MathStep 5

Students' Book

Solutions

Unit 1 Whole Numbers and Operations

Exercise 1

1. Write the following numbers in word (how to read)

a) 347891 → Three hundred forty seven thousand eight hundred and ninety one.

b) 234231 → Two hundred thirty four thousand two hundred and thirty one.

c) 532131 → Five hundred thirty two thousand one hundred and thirty one.

d) 9832454 → Nine million, eight hundred thirty two thousand four hundred and fifty four

e) 3578935 → Three million, five hundred seventy eight thousand, nine hundred and thirty five.

2. Write the following numbers in figure (how to write)

a) Two million, five thousand five hundred — 2,005,500

b) Three million, one hundred and fifty-five thousand — 3,155,000

c) Five million, two hundred and twenty-seven — 5,000,227

d) Seven million, two thousand and fifty-eight — 7,002,058

e) Nine million and seven — 9,000,007

f) Fifty two thousand, eight hundred and thirty three — 52,832

g) Sixty four thousand, seven hundred and seventeen — 64,717

3. Write the following numbers in expanded form

a) 234567 → 200,000 + 30,000 + 4,000 + 500 + 60 + 7

b) 678321 → 600000 + 70000 + 8000 + 300 + 20 + 1

c) 345679 → 300000 + 40000 + 5000 + 600 + 70 + 9

d) 2345421 → 2000000 + 300000 + 40000 + 5000 + 400 + 20 + 1

e) 9213312 → 900000 + 200000 + 10000 + 3000 + 300 + 10 + 2

4. Write the place and place value of the underlined digit of the following numbers.

a) 3̲45 678 → Hundred thousand (300,000)

b) 456 7̲89 → Hundred (700)

c) 4̲56 789 → Ten thousand (50,000)

d) 2 578 123̲ → Ones (3)

e) 9 134 56̲7 → Tens (60)

5. Fill in the blanks:

a) 100 is the smallest three-digit number.

b) 99999 is the largest five-digit number.

c) 999999 is the largest six-digit number.

d) 1000000 is the smallest seven-digit number.

e) The place of the underlined digit of the number 3 4 5 6̲ 7 8 is hundred

f) The place value of the underlined digit of the numbers 1 2 3 4̲ 5 6 7 is thousands

Exercise 2

1. Add the given numbers.

a

$$\begin{array}{r} 8\,9\,3\,2\,1 \\ +\ 5\,6\,2\,1\,3 \\ \hline 1\,4\,5\,5\,3\,4 \end{array}$$

b

$$\begin{array}{r} 9\,7\,6\,5\,4 \\ +\ 1\,5\,4\,3\,2 \\ \hline 1\,1\,3\,0\,8\,6 \end{array}$$

c

$$\begin{array}{r} 8\,1\,2\,3\,4 \\ +\ 5\,6\,7\,8\,9 \\ \hline 1\,3\,8\,0\,2\,3 \end{array}$$

d

$$\begin{array}{r} 2\,4\,5\,6\,7 \\ +\ 3\,4\,5\,7\,8 \\ \hline 5\,9\,1\,4\,5 \end{array}$$

e

$$\begin{array}{r} 1\,2\,3\,4\,5\,6 \\ +\ 5\,6\,7\,8\,9\,1 \\ \hline 6\,9\,1\,3\,4\,7 \end{array}$$

f

$$\begin{array}{r} 4\,5\,6\,7\,8\,9 \\ +\ 8\,7\,3\,2\,1\,5 \\ \hline 1\,3\,3\,0\,0\,0\,4 \end{array}$$

g

$$\begin{array}{r} 4\,4\,4\,4\,5\,5 \\ +\ 5\,5\,4\,5\,4\,4 \\ \hline 9\,9\,8\,9\,9\,9 \end{array}$$

h

$$\begin{array}{r} 5\,7\,9\,7\,3\,1 \\ +\ 4\,5\,6\,1\,2\,3 \\ \hline 1\,0\,3\,5\,8\,5\,4 \end{array}$$

2. Subtract the given numbers

a

$$\begin{array}{r} 9\,6\,3\,2\,1 \\ -\ 3\,4\,3\,2\,0 \\ \hline 6\,2\,0\,0\,1 \end{array}$$

b

$$\begin{array}{r} 8\,9\,8\,7\,6 \\ -\ 3\,4\,1\,2\,3 \\ \hline 3\,5\,7\,5\,3 \end{array}$$

c

$$\begin{array}{r} 4\,5\,6\,2\,3\,4 \\ -\ 2\,3\,1\,1\,2\,3 \\ \hline 2\,2\,5\,1\,1\,1 \end{array}$$

d

$$\begin{array}{r} 6\,4\,5\,3\,2\,1 \\ -\ 2\,3\,1\,1\,2\,0 \\ \hline 4\,1\,4\,2\,0\,1 \end{array}$$

e

	6	7	8	9	3	1
–	2	3	4	5	6	2
	4	4	4	3	6	9

f

	7	9	8	3	2	1
–	1	2	3	4	5	6
	6	7	4	8	6	5

g

	7	7	7	6	6	6
–	6	8	8	7	7	7
	0	8	8	8	8	9

h

	8	9	8	9	8	9
–	6	5	4	3	2	1
	2	4	4	6	6	8

3. i) Find the number which is 4 5 6 7 8 more than 6 7 8 9 1.

= 113567

	6	7	8	9	1
+	4	5	6	7	8
1	1	3	5	6	7

ii) Find the number which is 2 3 5 6 7 more than 6 5 3 2 1.

= 88888

	2	3	5	6	7
+	6	5	3	2	1
	8	8	8	8	8

iii) Find the number which is 5 9 8 9 4 less than 8 4 5 9 1.

= 24697

	8	4	5	9	1
–	5	9	8	9	4
	2	4	6	9	7

iv) Find the number which is 2 3 4 9 6 5 less than 7 8 2 1 9 6.

= 547231

	7	8	2	1	9	6
–	2	3	4	9	6	5
	5	4	7	2	3	1

v) What number should we add in 1 2 1 3 1 4 to get 3 4 5 6 7 8?

= 224364

vi) What number should we subtract from 4 5 2 3 6 to get 5 7 2 3 6?

= 12000

vii) If we subtract 1 1 3 4 5 6 from a number it gives 5 6 7 8 1 3 find the number.

= 454357

viii) If we add 1 2 3 4 9 4 from a number it gives 7 2 3 4 5 6 find the number.

= 846950

ix) Subtract greatest five-digit number from the smallest six-digit number.

= 01

x) Add smallest five-digit number and the greatest six-digit number.

= 199,999

Exercise 3

1. Fill in the blanks

i) 1 5 6 7 1 × 1 0 = 156710

ii) 78945 × 100 = 7 8 9 4 5 0 0

iii) 7 8 9 6 5 × 1000 = 78965000

iv) 87654 × 100 = 8 7 6 5 4 0 0

v) 8 7 6 5 0 ÷ 10 = 8765

vi) 2 3 4 6 0 ÷ 10 = 2 3 4 6

vii) 4 5 9 8 0 ÷ 10 = 4598

viii) 2 3 4 0 0 ÷ 100 = 2 3 4

ix) 12000 ÷ 1000 = 12

x) 4 3 2 0 0 ÷ 10 = 432

2. Multiply the following numbers by 10.

a) 2 3 4 5 1

= 23451 × 10 = 234510

b) 7 8 9 6 5

= 78965 × 10 = 789650

c) 1 0 1 0 0

= 10100 × 10 = 1000

d) 7 8 9 6 5 6 5

= 78965 × 10 = 789650

e) 1 4 5 6 7

= 14567 × 10 = 14567

f) 9 8 7 6 5

= 98765 × 10 = 987650

3. Multiply the following numbers by 100.

a) 1 1 1 1 1

1111100

b) 2 3 4 5 1

2345100

c) 1 2 1 2 1

1212100

d) 1 2 2 1 3

1221300

e) 1 4 2 3 5

1423500

f) 4 4 5 5 1

4455100

4. Multiply the following numbers by 1000.

a) 1 2 3 1 2

12312000

b) 2 3 6 1 2

23612000

c) 1 2 1 3 1

12131000

d) 2 4 7 8 9

24789000

e) 9 8 4 5 1

98451000

f) 7 6 5 1 2

76512000

5. Divide the following numbers by 10.

a) 2 3 4 5 0

2345

b) 7 8 9 6 0

7896

c) 2 3 0 0 0

2300

d) 5 6 7 0 0

5670

e) 6 5 4 3 0

6543

f) 1 2 3 4 0

1234

6. Divide the following numbers by 100.

a) 2 3 4 0 0
234

b) 1 7 8 0 0
178

c) 2 3 4 0 0
234

d) 7 8 9 0 0
789

e) 1 4 5 0 0
145

f) 2 6 7 0 0
267

7. Divide the following numbers by 1000.

a) 2 3 0 0 0
23

b) 7 8 0 0 0
78

c) 8 9 0 0 0
89

d) 4 5 0 0 0
45

e) 1 2 0 0 0
12

f) 1 4 5 0 0 0
145

8. Solve the following multiplications

a) 54321 × 321
17437041

b) 34811 × 123
4281753

c) 45678 × 171
7810938

d) 12341 × 211
2603951

e) 87651 × 345
30239595

f) 14567 × 213
3102771

g) 34567 × 33
1140711

h) 12112 × 23
278576

i) 19785 × 98
1938930

9. Perform the following divisions

a) 78965 ÷ 23

```
      5264
  ┌──────
23 ) 78965
     75
     ──
      39
      30
      ──
       96
       90
       ──
        65
        60
        ──
         5
```

b) 45612 ÷ 12

```
      3801
  ┌──────
12 ) 45612
     36
     ──
      960
      960
      ───
        12
        12
        ──
         0
```

c) 12341 ÷ 11

```
      5264
  ┌──────
23 ) 12341
     11
     ──
      13
      11
      ──
       24
       22
       ──
        21
        11
        ──
        10
```

d) 99999 ÷ 13

```
      7692
  13 ) 99999
       91
       ---
        89
        78
        --
        119
        117
        ---
          29
          26
          --
           3
```

e) 14141 ÷ 14

```
      1010
  14 ) 14141
       14
       --
        141
        140
        ---
          1
```

f) 16151 ÷ 15

```
      1076
  15 ) 16151
       150
       ---
        115
        105
        ---
         101
          90
          --
          11
```

Exercise 4

Real life Problems

1. Shoaib sold 234321 eggs in first year and 121319 eggs in second year how many eggs he sold in two years?

Solution:

First year 234321
Second year 121319

```
  782196
+ 234965
--------
  355640
```

Ans statement:

He sold 355,640 eggs in two years.

2. Wareesha deposited 152231 rupees in bank on Wednesday and 403324 rupees on Thursday what is the total amount of money deposited by her in bank?

Solution:

Deposit on Wednesday 15231
Deposit on Thursday 403324

```
  152231
+ 403324
--------
  555555
```

Ans statement:

She deposit total 555,555 amount of money in bank.

3. Fatima made 231121 biscuits in January and 123145 in February how many biscuits she made in these two months?

Solution:

In January made 23121 biscuits
In February made 123145 biscuits

```
  231121
+ 123145
--------
  354266
```

Ans statement:

She made 354,266 biscuits in two month.

4. Azka has 92000 rupees in her bank she withdrew 23500 rupees what amount is still left in her bank account?

Solution:

92000 amount in bank
23500 withdraw

$$\begin{array}{r} 92000 \\ -\ 23500 \\ \hline 68500 \end{array}$$

Ans statement:

68,500 amount is still left in her bank account.

