + 20 + 60 + 90)

2.



3.



Exercise- 22.4

1. (a) Chocolate
(b) Strawberry
(c) Vanilla
(d) Strawberry < Mango < Vanilla < Chocolate

2. (a) Pizza
(b) Chips
(c) Biscuit
(d) Pizza > Biscuits > Samosa > Burger > Chips

❍❍❍

23 Reasoning : Verbal & Non-verbal and Logical

Exercise- 23.1

1. (c)	**2.** (d)	**3.** (c)	**4.** (d)
5. (c)	**6.** (c)	**7.** (d)	**8.** (b)
9. (d)	**10.** (a)	**11.** (c)	**12.** (c)
13. (d)	**14.** (b)	**15.** (a)	

Exercise- 23.2

1. (b)	**2.** (a)	**3.** (b)	**4.** (b)
5. (d)	**6.** (c)	**7.** (c)	**8.** (c)
9. (c)	**10.** (a)	**11.** (d)	**12.** (c)
13. (b)	**14.** (a)	**15.** (a)	**16.** (b)
17. (b)	**18.** (c)	**19.** (b)	**20.** (d)
21. (d)	**22.** (c)	**23.** (d)	**24.** (a)
25. (b)	**26.** (c)	**27.** (c)	**28.** (d)
29. (d)	**30.** (c)		

Exercise- 23.3

1. (a)	**2.** (d)	**3.** (b)	**4.** (c)
5. (b)	**6.** (a)	**7.** (b)	**8.** (a)
9. (d)	**10.** (c)	**11.** (b)	**12.** (a)
13. (b)	**14.** (a)	**15.** (c)	**16.** (b)
17. (a)	**18.** (a)	**19.** (c)	

Exercise- 23.4

1. (a)	**2.** (a)	**3.** (d)	**4.** (d)
5. (b)	**6.** (d)	**7.** (a)	**8.** (d)
9. (b)	**10.** (b)	**11.** (a)	**12.** (d)

Exercise- 23.5

A. 1. C A N | Y O U | S E E | T H E | E N E M Y

2. Y E S | I | C A N

3. F I R E | Y O U R | G U N

4. G O | A H E A D

B. 1. 9 0 9 1 K | S E | X 2 9 H 9 D

2. F G D O X + O A O F A I 9 E F

3. H 5 X F A D K S E A G D E

4. E 9 O ÷ I A D 9 E A 2 ÷ 5 9 D E

C. 1. 3 2 2 1

2. 3 7 9

3. * 0 #

Exercise- 23.6

1. (b)	**2.** (d)	**3.** (d)	**4.** (d)
5. (c)	**6.** (c)	**7.** (a)	**8.** (b)
9. (a)	**10.** (c)	**11.** (d)	