5. Rani earns 999999 rupees monthly as her salary she saves 223310 monthly what are her monthly expenditures?

Solution:

Rani earns 999999
She saves 223310 monthly

$$\begin{array}{r} 999999 \\ -\ 223310 \\ \hline 776689 \end{array}$$

Ans statement:

Her monthly expenditure 776,689 Rs.

6. Asia bought a bed for 199999 rupees she gave the shopkeeper 200000 rupees what amount will be returned by the shopkeeper?

Solution:

Bed cost 199999
She gave 200000 Rs. to shopkeeper

$$\begin{array}{r} 200000 \\ -\ 199999 \\ \hline 000001 \end{array}$$

Ans statement:

Shopkeeper returned has 1 rupee.

7. If a train travels a distance of 10000 km in 80 hours, how many km does it travel in one hour?

80 = 10000 1 hr = 10000 ÷ 80 125 km

8. Murad has 121 shops, the price of each shop is 99877, then what is the total cost of his shops?

99877 × 121 = 12085117

9. Zakir traveled 13459 miles in 43 hours how many miles did he travel on average in one hour?

13459 ÷ 43 = 313 Average distance

10. If a rocket travels a distance of 78935 miles in one hour how many miles does it travel in 19 hours?

78935 × 19 = 1499765

11. Annual income of Yasir is Rs. 34284 what will be his monthly income? Hanan's income is Rs. 36016. Find total of Yasir and Hanan's incomes.

Yasir 34284 ÷ 12 = 2857

2857 + 36016 = 38873

12. Monthly income of Shoaib is Rs. 19999 what will be his annual income?

19999 × 12 = 239988

Exercise 5

1. Find the missing number in the given sequence.

a) 11, 16, 21, 26, 31 , 36, 41, 46

b) 40, 35, 30, 25 , 20, 15, 10

c) 4, 8, 16, 32, 64 ,128, 256

d) 192, 96, 48, 24, 12 , 6, 3

2. Extend the given sequence for the next three terms

a) 3, 6, 9, 12, 15 , 18 , 21

b) 32, 28, 24, 20, 16 , 12 , 8

c) 6, 12, 24, 48, 96 , 192 , 384

d) 160, 80, 40, 20 , 10 , 5

3. Find the pattern in the given table

a)

1	10	13	20
5	14	17	24
n + 4	n + 4	n + 4	n + 4

1 + 4 = 5

10 + 4 = 14

b)

18	19	25	35
14	15	21	31
n – 4	n – 4	n – 4	n – 4

18 – 4 = 14

19 – 4 = 15

c)

4	6	7	12
12	14	15	20

4 + 8 = 12

d)

15	33	63	123
5	13	53	113

15 – 10 = 5

Review Exercise

1. Circle the correct option

a) the place value of 3 in the number 782359 is ___300___

i) 30 ii) 300 ✓ iii) 3000 iv) 30000

b) In 578234 the digit ___2___ is at hundreds place.

i) 2 ✓ ii) 3 iii) 5 iv) 7

c) When we multiply a number by ___100___ we put two zeroes to the right side

i) 100 ✓ ii) 10 iii) 1000 iv) 1

d) When we divide a number by ___100___ we remove two zeroes from the right side.

i) 10 ii) 100 ✓ iii) 1000 iv) 1

2. Write the following numbers is words

a) 234567 Two hundred thirty four thousand, five hundred and sixty seven.

b) 345789 Three hundred forty five thousand, seven hundred and eighty nine.

c) 123456 One hundred twenty three thousand, four hundred an fifty six.

d) 111222 One hundred elven thousand, two hundred and twenty two.

e) 333121 Three hundred thirty three thousand, one hundred and twenty one.

f) 451231 Four hundred fifty one thousand, two hundred and thirty one.

3. Solve the following

a) 121345 + 561234
= 682579

b) 213145 + 456789
= 669934

c) 727131 + 131727
= 858858

d) 111121 + 431234
= 542355

4. Solve the following

a) 675931 – 145321
= 530610

b) 145637 – 134213
= 11424

c) 789431 - 234567
= 554864

d) 999888 – 777666
= 222222

5. Solve the following

a) 12345 × 22
= 271590

b) 34567 × 111
= 386937

c) 23456 × 45
= 1055520

d) 15678 × 311
= 4875858

6. Solve the following

a) 15672 ÷ 12
= 1306

b) 95951 ÷ 95
= 1010 R1

c) 64486 ÷ 32
= 2015 R6

d) 73821 ÷ 311
= 237 R114

7. Find the next three terms of each pattern

a) 25, 50, 75, 100 , 125 , 150

b) 15, 55, 95, 135 , 175 , 215

c) 80, 65, 50, 35 , 20 , 05

d) 15, 30, 60, 90 , 120 , 150

8. The Price of a printer is Rs. 190231 and price of a super computer is Rs. 234567. Find the price of both items.

= 190231 + 234567 = 424798

9. The price of a computer is Rs. 12345. What will be the price of 23 such computers?

= 190231 + 234567 = 424798

10. Observe the given tables and find the rule of pattern given in them.

a)

Position	Term
6	3
12	6
18	9
24	12
30	15
36	18
42	21

n = t × 2

b)

Position	Term
12	4
24	8
36	12
48	16
60	20
72	24
84	28

n = t × 3

Unit 2 Highest Common Factor and Least Common Multiple

Exercise 1

1. Find the HCF of the following numbers by using the prime factorization method

a) 72, 48

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

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

H.C.F $= 2 \times 2 \times 2 \times 3$

$= 24$

2	72
2	36
2	18
3	9
3	3
	1

2	48
2	24
2	12
2	6
3	3
	1

b) 58, 70

$58 = 2 \times 29$

$70 = 2 \times 5 \times 7$

H.C.F $= 2$

2	58
29	29
	1

2	70
5	35
7	7
	1

c) 88, 84

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

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

H.C.F $= 2 \times 2$

$= 4$

2	88
2	44
2	22
11	11
	1

2	84
2	42
3	21
7	7
	1

d) 80, 68

$80 = 2 \times 2 \times 2 \times 2 \times 5$

$68 = 2 \times 2 \times 17$

H.C.F $= 2 \times 2$

$= 4$

2	80
2	40
2	20
2	10
5	5
	1

2	68
2	34
17	17
	1

e) 54, 64

54 = 2 × 3 × 3 × 3

64 = 2 × 2 × 2 × 2 × 2 × 2

H.C.F = 2

2	54
3	27
3	9
3	3
	1

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

f) 15, 18

15 = 3 × 5

18 = 2 × 3 × 3

H.C.F = 3

3	15
5	5
	1

2	18
3	9
3	3
	1

2. Find the HCF of the following numbers by using the division method.

a) 42, 54

```
        1
42 ) 54
     42    3
     12 ) 42
          36    6
           6 ) 36
               36
                0
```

The last divisor 6 is the H.C.F of 42 and 54

b) 98, 94

```
        1
94 ) 98
     94    24
      4 ) 94
          8
          14
          16    8
           2 ) 16
               16
                0
```

The last divisor 2 is the H.C.F of 98 and 94

c) 88, 96

```
        1
  88 ) 96
       88    11
       --    --
        8 |  88
          |  88
          |  --
          |   0
```

8 is H.C.F

d) 80, 72

```
        1
  72 ) 80
       72     9
       --    --
        8 |  72
          |  72
          |  --
          |   0
```

8 is H.C.F

e) 55, 65

```
        1
  55 ) 65
       55     5
       --    --
        11 |  55
           |  55
           |  --
           |   0
```

11 is the H.C.F

f) 18, 32

```
        1
  18 ) 23
       18     1
       --    --
        14 |  18
           |  14     3
           |  --    --
            4 |  14
              |  12     6
              |  --    --
               2 |  12
                 |  12
                 |  --
                 |   0
```

2 is H.C.F

3. Find the HCF of the following numbers by using the prime factorization method

a) 58, 72, 48

2	58, 72, 48
	29, 35, 24

H.C.F is 2

b) 15, 54, 18

3	15, 54, 18
	5, 18, 6

H.C.F is 3

c) 42, 54, 64

2	42, 54, 64
	21, 27, 32

H.C.F is 2

d) 13, 39, 78

3	13, 39, 78
	11, 2, 6

H.C.F is 5

e) 24, 48, 72

2	24, 48, 72
2	12, 24, 36
2	6, 12, 18
3	3, 6, 9
	1, 2, 3

2 × 2 × 2 × 3 = 24

H.C.F is 24

f) 50, 65, 85

5	50, 65, 85
	10, 13, 17

H.C.F is 5

4. Find the HCF of the following numbers by using the division method.

a) 48, 58, 78

Step 1

48) 78 (1
48
30) 48 (1
30
18) 30 (1
18
12) 18 (1
12
6) 12 (2
12
0

and H.C.F of 48, 78 is 6

Step 2

6) 58 (9
54
4) 54 (13
52
2) 52 (26
52
0

and H.C.F of 6, 58

b) 18, 15, 12

Step 1

12) 18 (1
12
6) 12 (2
12
0

H.C.F of 18 and 12 is 6

Step 2

6) 15 (2
12
3) 12 (4
12
0

H.C.F of 6 and 15 is 3

c) 21, 15, 24

Step 1

$$
\begin{array}{r}
1 \\
15\overline{)\,24} \\
15 \quad 1 \\
\hline
9 \;\big|\; 15 \\
\quad 9 \quad 1 \\
\quad\hline
\quad 6 \;\big|\; 9 \\
\quad\quad 6 \quad 2 \\
\quad\quad\hline
\quad\quad 3 \;\big|\; 6 \\
\quad\quad\quad 6 \\
\quad\quad\quad\hline
\quad\quad\quad 0
\end{array}
$$

H.C.F of 15 and 24 is 3

Step 2

$$
\begin{array}{r}
7 \\
3\overline{)\,21} \\
21 \\
\hline
0
\end{array}
$$

H.C.F of 3 and 21 is 3

d) 58, 78, 72

Step 1

$$
\begin{array}{r}
1 \\
58\overline{)\,78} \\
58 \quad 2 \\
\hline
20 \;\big|\; 58 \\
\quad 40 \quad 1 \\
\quad\hline
\quad 18 \;\big|\; 40 \\
\quad\quad 36 \quad 9 \\
\quad\quad\hline
\quad\quad 4 \;\big|\; 36 \\
\quad\quad\quad 36 \\
\quad\quad\quad\hline
\quad\quad\quad 0
\end{array}
$$

H.C.F of 78 and 58 is 4

Step 2

$$
\begin{array}{r}
18 \\
4\overline{)\,72} \\
72 \\
\hline
0
\end{array}
$$

H.C.F of 4 and 72 is 4

e) 16, 18, 22

Step 1

$$
\begin{array}{r}
1 \\
16\overline{)\,22} \\
16 \quad 2 \\
\hline
6 \;\big|\; 16 \\
\quad 12 \quad 2 \\
\quad\hline
\quad 4 \;\big|\; 16 \\
\quad\quad 12 \quad 3 \\
\quad\quad\hline
\quad\quad 4 \;\big|\; 12 \\
\quad\quad\quad 12 \\
\quad\quad\quad\hline
\quad\quad\quad 0
\end{array}
$$

H.C.F of 12 and 16 is 4

Step 2

$$
\begin{array}{r}
8 \\
2\overline{)\,16} \\
16 \\
\hline
0
\end{array}
$$

H.C.F of 4 and 18 is 2

f) 88, 98, 96

Step 1

$$
\begin{array}{r}
1 \\
88 \overline{)\,98} \\
88 \\
\hline
10
\end{array}
\qquad
\begin{array}{r}
8 \\
\hline
88 \\
80 \\
\hline
8
\end{array}
\qquad
\begin{array}{r}
10 \\
\hline
80 \\
80 \\
\hline
0
\end{array}
$$

H.C.F of 88 and 98 is 8

Step 2

$$
\begin{array}{r}
12 \\
8 \overline{)\,96} \\
96 \\
\hline
0
\end{array}
$$

H.C.F of 8 and 96 is 8

Exercise 2

1. Find the LCM of the following two numbers by using prime factorization method.

a) 12, 21

$12 = 2 \times 2 \times 3$

$21 = 3 \times 7$

L.C.M = 3

2	12
2	6
3	3
	1

2	21
7	7
	1

b) 15, 18

$15 = 3 \times 5$

$18 = 3 \times 6$

L.C.M = 3

3	15
5	5
	1

3	18
6	6
	1

c) 18, 36

$18 = 2 \times 3 \times 3$

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

L.C.M = $2 \times 3 \times 3$

= 18

2	18
3	9
3	3
	1

2	36
2	18
3	9
3	3
	1

d) 21, 35

$21 = 3 \times 7$

$35 = 5 \times 7$

L.C.M = 7

2	21
7	7
	1

5	35
7	7
	1

e) 14, 16

$14 = 2 \times 7$

$16 = 2 \times 8$

L.C.M = 2

2	14
7	7
	1

2	16
8	8
	1

f) 18, 22

$18 = 2 \times 3 \times 3$

$22 = 2 \times 11$

L.C.M = 2

2	18
3	9
3	3
	1

2	22
11	11
	1

2. Find the LCM of the following three numbers by using prime factorization method.

a) 16, 32, 48

2	16, 32, 48
2	8, 16, 24
2	4, 8, 12
2	2, 4, 6
2	1, 2, 3
3	1, 1, 3
	1, 1, 1

L.C.M = $2 \times 2 \times 2 \times 2 \times 2 \times 3$

= 96

b) 35, 60, 75

2	35, 60, 75
2	35, 30, 75
3	35, 15, 75
5	35, 5, 25
5	7, 1, 15
7	7, 1, 1
	1, 1, 1

L.C.M = $2 \times 2 \times 3 \times 5 \times 5 \times 7$

= 2100

c) 25, 45, 95

5	25, 45, 95
5	5, 9, 19
9	1, 9, 19
19	1, 1, 19
	1, 1, 1

L.C.M = 5 × 5 × 9 × 19

= 4275

d) 10, 20, 25

2	10, 20, 25
2	5, 10, 25
5	5, 5, 25
5	1, 1, 5
	1, 1, 1

L.C.M = 2 × 2 × 5 × 5

= 100

e) 12, 14, 26

2	12, 14, 26
2	6, 7, 13
3	3, 7, 13
7	1, 7, 13
13	1, 1, 13
	1, 1, 1

L.C.M = 2 × 2 × 3 × 7 × 13

= 1092

f) 28, 32, 40

4	28, 32, 40
7	7, 8, 10
8	1, 8, 10
10	1, 1, 10
	1, 1, 1

L.C.M = 4 × 7 × 8 × 10

= 2240

3. Find the LCM of the following two numbers by using division method.

a) 18, 22

2	18, 22
2	9, 11
2	3, 11
2	1, 11
	1, 1

L.C.M = 2 × 3 × 3 × 11

= 198

b) 12, 27

2	12, 27
4	4, 9
7	1, 9
	1, 1

L.C.M = 3 × 4 × 9

= 108

c) 14, 82

2	14, 82
7	7, 41
41	1, 41
	1, 1

L.C.M = 2 × 7 × 41

= 574

d) 18, 22

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

L.C.M = 2 × 2 × 2 × 3 × 3
= 72

e) 18, 24

2	18, 24
2	9, 14
3	9, 7
3	3, 7
7	1, 7
	1, 1

L.C.M = 2 × 2 × 3 × 3 × 7
= 252

f) 19, 57

2	19, 57
19	19, 19
	1, 1

L.C.M = 3 × 19
= 57

4. Find the LCM of the following three numbers by using division method.

a) 12, 14, 18

2	12, 14, 18
2	6, 7, 9
3	3, 7, 9
3	1, 7, 3
7	1, 7, 1
	1, 1, 1

L.C.M = 2 × 2 × 3 × 3 × 7 = 252

b) 18, 22, 24

2	18, 22, 24
3	9, 11, 12
3	3, 11, 4
4	1, 11, 4
11	1, 11, 1
	1, 1, 1

L.C.M = 2 × 3 × 3 × 4 × 11 = 792

c) 24, 28, 32

2	24, 28, 32
2	12, 14, 16
2	6, 7, 8
3	3, 7, 4
4	1, 7, 4
7	1, 7, 1
	1, 1, 1

L.C.M = 2 × 2 × 2 × 3 × 4 × 7 = 672

d) 32, 34, 36

2	32, 34, 36
2	16, 17, 18
2	8, 17, 9
4	4, 17, 9
9	1, 17, 9
17	1, 17, 1
	1, 1, 1

L.C.M = 2 × 2 × 2 × 4 × 9 × 17 = 4892

e) 38, 42, 48

2	38, 42, 48
3	19, 21, 24
7	19, 7, 8
8	19, 1, 8
19	19, 1, 1
	1, 1, 1

L.C.M = 2 × 3 × 7 × 8 × 19 = 6384

f) 50, 56, 58

2	50, 56, 58
2	25, 28, 29
2	25, 14, 29
5	25, 7, 29
5	5, 7, 29
7	1, 7, 29
29	1, 1, 29
	1, 1, 1

L.C.M = 2 × 2 × 2 × 5 × 5 × 7 × 29

= 40600

Exercise 3

Real life problems involving LCM and HCF.

1. Find the minimum length of the ribbon which can completely be cut into pieces of length 12 cm 14 cm and 16 cm.

2	12, 14, 16
2	6, 7, 8
3	3, 7, 4
4	1, 7, 4
7	1, 7, 1
	1, 1, 1

Minimum length = L.C.M

2 × 2 × 3 × 4 × 7 = 336 cm

2. A bell rings after 18 seconds, another after 10 seconds. At 5pm the two bells rang simultaneously at what time will the bells will ring again simultaneously?

2	18, 10
5	9, 5
9	9, 1
	1, 1

L.C.M = 2 × 5 × 9 = 90

90 minutes after 5 pm will be the next time both bells rings 90min = 1 hr 30 min = 1.5 hr

3. A salesman goes to Lahore after 12 days for one day and another after 15 days, one day they met to each other in Lahore after how many days they will meet again in Lahore?

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

L.C.M = 2 × 2 × 3 × 5 = 60

After 60 days they will meet again Lahore.

4. Two wires are 12 m and 16 m long. The wires are to be cut into pieces of equal length. Find the maximum length of each piece.

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

12 = 2 × 2 × 3

16 = 2 × 2 × 2 × 2

H.C.F = 2 × 2 = 4

The maximum length of each piece is 4 m.

5. Three different groups of scientists with 12, 30 and 42 members respectively will go to Japan for a conference. Find the maximum numbers of scientist in hotel room if an equal number of scientists from same group will stay in each room.

2	12
2	6
3	3
	1

2	30
3	15
5	5
	1

2	42
3	21
7	7
	1

Maximum 6 scientist will stay in hotel room.

$12 = 2 \times 2 \times 3$

$30 = 2 \times 3 \times 5$

$40 = 2 \times 3 \times 7$

H.C.F $= 2 \times 3 = 6$

6. If the product of two numbers is 120 and their LCM is 60 what will be the HCF of the numbers.

Hint!

product of numbers

= LCM of the numbers x HCF of the numbers

Review Exercises

1. Tick the correct option

a) The LCM of 7 and 3 is

i) 42 ii) 63 iii) 21 ✓ iv) 84

b) The HCF of 15 and 18 is

i) 3 ✓ ii) 6 iii) 1 iv) 9

c) Prime factorization of 48 is

i) 2 × 24 ii) 3 × 16 iii) 2 × 2 ✓ × 2 × 3 × 2 iv) 4×12

d) The HCF of two prime numbers is

i) 1 ✓ ii) 2 iii) 3 iv) 4

2. Find the LCM of the following numbers by using Prime factorization

a) 25, 40

25 = 5 × 5

40 = 5 × 8

L.C.M = 5

b) 28, 32

28 = 2 × 2 × 7

32 = 2 × 2 × 8

L.C.M = 2 × 2 = 4

c) 18, 34

18 = 2 × 9

34 = 2 × 17

L.C.M = 2

d) 12, 14

12 = 2 × 6

14 = 2 × 7

L.C.M = 2

e) 15, 18

15 = 3 × 5

18 = 3 × 6

L.C.M = 3

f) 12, 18

12 = 2 × 6

18 = 2 × 9

L.C.M = 2

3. Find the LCM of the following numbers by using division method

a) 15, 21

3	15, 21
5	5, 7
7	1, 7
	1, 1

L.C.M = 3 × 5 × 7 = 105

b) 12, 21

2	12, 21
2	6, 21
3	3, 21
7	1, 7
	1, 1

L.C.M = 2 × 2 × 3 × 7 = 84

c) 18, 34

2	18, 34
3	9, 17
3	3, 17
17	1, 17
	1, 1

L.C.M = 2 × 3 × 3 × 17 = 306

d) 18, 25

2	18, 25
2	9, 25
3	3, 25
7	1, 25
5	1, 5
	1, 1

L.C.M = 2 × 3 × 3 × 5 × 5 = 450

e) 19, 57

2	19, 57
19	19, 19
	1, 1

L.C.M = 2 × 19 = 57

f) 51, 15

2	51, 15
5	17, 5
17	17, 1
	1, 1

L.C.M = 3 × 5 × 17 = 255

4. Find the HCF of the following numbers by using Prime factorization

a) 20, 50

2	20, 50
2	10, 25
5	5, 25
5	1, 5
	1, 1

H.C.F = 2 × 2 × 5 × 5 = 100

b) 60, 80

2	60, 80
2	30, 40
5	15, 20
3	3, 4
4	1, 4
	1, 1

H.C.F = 2 × 2 × 5 × 4 × 5 = 20

c) 26, 52

2	26, 52
13	13, 26
	1, 2

H.C.F = 2 × 13 = 26

d) 30, 70

2	30, 70
5	15, 35
	3, 7

H.C.F = 2 × 5 = 10

e) 45, 95

5	26, 52
	9, 19

H.C.F = 5

f) 30, 70

5	20, 25
	4, 5

H.C.F = 5

5. Find the HCF of the following numbers by using division method

a) 14, 26

$26 = 14 \times 1 + 12$

$14 = 12 \times 1 + 2$

$12 = 2 \times 6 + 0$

H.C.F = 3

b) 12, 18

$18 = 12 \times 1 + 6$

$12 = 6 \times 2 + 0$

H.C.F = 6

c) 6, 15

$15 = 6 \times 2 + 3$

$12 = 3 \times 1 + 0$

H.C.F = 3

d) 18, 38

$38 = 18 \times 2 + 2$

$36 = 2 \times 18 + 0$

H.C.F = 2

e) 70, 80

```
       1
70 ) 80
     70      7
    ----------
     10 | 70
        | 70
        | ----
        |  0
```

H.C.F = 10

e) 4, 9

```
      2
4 ) 9
    8      8
   ---------
    1 |  8
      |  8
      | ---
      |  0
```

H.C.F = 1

6. Find the LCM of the following numbers by using Prime factorization

a) 20, 30, 40

20 = 2 × 2 × 2

30 = 2 × 15

40 = 2 × 20

L.C.M = 2

b) 12, 16, 18

12 = 2 × 2 × 3

16 = 2 × 2 × 4

18 = 2 × 9

L.C.M = 2

c) 8, 18, 36

8 = 2 × 4

18 = 2 × 9

36 = 2 × 18

L.C.M = 2

d) 9, 18, 27

9 = 3 × 3

18 = 3 × 6

27 = 3 × 9

L.C.M = 3

7. Find the LCM of the following numbers by using division method

a) 15, 20, 25

2	15, 20, 25
2	15, 10, 25
3	15, 5, 25
5	5, 5, 25
5	1, 1, 5
	1, 1, 1

L.C.M = 2 × 2 × 3 × 5 × 5 = 300

b) 18, 36, 54

2	18, 36, 54
2	9, 18, 27
3	9, 9, 27
3	3, 3, 9
3	1, 1, 3
	1, 1, 1

L.C.M = 2 × 2 × 3 × 3 × 3 = 108

c) 19, 38, 57

2	19, 38, 57
19	19, 19, 57
3	1, 1, 3
	1, 1, 1

L.C.M = 2 × 19 × 3 = 114

d) 18, 16, 22

2	18, 16, 22
2	9, 8, 11
4	9, 4, 11
9	9, 1, 11
11	1, 1, 11
	1, 1, 1

L.C.M = 2 × 2 × 4 × 9 × 11 = 1584

8. Find the HCF of the following numbers by using Prime factorization

a) 8, 12, 14

2	8, 12, 14
	4, 6, 7

H.C.F = 2

b) 12, 16, 8

2	12, 16, 18
	6, 8, 9

H.C.F = 2

c) 22, 24, 26

2	22, 24, 26
	11, 12, 13

H.C.F = 2

d) 32, 34, 36

2	32, 34, 36
	16, 17, 18

H.C.F = 2

9. Find the HCF of the following numbers by using division method

a) 12, 16, 16

12) 16 (1
12
4) 12 (3
12
0

4) 14 (3
12
2) 12 (6
12
0

H.C.F = 2

b) 12, 18

18) 22 (1
18
4) 18 (4
16
2) 16 (8
16
0

2) 20 (10
20
0

H.C.F = 2

c) 24, 26, 28

$$\begin{array}{r|l} 24 & 28 \\ \hline 4 & 24 \\ & 24 \\ \hline & 0 \end{array}$$

$$\begin{array}{r|l} 24 & 26 \\ \hline 2 & 24 \\ & 24 \\ \hline & 0 \end{array}$$

H.C.F = 2

d) 38, 40, 42

$$\begin{array}{r|l} 38 & 42 \\ \hline 4 & 38 \\ & 36 \\ \hline & 4 \end{array}$$

$$\begin{array}{r|l} 38 & 36 \\ \hline 2 & 36 \\ & 36 \\ \hline & 0 \end{array}$$

$$\begin{array}{r|l} 2 & 40 \\ \hline & 40 \\ \hline & 0 \end{array}$$

H.C.F = 2

10. Find the least numbers which is completely divided by 12 and 14

2	12, 14
2	6, 7
3	3, 7
7	1, 7
	1, 1

L.C.M = 2 × 2 × 3 × 7 = 84

11. Find the least number of candies which can equally be distributed among 16,18 and 22 Children.

2	16, 18, 22
2	8, 9, 11
4	4, 9, 11
9	1, 9, 11
11	1, 1, 11
	1, 1, 1

L.C.M = 2 × 2 × 4 × 9 × 11 = 1584

Unit 3 Fractions

Exercise 1

1. Add the following fractions:

a) $\frac{1}{4} + \frac{1}{5}$

$= \frac{1 \times 5}{4 \times 5} + \frac{1 \times 4}{5 \times 4} = \frac{5}{20} + \frac{4}{20} = \frac{9}{20}$

b) $\frac{2}{9} + \frac{1}{8}$

$= \frac{2 \times 8}{9 \times 8} + \frac{1 \times 9}{8 \times 9} = \frac{15}{72} + \frac{9}{72} = \frac{25}{72}$

c) $\frac{1}{2} + \frac{1}{7}$

$= \frac{1 \times 7}{2 \times 7} + \frac{1 \times 2}{7 \times 2} = \frac{7}{14} + \frac{2}{14} = \frac{9}{14}$

d) $2\frac{1}{3} + 3\frac{1}{4}$

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

$= \frac{4}{12} + \frac{3}{12} = \frac{9}{12} = 5\frac{9}{12}$

e) $3\frac{2}{15} + 4\frac{3}{2}$

$= 3 + 4 = 7, \frac{1 \times 5}{4 \times 5} + \frac{1 \times 4}{5 \times 4} = \frac{5}{20} + \frac{4}{20} = \frac{9}{20} = 7\frac{9}{20}$

f) $5\frac{1}{3} + 3\frac{1}{2}$

$= 5 + 3 = 8, \frac{1 \times 2}{3 \times 2} + \frac{1 \times 3}{2 \times 3} = \frac{2}{6} + \frac{3}{6} = \frac{5}{6} = 8\frac{8}{6}$

2. Add the following fractions:

a) $\frac{1}{4} + \frac{1}{5} + \frac{2}{6}$

$= \frac{1 \times 15}{4 \times 15} + \frac{1 \times 12}{5 \times 12} + \frac{2 \times 10}{6 \times 10}$

$= \frac{15}{60} + \frac{12}{60} + \frac{20}{60}$

$= \frac{15 + 12 + 20}{60} = \frac{47}{60}$

2	4, 5, 6
2	2, 5, 3
3	1, 5, 3
5	1, 5, 1
	1, 1, 1

L.C.M $= 2 \times 2 \times 3 \times 6 = 60$

b) $\frac{1}{2} + \frac{1}{3} + \frac{2}{7}$

$= \frac{1 \times 21}{2 \times 21} + \frac{1 \times 14}{3 \times 14} + \frac{2 \times 6}{7 \times 6}$

$= \frac{21}{42} + \frac{14}{42} + \frac{12}{42}$

$= \frac{21 + 14 + 12}{42} = \frac{47}{42} = 1\frac{5}{42}$

2	2, 3, 7
3	1, 3, 7
7	1, 1, 7
	1, 1, 1

L.C.M = 2 × 3 × 7 = 42

c) $\frac{1}{6} + \frac{1}{3} + \frac{1}{4}$

$= \frac{1 \times 2}{6 \times 2} + \frac{1 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3}$

$= \frac{2}{12} + \frac{4}{12} + \frac{3}{12}$

$= \frac{2 + 4 + 3}{12} = \frac{{}^{3}\cancel{9}}{\cancel{12}_{4}} = \frac{3}{4}$

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

L.C.M = 2 × 2 × 3 = 12

d) $\frac{3}{4} + \frac{2}{6} + \frac{6}{5}$

$= \frac{3 \times 15}{4 \times 15} + \frac{2 \times 10}{6 \times 10} + \frac{4 \times 12}{5 \times 12}$

$= \frac{45}{30} + \frac{20}{60} + \frac{48}{60}$

$= \frac{45 + 20 + 48}{60} = \frac{113}{60}$

$= 1\frac{53}{60}$

2	4, 6, 5
2	2, 3, 5
3	1, 3, 5
5	1, 1, 5
	1, 1, 1

L.C.M = 2 × 2 × 3 × 5 = 60

e) $3\frac{2}{15} + 4\frac{3}{2} + 5\frac{1}{15}$

$= 3 + 4 + 5 = 12 \quad = \frac{2}{15} + \frac{3}{2} + \frac{1}{5}$

$= \frac{2 \times 2}{15 \times 2} + \frac{3 \times 15}{2 \times 15} + \frac{1 \times 6}{5 \times 6}$

$= \frac{4}{30} + \frac{45}{30} + \frac{6}{30}$

$= \frac{4 + 45 + 6}{30} = 12\frac{{}^{11}\cancel{55}}{\cancel{30}_{6}} = 12\frac{11}{6}$

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

L.C.M = 2 × 3 × 5 = 30

f) $1\frac{4}{13} + 2\frac{3}{10} + 1\frac{5}{26}$

$= 1 + 2 + 1 = 4$ $= \frac{4 \times 10}{13 \times 10} + \frac{3 \times 13}{10 \times 13} + \frac{5 \times 5}{26 \times 5}$

$= \frac{40}{130} + \frac{39}{130} + \frac{25}{130}$

$= \frac{40 + 39 + 25}{130}$

$= 4\frac{\cancel{104}^{52}}{\cancel{130}_{65}}$

$= 4\frac{52}{65}$

2	13, 10, 25
5	13, 5, 13
13	13, 1, 13
	1, 1, 1

L.C.M $= 2 \times 5 \times 13 = 130$

3. Subtract the following fractions:

a) $\frac{1}{4} - \frac{1}{5}$

$= \frac{1 \times 5}{4 \times 5} - \frac{1 \times 4}{5 \times 4}$

$= \frac{5}{20} - \frac{4}{20} = \frac{1}{20}$

b) $3\frac{1}{9} - \frac{5}{11}$

$= 3\frac{1}{9} - \frac{5}{11}$

$= \frac{28 \times 11}{9 \times 11} - \frac{5 \times 9}{11 \times 9}$

$= \frac{308}{99} - \frac{45}{99} = \frac{263}{99}$

c) $\frac{7}{3} - \frac{11}{8}$

$= \frac{7 \times 8}{3 \times 8} - \frac{11 \times 3}{8 \times 3}$

$= \frac{56}{24} - \frac{33}{24} = \frac{23}{24}$

d) $1\frac{1}{3} - \frac{3}{4}$

$= \frac{4 \times 4}{3 \times 4} - \frac{3 \times 3}{4 \times 3}$

$= \frac{16}{12} - \frac{9}{12} = \frac{7}{12}$

e) $2\frac{1}{3} - 1\frac{1}{4}$

$= 2 - 1 = 1$, $\frac{1 \times 4}{3 \times 4} - \frac{1 \times 3}{4 \times 3}$

$= \frac{4}{12} - \frac{3}{12} = \frac{1}{12}$

$= 1\frac{1}{12}$

f) $5\frac{1}{3} - 4\frac{1}{4}$

$= 5 - 4 = 1$, $\frac{1 \times 4}{3 \times 4} - \frac{1 \times 3}{4 \times 3}$

$= \frac{4}{12} - \frac{3}{12} = \frac{1}{12}$

$= 1\frac{1}{12}$

4. Subtract the following fractions:

a) $\frac{8}{7} - \frac{1}{8} - \frac{3}{4}$

$= \frac{8 \times 8}{7 \times 8} - \frac{1 \times 7}{8 \times 7} - \frac{3 \times 14}{4 \times 14}$

$= \frac{64}{56} - \frac{7}{56} - \frac{42}{56}$

$= \frac{64 - 7 - 42}{56}$

$= \frac{15}{56}$

2	7, 8, 4
2	7, 4, 2
2	7, 2, 1
7	7, 1, 1
	1, 1, 1

b) $\frac{15}{16} - \frac{1}{4} - \frac{1}{2}$

$= \frac{15}{56} - \frac{1 \times 4}{4 \times 4} - \frac{1 \times 8}{2 \times 8}$

$= \frac{15}{16} - \frac{4}{16} - \frac{8}{16}$

$= \frac{15 - 4 - 8}{16}$

$= \frac{3}{16}$

c) $\frac{4}{7} - \frac{2}{5} - \frac{1}{10}$

$= \frac{4 \times 10}{7 \times 10} - \frac{2 \times 14}{5 \times 14} - \frac{1 \times 7}{10 \times 7}$

$= \frac{40}{70} - \frac{28}{70} - \frac{7}{70}$

$= \frac{40 - 28 - 7}{70}$

$= \frac{5}{70}$

d) $\frac{15}{16} - \frac{1}{4} - \frac{1}{2}$

$= \frac{15}{56} - \frac{1 \times 4}{4 \times 4} - \frac{1 \times 8}{2 \times 8}$

$= \frac{15}{16} - \frac{4}{16} - \frac{8}{16}$

$= \frac{15 - 4 - 8}{16}$

$= \frac{3}{16}$

e) $2\frac{3}{4} - \frac{2}{5} - \frac{1}{10}$

$= \frac{3 \times 5}{4 \times 5} - \frac{2 \times 4}{5 \times 4} - \frac{1 \times 2}{10 \times 2}$

$= \frac{15}{20} - \frac{8}{20} - \frac{2}{20}$

$= \frac{15 - 8 - 2}{20}$

$= \frac{7 - 2}{20}$

$= \frac{5}{20}$

f) $8\frac{9}{7} - \frac{3}{5} - 1\frac{1}{10}$

$= 8 - 1 , \frac{9 \times 10}{7 \times 10} - \frac{3 \times 14}{5 \times 14} - \frac{1 \times 7}{10 \times 7}$

$= 7 , \frac{90}{70} - \frac{42}{70} - \frac{7}{70}$

$= 7 , \frac{90 - 42 - 7}{70}$

$= 7\frac{41}{70}$

5. Shoaib ran 1 $\frac{1}{4}$ km and then took a rest he ran further 2 $\frac{1}{5}$ km. how for did he run?

Solution: $1\frac{1}{4} + 2\frac{1}{5}$

$1 + 2 , \frac{1 \times 5}{4 \times 5} + \frac{1 \times 4}{5 \times 4}$

$3\frac{5}{20} + \frac{4}{20}$

$3\frac{9}{20}$ km did he ran.

6. Wareesha made 3 $\frac{1}{2}$ pond cake her family ate 2 $\frac{1}{4}$ pond. How much cake left over?

Solution: $3\frac{1}{2} + 2\frac{1}{4}$

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

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

$1\frac{2 - 1}{4}$

$1\frac{1}{4}$ cake left over.

7. **Fatima ate $\frac{1}{15}$ of a chocolate bar. Azka ate $\frac{2}{15}$ of the chocolate bar. How much of the chocolate bar did they eat together?**

Solution: $\frac{1}{15} + \frac{2}{15}$

$\frac{\cancel{3}^{1}}{\cancel{15}_{5}} = \frac{1}{5}$ chocolate bar did they eat together.

Exercise 2

1. **Multiply the following fraction by a 1-digit number and elaborate it by diagram.**

a) $\frac{1}{3} \times 6$

$= \frac{1}{\cancel{3}_{1}} \times \frac{\cancel{6}^{2}}{} = \frac{2}{1} = 2$

b) $\frac{1}{2} \times 4$

$= \frac{1}{\cancel{2}_{1}} \times \frac{\cancel{4}^{2}}{} = \frac{2}{1} = 2$

c) $\frac{1}{4} \times 8$

$= \frac{1}{\cancel{4}_{1}} \times \frac{\cancel{8}^{2}}{} = \frac{2}{1} = 2$

c) $\frac{3}{4} \times 8$

$= \frac{3}{\cancel{4}_{1}} \times \frac{\cancel{8}^{2}}{} = 6$

e) $\frac{2}{5} \times 5$

$= \frac{2}{\cancel{5}_{1}} \times \frac{\cancel{5}^{1}}{} = 2$

f) $\frac{2}{3} \times 9$

$= \frac{2}{\cancel{3}_{1}} \times \frac{\cancel{9}^{3}}{} = 6$

2. **Multiply the following fraction:**

a) $\frac{1}{2} \times \frac{2}{3}$

$= \frac{1}{\cancel{2}_{1}} \times \frac{\cancel{2}^{1}}{3} = \frac{1}{3}$

b) $\frac{3}{4} \times \frac{6}{8}$

$= \frac{3}{\cancel{4}_{2}} \times \frac{\cancel{6}^{3}}{8} = \frac{9}{16}$

c) $\frac{2}{7} \times \frac{8}{14}$

$= \frac{\cancel{2}^{1}}{7} \times \frac{6}{\cancel{14}_{7}} = \frac{8}{49}$

d) $\frac{4}{5} \times \frac{9}{12}$

$= \frac{\cancel{4}^{1}}{5} \times \frac{9}{\cancel{12}_{3}} = \frac{9}{15}$

e) $\frac{3}{8} \times \frac{11}{15}$

$= \frac{\cancel{3}^{1}}{8} \times \frac{11}{\cancel{15}_{5}} = \frac{11}{40}$

f) $\frac{2}{6} \times \frac{1}{4}$

$= \frac{\cancel{2}^{1}}{6} \times \frac{1}{\cancel{4}_{2}} = \frac{1}{12}$

3. **Multiply the following fraction:**

a) $\frac{7}{3} \times \frac{18}{14}$

$= \frac{\cancel{7}^{1}}{\cancel{3}_{1}} \times \frac{\cancel{18}^{6}}{\cancel{14}_{2}} = \frac{6}{2}$

b) $\frac{11}{15} \times \frac{33}{22}$

$= \frac{\cancel{11}^{1}}{15} \times \frac{33}{\cancel{22}_{2}} = \frac{33}{30}$

c) $\frac{14}{42} \times \frac{56}{28}$

$= \frac{\cancel{14}^{1}}{\cancel{42}_{6}} \times \frac{\cancel{56}^{8}}{\cancel{28}_{2}} = \frac{8}{12}$

e) $\frac{12}{8} \times \frac{8}{3}$

$= \frac{12}{\cancel{8}_{1}} \times \frac{\cancel{8}^{1}}{3} = \frac{12}{3}$

f) $\frac{15}{4} \times \frac{8}{3}$

$= \frac{15}{\cancel{4}_{1}} \times \frac{\cancel{8}^{2}}{3} = \frac{30}{3}$

f) $\frac{19}{12} \times \frac{54}{38}$

$= \frac{\cancel{19}^{1}}{\cancel{12}_{2}} \times \frac{\cancel{54}^{9}}{\cancel{38}_{2}} = \frac{9}{4}$

4. Multiply the following fraction:

a) $2\frac{3}{4} \times 3\frac{4}{5}$

$= 2\frac{3}{4} = \frac{4 \times 2 + 3}{4} = \frac{8 + 3}{4} = \frac{11}{4}$

$= 3\frac{4}{5} = \frac{5 \times 3 + 4}{5} = \frac{15 + 4}{5} = \frac{19}{5}$

$= \frac{11}{4} \times \frac{19}{5} = \frac{209}{20}$

b) $5\frac{7}{12} \times 8\frac{7}{16}$

$= 5\frac{7}{12} = \frac{12 \times 5 + 7}{12} = \frac{60 + 7}{12} = \frac{67}{12}$

$= 8\frac{7}{16} = \frac{16 \times 8 + 7}{16} = \frac{128 + 4}{16} = \frac{135}{16}$

$= \frac{67}{12} \times \frac{135}{16} = \frac{9045}{192}$

c) $6\frac{5}{4} \times 8\frac{7}{5}$

$= 6\frac{5}{4} = \frac{4 \times 6 + 5}{4} = \frac{24 + 5}{4} = \frac{29}{4}$

$= 8\frac{7}{5} = \frac{5 \times 8 + 7}{5} = \frac{40 + 7}{5} = \frac{47}{5}$

$= \frac{29}{4} \times \frac{47}{5} = \frac{1363}{20}$

d) $11\frac{1}{11} \times 12\frac{1}{12}$

$= 11\frac{1}{11} = \frac{11 \times 11 + 1}{11} = \frac{121 + 1}{11} = \frac{121}{11}$

$= 12\frac{1}{12} = \frac{12 \times 12 + 1}{12} = \frac{144 + 1}{12} = \frac{145}{12}$

$= \frac{121}{11} \times \frac{145}{12} = \frac{17545}{132}$

e) $13\frac{1}{12} \times 11\frac{1}{10}$

$= 13\frac{1}{12} = \frac{12 \times 13 + 1}{12} = \frac{156 + 1}{12} = \frac{156}{12}$

$= 11\frac{1}{10} = \frac{10 \times 11 + 1}{10} = \frac{110 + 1}{10} = \frac{111}{10}$

$= \frac{157}{12} \times \frac{111}{10} = \frac{17427}{120}$

f) $2\frac{1}{3} \times 3\frac{1}{5}$

$= 2\frac{1}{3} = \frac{3 \times 2 + 1}{3} = \frac{7}{3}$

$= 3\frac{1}{5} = \frac{5 \times 3 + 1}{5} = \frac{16}{5}$

$= \frac{7}{3} \times \frac{16}{5} = \frac{112}{15}$

5. Multiply the following fraction:

a) $\frac{1}{2} \times \frac{1}{7} \times \frac{1}{5}$

$= \frac{1}{70}$

b) $\frac{2}{3} \times \frac{3}{5} \times \frac{5}{7}$

$= \frac{2}{1\cancel{3}} \times \frac{1\cancel{3}}{1\cancel{5}} \times \frac{1\cancel{5}}{7} = \frac{2}{7}$

c) $\frac{1}{4} \times \frac{3}{5} \times \frac{4}{9}$

$= \frac{1}{1\cancel{4}} \times \frac{3}{5} \times \frac{1\cancel{4}}{9} = \frac{3}{45}$

d) $\frac{9}{7} \times \frac{12}{13} \times \frac{26}{4}$

$= \frac{9}{7} \times \frac{3\cancel{12}}{1\cancel{13}} \times \frac{2\cancel{26}}{1\cancel{4}} = \frac{54}{7}$

6. Multiply the following fraction:

a) $2\frac{3}{4} \times 4\frac{5}{6} \times 5\frac{6}{7}$

$= \frac{11}{4} \times \frac{29}{6} \times \frac{41}{7} = \frac{13079}{168}$

b) $1\frac{1}{2} \times 2\frac{3}{4} \times 3\frac{4}{5}$

$= \frac{3}{2} \times \frac{11}{4} \times \frac{19}{5} = \frac{627}{40}$

c) $6\frac{30}{32} \times 3\frac{1}{2} \times 2\frac{5}{6}$

$= \frac{\overset{111}{\cancel{222}}}{32} \times \frac{7}{\underset{1}{\cancel{2}}} \times \frac{17}{6} = \frac{13209}{192}$

d) $5\frac{3}{9} \times 9\frac{6}{7} \times 7\frac{6}{9}$

$= \frac{48}{9} \times \frac{69}{7} \times \frac{69}{9} = \frac{228528}{567}$

7. How many months will be there in $2\frac{3}{4}$ years?

2 years = 12 × 2 = 24 months

$\frac{3}{\underset{1}{\cancel{4}}} \times \overset{3}{\cancel{12}} = 3 \times 3 \times 9$ months

24 + 9 = 33 months

8. How many days will be there in $3\frac{1}{4}$ weeks?

3 weeks = 7 × 3 = 21 days

$\frac{1}{4}$ weeks $\frac{1}{4} \times \frac{7}{1} = \frac{7}{4} = 1.75$

21 + 1.75 = 22.75

22.75 days

9. If Fatima covers 3 $\frac{1}{2}$ km, 8 times a day, how much distance will she cover in the day?

$3\frac{1}{2} \times 8$

$\frac{7}{\underset{1}{\cancel{2}}} \times \overset{4}{\cancel{8}}$

7 × 4 = 28 km

10. If there are 10 $\frac{1}{5}$ kg of apples in carton what will be the weight of 25 such cartons?

$10\frac{1}{5} \times 25$

$\frac{51}{1\cancel{5}} \times \overset{5}{\cancel{25}}$

$51 \times 5 = 255$ kg

11. A farmer used $\frac{2}{5}$ part of his farm to grow fruits. Apples are grown on $\frac{5}{8}$ of this portion what fraction of the total farm area is used to grow apples?

$\frac{\overset{1}{\cancel{2}}}{1\cancel{5}} \times \frac{\overset{1}{\cancel{5}}}{4\cancel{8}} = \frac{1}{4}$

$\frac{1}{4}$ area is used to grow apple.

12. If 6 $\frac{2}{5}$ m of cloth is used to stitch one dress, how much cloth will be used to stitch 12 such dresses?

$6\frac{1}{2} \times 12$

$\frac{13}{1\cancel{2}} \times \overset{6}{\cancel{12}}$

$13 \times 6 = 78$ dresses stitched.

Exercise 3

1. Add the following fractions:

a) $\frac{\frac{3}{8}}{\frac{4}{16}}$ $\frac{3}{8} \div \frac{16}{4}$

$\frac{3}{1\cancel{8}} \times \frac{\overset{2}{\cancel{16}}}{4} = \frac{3 \times 2}{8 \times 4} = \frac{6}{4}$

b) $\frac{\frac{4}{11}}{\frac{2}{11}}$ $\frac{4}{11} \div \frac{2}{11}$

$\frac{\overset{2}{\cancel{4}}}{1\cancel{11}} \times \frac{\overset{1}{\cancel{11}}}{1\cancel{2}} = \frac{2}{1} = 2$

c) $\frac{\frac{4}{11}}{\frac{2}{22}}$ $\frac{4}{11} \div \frac{2}{22}$

$\frac{\overset{2}{\cancel{4}}}{1\cancel{11}} \times \frac{\overset{2}{\cancel{22}}}{1\cancel{2}} = \frac{2 \times 2}{1 \times 1} = \frac{4}{1}$ 4

d) $\frac{\frac{1}{11}}{\frac{12}{121}}$ $\frac{1}{11} \div \frac{12}{121}$

$\frac{1}{1\cancel{11}} \times \frac{\overset{11}{\cancel{121}}}{1 12} = \frac{11}{12}$

e) $\dfrac{\frac{3}{13}}{\frac{3}{36}}$ $\quad \frac{3}{13} \div \frac{3}{26}$

$\frac{1}{1}\cancel{3} \times \frac{2}{1}\cancel{26} = \frac{2}{1} = 2$

f) $\dfrac{\frac{5}{9}}{\frac{7}{27}}$ $\quad \frac{5}{9} \div \frac{7}{27}$

$\frac{5}{1}\cancel{9} \times \frac{3}{7}\cancel{27} = \frac{15}{7}$

2. Solve the following fraction:

a) $\dfrac{2\frac{3}{4}}{1\frac{1}{4}} = 2\frac{3}{4} \div 1\frac{1}{4}$

$\frac{11}{4} \div \frac{5}{4}$

$\frac{11}{1}\cancel{4} \times \frac{1}{5}\cancel{4} = \frac{11}{5}$

b) $\dfrac{4\frac{1}{9}}{2\frac{1}{3}} = 4\frac{1}{9} \div 2\frac{1}{3}$

$\frac{37}{9} \div \frac{7}{3}$

$\frac{37}{3}\cancel{9} \times \frac{1}{7}\cancel{3} = \frac{37}{21}$

c) $\dfrac{5\frac{1}{3}}{2\frac{1}{9}} = 5\frac{1}{3} \div 2\frac{1}{9}$

$\frac{16}{3} \div \frac{19}{9}$

$\frac{16}{1}\cancel{3} \times \frac{3}{19}\cancel{9} = \frac{48}{19}$

d) $\dfrac{9\frac{1}{8}}{2\frac{1}{72}} = 9\frac{1}{8} \div 2\frac{1}{72}$

$\frac{73}{8} \div \frac{145}{72}$

$\frac{73}{1}\cancel{8} \times \frac{9}{145}\cancel{72} = \frac{657}{145}$

e) $\dfrac{13\frac{1}{4}}{2\frac{1}{16}} = 13\frac{1}{4} \div 2\frac{1}{16}$

$\frac{53}{4} \div \frac{33}{16}$

$\frac{53}{1}\cancel{4} \times \frac{4}{33}\cancel{16} = \frac{212}{33}$

f) $\dfrac{5\frac{1}{3}}{3\frac{1}{25}} = 5\frac{1}{3} \div 3\frac{1}{24}$

$\frac{16}{3} \div \frac{73}{24}$

$\frac{16}{1}\cancel{3} \times \frac{8}{73}\cancel{24} = \frac{128}{73}$

3. How many sugar packets can be packed of capacity $3\frac{1}{2}$ kg from $31\frac{1}{2}$ kg sugar?

$31\frac{1}{2} \div 3\frac{1}{2}$

$\frac{63}{2} \div \frac{7}{2}$

$\frac{{}^{9}\cancel{63}}{{}_{1}\cancel{2}} \times \frac{{}^{1}\cancel{7}}{{}_{1}\cancel{2}} = \frac{9}{1} = 9$ kg sugar packed.

4. A cake takes $1\frac{1}{2}$ hours to bake. How many cakes can be baked in $16\frac{1}{2}$ hours?

$16\frac{1}{2} \div 1\frac{1}{2}$

$\frac{33}{2} \div \frac{3}{2}$

$\frac{{}^{11}\cancel{33}}{{}_{1}\cancel{2}} \times \frac{{}^{1}\cancel{3}}{{}_{1}\cancel{2}} = \frac{11}{1} = 11$ cakes baked.

5. How many glasses of capacity $\frac{1}{2}$ litres can be filled from a bottle of $6\frac{1}{2}$ litres?

$6\frac{1}{2} \div 1\frac{1}{2}$

$\frac{13}{2} \div \frac{2}{1}$

$\frac{13}{2} \times \frac{1}{2} = \frac{26}{2} = 13$

6. How many pieces of $\frac{2}{13}$ metres of a wire can be cut from a $\frac{18}{13}$ metres long wire?

$\frac{18}{13} \div \frac{2}{13}$

$\frac{{}^{9}\cancel{18}}{{}_{1}\cancel{13}} \times \frac{{}^{1}\cancel{13}}{{}_{1}\cancel{2}} = \frac{9}{1} = 9$ metres.

Review Exercises

1. Tick the correct option

a) $\frac{1}{4} + \frac{1}{3} =$ _____

i) $\frac{11}{12}$ ii) $\frac{7}{12}$ ✓ iii) $\frac{5}{12}$ iv) $\frac{7}{6}$

b) $\frac{1}{3} - \frac{1}{4} =$ _____

i) $\frac{3}{5}$ ii) $\frac{1}{12}$ ✓ iii) $\frac{7}{12}$ iv) $\frac{5}{12}$

c) $\frac{3}{7} \times \frac{8}{3} =$ ____

i) $\frac{7}{8}$ ii) $\frac{8}{7}$ ✓ iii) $\frac{7}{4}$ iv) $\frac{16}{3}$

d) $\frac{2}{7} \div \frac{7}{2} =$_____

i) 1 ii) $\frac{4}{49}$ ✓ iii) $\frac{49}{4}$ iv) $\frac{3}{14}$

2. Solve the following

a) $\frac{7}{20} + \frac{3}{4}$

$= \frac{7}{20} + \frac{3 \times 5}{4 \times 5}$

$= \frac{7}{20} + \frac{15}{20} = \frac{22}{20}$

b) $\frac{1}{5} + \frac{7}{4}$

$= \frac{1 \times 4}{5 \times 4} + \frac{7 \times 5}{4 \times 5}$

$= \frac{4}{20} + \frac{35}{20} = \frac{39}{20}$

c) $\frac{7}{5} + \frac{4}{3} + \frac{5}{6}$

$= \frac{7 \times 6}{5 \times 6} + \frac{4 \times 10}{3 \times 10} + \frac{5 \times 5}{6 \times 5}$

$= \frac{42}{30} + \frac{40}{30} + \frac{25}{30}$

$= \frac{42 + 40 + 25}{30} = \frac{107}{30}$

d) $\frac{1}{2} + \frac{4}{3} + \frac{4}{4}$

$= \frac{1 \times 6}{2 \times 6} + \frac{1 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3}$

$= \frac{6}{12} + \frac{4}{12} + \frac{3}{12}$

$= \frac{6 + 4 + 3}{12} = \frac{13}{12}$

e) $\frac{6}{7} + \frac{7}{6} + \frac{1}{3}$

$= \frac{6 \times 6}{7 \times 6} + \frac{7 \times 7}{6 \times 7} + \frac{1 \times 14}{3 \times 14}$

$= \frac{36}{42} + \frac{49}{42} + \frac{14}{42}$

$= \frac{36 + 49 + 14}{42} = \frac{99}{42}$

f) $1\frac{3}{4} + 2\frac{1}{3}$

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

$= \frac{21}{12} + \frac{28}{12}$

$= \frac{21 + 28}{12} = \frac{49}{12}$

3. Solve the following

a) $2\frac{1}{7} + \frac{1}{6} + \frac{1}{3}$

$= \frac{15 \times 6}{7 \times 6} + \frac{1 \times 7}{6 \times 7} + \frac{1 \times 14}{3 \times 14}$

$= \frac{90}{42} + \frac{7}{42} + \frac{14}{42}$

$= \frac{90 + 7 + 14}{42} = \frac{111}{42}$

b) $1\frac{3}{7} + \frac{2}{14} + \frac{3}{7}$

$= \frac{10 \times 2}{7 \times 2} + \frac{2}{14} + \frac{3 \times 2}{7 \times 2}$

$= \frac{20}{14} + \frac{2}{14} + \frac{6}{14}$

$= \frac{20 + 2 + 6}{14} = \frac{28}{14}$

c) $3\frac{1}{4} + 4\frac{1}{3} + \frac{3}{2}$

$= \frac{13 \times 3}{4 \times 3} + \frac{13 \times 4}{3 \times 4} + \frac{3 \times 6}{2 \times 6}$

$= \frac{39}{12} + \frac{52}{12} + \frac{18}{12}$

$= \frac{39 + 52 + 18}{12} = \frac{109}{12}$

d) $1\frac{1}{2} + 3\frac{1}{3} + \frac{1}{5}$

$= \frac{3 \times 15}{2 \times 15} + \frac{10 \times 10}{3 \times 10} + \frac{3 \times 2}{7 \times 2}$

$= \frac{75}{30} + \frac{100}{30} + \frac{6}{30} = \frac{181}{30}$

e) $1\frac{1}{7} + 3\frac{1}{2} + 1\frac{3}{4}$

$= \frac{5 \times 4}{3 \times 4} + \frac{7 \times 6}{2 \times 6} + \frac{7 \times 3}{4 \times 3}$

$= \frac{20}{12} + \frac{42}{12} + \frac{21}{12}$

$= \frac{20 + 42 + 21}{12} = \frac{83}{12}$

4. Solve the following

a) $7\frac{1}{6} - 3\frac{1}{2}$

$= \frac{43}{6} - \frac{7 \times 3}{2 \times 3}$

$= \frac{43}{6} - \frac{21}{6}$

$= \frac{43 - 21}{6} = \frac{22}{6}$

b) $5\frac{1}{6} - 2\frac{1}{2}$

$= \frac{16 \times 2}{3 \times 2} - \frac{5 \times 3}{2 \times 3}$

$= \frac{32}{6} - \frac{15}{6}$

$= \frac{32 - 15}{12} = \frac{17}{12}$

c) $8\frac{1}{3} - 3\frac{1}{4}$

$= \frac{25 \times 4}{3 \times 4} - \frac{13 \times 3}{4 \times 3}$

$= \frac{100}{12} - \frac{39}{12}$

$= \frac{100 - 39}{12} = \frac{61}{12}$

d) $6\frac{1}{5} - 3\frac{1}{2}$

$= \frac{31 \times 2}{5 \times 2} - \frac{7 \times 5}{2 \times 5}$

$= \frac{62}{10} - \frac{35}{10}$

$= \frac{62 - 35}{10} = \frac{27}{10}$

5. Solve the following

a) $\frac{3}{4} \times \frac{7}{6}$

$= \frac{3}{4} \times \frac{7}{6} = \frac{21}{24}$

b) $\frac{5}{8} \times \frac{3}{10}$

$= \frac{5}{8} \times \frac{3}{10} = \frac{15}{80}$

c) $\frac{6}{11} \times \frac{22}{3}$

$= \frac{\cancel{6}^{2}}{\cancel{11}_{1}} \times \frac{\cancel{22}^{2}}{\cancel{3}_{1}} = \frac{4}{1} = 4$

d) $\frac{3}{19} \times \frac{57}{6}$

$= \frac{\cancel{3}^{1}}{\cancel{19}_{1}} \times \frac{\cancel{57}^{3}}{\cancel{6}_{2}} = \frac{3}{2}$

6. Solve the following

a) $2\frac{3}{4} \times 3\frac{2}{4}$

$= \frac{11}{\cancel{4}_{2}} \times \frac{\cancel{14}^{7}}{4} = \frac{77}{8}$

b) $2\frac{1}{3} \times 3\frac{1}{7} \times 2\frac{1}{4}$

$= \frac{\cancel{7}^{1}}{\cancel{3}_{2}} \times \frac{22}{\cancel{7}_{1}} \times \frac{\cancel{9}^{3}}{4} = \frac{66}{4}$

c) $3\frac{1}{7} \times 4\frac{2}{3}$

$= \frac{22}{\cancel{7}_{1}} \times \frac{\cancel{14}^{2}}{3} = \frac{44}{3}$

d) $2\frac{3}{6} \times 4\frac{4}{5} \times 3\frac{2}{4}$

$= \frac{\cancel{15}^{3}}{\cancel{6}_{1}} \times \frac{\cancel{24}^{4}}{\cancel{5}_{1}} \times \frac{14}{4} = \frac{3 \times 4 \times 14}{4} = \frac{168}{4}$

7. Solve the following

a) $1\frac{4}{3} \div 3\frac{1}{4}$

$= \frac{7}{3} \div \frac{13}{4}$

$= \frac{7}{3} \times \frac{4}{13} = \frac{28}{39}$

b) $2\frac{1}{3} \div 3\frac{1}{2}$

$= \frac{7}{3} \div \frac{7}{2}$

$= \frac{\cancel{7}^{1}}{3} \times \frac{2}{\cancel{7}_{1}} = \frac{2}{3}$

c) $\frac{7}{8} \div \frac{3}{4}$

$= \frac{7}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{3} = \frac{7}{6}$

d) $\frac{5}{7} \div \frac{12}{14}$

$= \frac{5}{\cancel{7}_{2}} \times \frac{\cancel{14}^{2}}{12} = \frac{10}{12}$

8. Azka prepared 3 $\frac{1}{4}$ litre cold milk for the guest, she served 2 $\frac{1}{3}$ litres. How much milk was left?

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

$\frac{13 \times 3}{4 \times 3} - \frac{7 \times 4}{3 \times 4}$

$\frac{39}{12} - \frac{28}{12} = \frac{39 \times 28}{12} = \frac{11}{12}$

9. Add product of $\frac{4}{5}$ and $\frac{3}{8}$ to the quotient $\frac{3}{15} \div \frac{4}{12}$

a) $\frac{4}{5} \times \frac{3}{8}$

$\frac{\cancel{4}^{1}}{5} \times \frac{3}{\cancel{8}_{2}} = \frac{3}{10}$

b) $\frac{3}{15} \div \frac{4}{12}$

$\frac{3}{15} \times \frac{12}{4} = \frac{36}{60}$

10. Subtract $\frac{1}{3}$ from the product of $\frac{3}{4} \times \frac{4}{5} \times \frac{5}{6}$

a) $\frac{3}{4} \times \frac{4}{5} \times \frac{5}{6}$

$\frac{\cancel{3}^{1}}{4} \times \frac{4}{\cancel{5}_{2}} \times \frac{5}{6} = \frac{1}{2}$

b) $\frac{1}{3} - \frac{1}{2}$

$\frac{1 \times 2}{3 \times 2} - \frac{1 \times 3}{2 \times 3} = \frac{2}{6} - \frac{3}{6} = \frac{1}{6}$

Unit 4 Decimal Numbers and Percentages

Exercise 1

1. Compare the following decimal numbers using the symbols (< , > or =).

a) 0.61 > 0. 51

b) 0.21 < 8.71

c) 0.34 < 20.89

d) 6.67 > 6.23

e) 72.3 > 72.03

f) 7.07 < 7.1

2. Write the following decimal numbers in descending order:

a) 3.41, 4.43, 3.43, 4.41

4.43, 4.41, 3.43, 3.41

b) 7.81, 6.31, 7.91, 6.41

7.91, 7.81, 6.41, 6.31

c) 2.31, 3.41, 2.11, 3.31

3.41, 3.31, 2.31, 2.11

d) 3.1, 3.01, 2.01, 3.11

3.11, 3.1, 3.01, 2.01

e) 1.1, 1.2, 2.1, 2.2

2.2, 2.1, 1.2, 1.1

f) 1.3, 3.1, 3.2, 3.02

3.2, 3.1, 3.02, 1.3

3. Write the following decimal numbers in ascending order:

a) 8.2, 11.4, 11.38, 8.3

8.2, 8.3, 11.38, 11.4

b) 13.56, 16.02, 15.99, 13.46

3.46, 3.56, 5.99, 6.02

c) 2.34, 3.45, 4.56, 4.34

2.34, 3.45, 4.34, 4.56

d) 241.1, 242.2, 243.3, 243.03

1.1, 2.2, 3.03, 3.3

e) 671.2, 782.1, 663.1, 763.01

1.2, 2.1, 3.01, 3.1

f) 532.3, 543.4, 551.1, 541.02

1.02, 1.1, 2.3, 3.4

4. Solve the following.

a) 3.121 + 4.371

$$\begin{array}{r} 3.121 \\ +\ 4.371 \\ \hline 7.490 \end{array}$$

b) 2.321 + 7.359

$$\begin{array}{r} 2.321 \\ +\ 7.359 \\ \hline 9.680 \end{array}$$

c) 33.22 + 44.33 + 77.39

$$\begin{array}{r} 33.22 \\ 44.33 \\ +\ 77.39 \\ \hline 154.94 \end{array}$$

a) 3.121 + 4.371

$$\begin{array}{r} 3.121 \\ +\ 4.371 \\ \hline 7.490 \end{array}$$

b) 2.321 + 7.359

$$\begin{array}{r} 2.321 \\ +\ 7.359 \\ \hline 9.680 \end{array}$$

c) 33.22 + 44.33 + 77.39

$$\begin{array}{r} 33.22 \\ 44.33 \\ +\ 77.39 \\ \hline 154.94 \end{array}$$

5. Solve the following.

a) 9.510 – 3.39

$$\begin{array}{r} 9.\overset{1}{\cancel{5}}\overset{11}{1}\overset{0}{0} \\ -\ 3.392 \\ \hline 6.118 \end{array}$$

b) 12.45 – 2.76

$$\begin{array}{r} 12.45 \\ -\ 2.76 \\ \hline 9.37 \end{array}$$

c) 555.7 – 462.9

$$\begin{array}{r} 5.55 \\ -\ 4.44 \\ \hline 1.11 \end{array}$$

d) 1.999 – 1.009

$$\begin{array}{r} 1.999 \\ -\ 1.009 \\ \hline 0.990 \end{array}$$

e) 478.1 + 121.9

$$\begin{array}{r} 4.992 \\ -\ 3.142 \\ \hline 1.850 \end{array}$$

f) 34.35 + 21.48

$$\begin{array}{r} 2.0\overset{1}{\cancel{2}}\overset{1}{1} \\ -\ 2.018 \\ \hline 0.003 \end{array}$$

6. Shoaib spent Rs. 11.50 on Saturday and Rs. 19.25 on Tuesday. How much amount did he spend in two days.

11.50 + 19.25

Working

$$\begin{array}{r} {\scriptstyle 1}1\ 1\ .\ 5\ 0 \\ +\ 1\ 9\ .\ 2\ 5 \\ \hline 3\ 0\ .\ 7\ 5 \end{array}$$

30.75 a,ount spend in two days.

7. Wareesha ran 15.75 km on first day and 16.35 km on second day. Find the total distance she covered in both days.

15.75+16.75

$$\begin{array}{r} {\scriptstyle 1}\ {\scriptstyle 1}\ \ {\scriptstyle 1}\ 1\ 5\ .\ 7\ 5 \\ +\ 1\ 6\ .\ 3\ 5 \\ \hline 3\ 2\ .\ 0\ 0 \end{array}$$

She covered 32km distance in both days.

8. A tailor had 15.75 metres cloth, he used 12.25 metres cloth. How much cloth did left with him?

15.75-12.25

$$\begin{array}{r} 1\ 5\ .\ 7\ 5 \\ -\ 1\ 2\ .\ 2\ 5 \\ \hline 0\ .\ 3\ 5\ 0 \end{array}$$

He had 3.50 metre colth left with him

Exercise 2

1. Solve the following.

a)5.131 + 2.001

$$\begin{array}{r} 5\ .\ 1\ 3\ 1 \\ +\ 2\ .\ 0\ 0\ 1 \\ \hline 7\ .\ 1\ 3\ 1 \end{array}$$

b) 3.211+ 5.914

$$\begin{array}{r} {\scriptstyle 1}3\ .\ 2\ 1\ 1 \\ +\ 5\ .\ 9\ 1\ 4 \\ \hline 9\ .\ 1\ 2\ 5 \end{array}$$

c) 1.194 + 3.876

$$\begin{array}{r} {\scriptstyle 1}\ {\scriptstyle 1}\ {\scriptstyle 1}\ 1\ .\ 1\ 9\ 4 \\ +\ 3\ .\ 8\ 7\ 6 \\ \hline 5\ .\ 0\ 7\ 0 \end{array}$$

d) 6.188 + 2.109

$$\begin{array}{r} 6.188 \\ +\ 2.109 \\ \hline 8.297 \end{array}$$

e) 5.008 + 3.044

$$\begin{array}{r} 5.008 \\ +\ 3.044 \\ \hline 8.052 \end{array}$$

f) 6.925 + 5.555

$$\begin{array}{r} 6.925 \\ +\ 5.555 \\ \hline 13.480 \end{array}$$

2. Solve the following.

a) 6.554 - 1.309

$$\begin{array}{r} 6.554 \\ -\ 1.309 \\ \hline 5.245 \end{array}$$

b) 6.188 - 2.109

$$\begin{array}{r} 6.188 \\ -\ 2.109 \\ \hline 4.079 \end{array}$$

c) 1.999-1.088

$$\begin{array}{r} 1.999 \\ -\ 1.088 \\ \hline 0.911 \end{array}$$

d) 3.562 - 1.210

$$\begin{array}{r} 3.562 \\ -\ 1.210 \\ \hline 2.352 \end{array}$$

e) 4.999 - 3.444

$$\begin{array}{r} 4.999 \\ -\ 3.444 \\ \hline 1.555 \end{array}$$

f) 2.018 - 1.840

$$\begin{array}{r} 2.018 \\ -\ 1.840 \\ \hline 0.178 \end{array}$$

3. Solve the following.

a) 1.65 × 10 = 16.5

b) 3.54 × 100 = 354.0

c) 3.06 × 1000 = 3060

d) 8.75 × 10 = 87.5

e) 4.72 × 10 = 47.2

d) 3.03 × 100 = 303

4. Solve the following.

a) 2.31 × 12

$$\begin{array}{r} 2.31 \\ \times\ 12 \\ \hline 462 \\ 2310 \\ \hline 27.72 \end{array}$$

b) 3.41 × 11

$$\begin{array}{r} 3.41 \\ \times\ 11 \\ \hline 341 \\ 3410 \\ \hline 37.51 \end{array}$$

c) 5.21 ×15

$$\begin{array}{r} 5.21 \\ \times\ 15 \\ \hline 2605 \\ 5210 \\ \hline 78.15 \end{array}$$

d) 1.99 × 19

$$\begin{array}{r} {\scriptstyle 8}\quad {\scriptstyle 8} \\ 1.99 \\ \times\ 19 \\ \hline {\scriptstyle 1}\ {\scriptstyle 1} \\ 1791 \\ 1990 \\ \hline 37.81 \\ \hline \end{array}$$

e) 1.33 × 19

$$\begin{array}{r} {\scriptstyle 2}\quad {\scriptstyle 2} \\ 1.33 \\ \times\ 19 \\ \hline 1197 \\ 1330 \\ \hline 25.27 \\ \hline \end{array}$$

f) 7.31 × 21

$$\begin{array}{r} 7.31 \\ \times\ 21 \\ \hline 1731 \\ 14620 \\ \hline 153.51 \\ \hline \end{array}$$

5. Solve the following.

a) 2.31 × 3.41

$$\begin{array}{r} 2.31 \\ \times\ 3.41 \\ \hline 231 \\ 19240 \\ +\ 69300 \\ \hline 7.8771 \\ \hline \end{array}$$

b) 4.71 × 3.21

$$\begin{array}{r} {\scriptstyle 2} \\ 4.71 \\ \times\ 3.21 \\ \hline 471 \\ {\scriptstyle 1} \\ 19420 \\ +14\ 1300 \\ \hline 15.1191 \\ \hline \end{array}$$

c) 5.21 × 7.31

$$\begin{array}{r} {\scriptstyle 1} \\ 5.21 \\ \times\ 7.31 \\ \hline 521 \\ {\scriptstyle 1}\ {\scriptstyle 1} \\ 15630 \\ +36\ 4700 \\ \hline 38.0851 \\ \hline \end{array}$$

d) 1.21 × 2.31

$$\begin{array}{r} 1.21 \\ \times\ 2.31 \\ \hline 121 \\ 3630 \\ +\ 24200 \\ \hline 2.7951 \\ \hline \end{array}$$

b) 3.12 × 23.13

$$\begin{array}{r} 2.12 \\ \times\ 2.13 \\ \hline 1936 \\ {\scriptstyle 1} \\ 3120 \\ +\ 62400 \\ \hline 6.6456 \\ \hline \end{array}$$

c) 1.11 × 2.22

$$\begin{array}{r} 1.11 \\ \times\ 2.22 \\ \hline 222 \\ 2220 \\ +\ 22200 \\ \hline 2.4642 \\ \hline \end{array}$$

6. Solve the following.

a) 2.31 ÷ 10

2.31 ÷ 10 = 0.231

b) 4.39 ÷ 100

4.39 ÷ 100 = 0.0439

c) 3.98 ÷ 1000

3.98 ÷ 1000 = 0.00398

d) 5.82 ÷ 100

5.72 ÷ 100 = 0.0572

e) 4.31 ÷ 10

4.31 ÷ 10 = 0.431

f) 5.55 ÷ 100

5.55 ÷ 100 = 0.0555

7. Solve the following.

a) 2.52 ÷ 12

$$\frac{252}{100} \div 12$$

$$\frac{\overset{21}{\cancel{252}}}{100} \times \frac{1}{\cancel{12}_{1}}$$

$$\frac{21}{100} = 0.28$$

b) 5.44 ÷ 16

$$\frac{544}{100} \div 16$$

$$\frac{\overset{34}{\cancel{544}}}{100} 1 \frac{1}{\cancel{16}_{1}}$$

$$\frac{21}{100} = 0.34$$

c) 3.08 ÷ 11

$$\frac{308}{100} \div 11$$

$$\frac{\overset{28}{\cancel{308}}}{100} 1 \frac{1}{\cancel{11}_{1}}$$

$$\frac{28}{100} = 0.28$$

d) 3.38 ÷ 13

$$\frac{338}{100} \div 13$$

$$\frac{\overset{26}{\cancel{229}}}{100} \times \frac{1}{\cancel{13}_{1}}$$

$$\frac{26}{100} = 0.26$$

e) 5.04 ÷ 14

$$\frac{504}{100} \div 14$$

$$\frac{\overset{36}{\cancel{504}}}{100} 1 \frac{1}{\cancel{14}_{1}}$$

$$\frac{36}{100} = 0.36$$

f) 3.45 ÷ 15

$$\frac{345}{100} \div 15$$

$$\frac{\overset{23}{\cancel{345}}}{100} 1 \frac{1}{\cancel{15}_{1}}$$

$$\frac{23}{100} = 0.23$$

8. Solve the following.

a) 7.70 ÷ 3.5

$$\frac{770}{100} \div \frac{35}{100}$$

$$\frac{\overset{22}{\cancel{770}}}{\cancel{100}_{10}} \times \frac{\overset{1}{\cancel{10}}}{\cancel{35}_{1}}$$

$$\frac{22}{10} = 2.2$$

b) 6.25 ÷ 7.8

$$\frac{624}{100} \div \frac{78}{10}$$

$$\frac{\overset{8}{\cancel{624}}}{\cancel{100}_{10}} \times \frac{\overset{1}{\cancel{10}}}{\cancel{78}_{1}}$$

$$\frac{8}{10} = 0.8$$

c) 8.16 ÷ 6.8

$$\frac{816}{100} \div \frac{68}{10}$$

$$\frac{\overset{12}{\cancel{816}}}{\cancel{100}_{10}} \times \frac{\overset{1}{\cancel{10}}}{\cancel{68}_{1}}$$

$$\frac{12}{10} = 0.12$$

d) 8.55 ÷ 5.7

$$\frac{855}{100} \div \frac{57}{10}$$

$$\frac{\overset{15}{\cancel{855}}}{\cancel{100}_{10}} \times \frac{\overset{1}{\cancel{10}}}{\cancel{57}_{1}}$$

$$\frac{15}{10} 1.5$$

e) 9.76 ÷ 61

$$\frac{976}{100} \div \frac{78}{10}$$

$$\frac{\overset{16}{\cancel{976}}}{\cancel{100}_{10}} \times \frac{\overset{1}{\cancel{10}}}{61_{1}}$$

$$\frac{16}{10} = 1.6$$

f) 9.76 ÷ 16

$$\frac{976}{100} \div \frac{16}{10}$$

$$\frac{\overset{61}{\cancel{976}}}{\cancel{100}_{10}} \times \frac{\overset{1}{\cancel{10}}}{\cancel{16}_{1}}$$

$$\frac{61}{10} = 6.1$$

9. Solve the following.

a) $\frac{69}{30}$

$\frac{\cancel{69}^{23}}{\cancel{30}_{10}} = \frac{23}{10}$

$10\overline{)23}$ → 2.3

$-\ 20$

30

$-\ 30$

00

2.3

a) $\frac{72}{45}$

$\frac{\cancel{72}^{24}}{\cancel{45}_{15}} = \frac{24}{15}$

$15\overline{)24}$ → 1.6

$-\ 15$

90

$-\ 90$

00

1.6

a) $\frac{99}{55}$

$\frac{\cancel{99}^{9}}{\cancel{55}_{5}} = \frac{9}{\cancel{5}}$

$5\overline{)9}$ → 1.8

$-\ 5$

40

$-\ 40$

00

1.8

d) $\frac{34}{25}$

$25\overline{)\cancel{3}^{1}4}$ → 1.36

-25

$\cancel{9}^{8}0$

-75

150

$-\ 150$

000

1.36

e) $\frac{30}{25}$

$\frac{\cancel{30}^{6}}{\cancel{25}_{5}} = \frac{6}{5}$

$5\overline{)6}$ → 1.2

$-\ 5$

10

$-\ 10$

00

1.2

f) $\frac{45}{30}$

$\frac{\cancel{45}^{9}}{\cancel{30}_{6}} = \frac{9}{6}$

$6\overline{)9}$ → 1.5

$-\ 6$

30

$-\ 30$

00

1.5

10. Hareem has a strip of cloth 8.16 cm long. She needs small pieces of 1.36 cm long to make a doll house. How many pieces can she cut from her strip?

$8.16 \div 1.36$

$\frac{816}{100} \div \frac{136}{100}$

$\frac{\cancel{816}^{6}}{\cancel{100}_{1}} \times \frac{\cancel{100}^{1}}{\cancel{136}_{1}}$

$\frac{6}{1} = 6$

6 bags filled from the rice bay.

11. Shoaib has a bag of rice weight 9.04 kg. How many bags of weight 2.26 kg can be filled from the rice bag?

$$9.04 \div 2.26$$

$$\frac{904}{100} \div \frac{226}{100}$$

$$\frac{\cancel{904}^{4}}{\cancel{100}_{1}} \times \frac{\cancel{100}^{1}}{\cancel{226}_{1}}$$

$$\frac{4}{1} = 4$$

4 bags filled from the rice bay.

12. Fatima has a water bottle of capacity 9.09 litres. How many bottles of capacity 3.03 litre can be filled from the bottle?

$$9.09 \div 3.03$$

$$\frac{909}{100} \div \frac{303}{100}$$

$$\frac{\cancel{909}^{3}}{\cancel{100}_{1}} \times \frac{\cancel{100}^{1}}{\cancel{303}_{1}}$$

$$\frac{3}{1} = 3$$

3 bottle filled from the rice bottle.

Exercise 3

1. Round off the given decimal numbers to the nearest tenth

a) 4.345
4.345 ≈ 4.35

b) 5.329
5.329 ≈ 5.33

c) 2.891
2.891 ≈ 2.89

d) 2.312
2.312 ≈ 2.31

e) 7.239
7.239 ≈ 7.24

f) 5.219
5.219 ≈ 5.22

2. Round off the given decimal numbers to the nearest hundredth.

a) 7.279
7.279 ≈ 8.280

b) 1.235
1.235 ≈ 8.280

c) 2.315
2.315 ≈ 8.280

d) 8.218
8.218 ≈ 8.280

e) 9.765
9.765 ≈ 8.280

f) 3.451
3.451 ≈ 8.280

3. Estimate the sum of the given decimal numbers rounding off the nearest tenth and hundredth

a) 3.452 + 5.672
3.452 + 5.672 = 9.124

b) 2.319 + 5.623
2.319 + 5.623 = 7.942

c) 2.345 + 4.329
32.345 + 4.329 = 6.674

d) 1.236 7.239
1.236 7.239 = 8.475

Answer	nearest tenth	nearest hundreth
a. 9.124	7.12	9.120
b. 7.942	7.94	7.940
c. 6.674	6.67	6.670
d. 8.475	8.48	8.480

4. Estimate the difference of the given decimal numbers by rounding off to the nearest tenth and hundredth.

a) 4.362 – 1.215
4.362 – 1.215 = 3.147

b) 3.456 – 2.123
3.456 – 2.123 = 1.333

c) 5.626 – 3.123
5.626 – 3.123 = 2.503

d) 8.432 – 7.112
8.432 – 7.112 = 1.32

Answer	nearest tenth	nearest hundreth
a. 3.147	3.20	3.150
b. 1.333	1.33	1.330
c. 2.503	2.50	2.500
d. 1.32	1.30	1.320

Exercise 4

1. Convert the following percentages into fractions

a) 43%

$\frac{43}{100}$

b) 55%

$\frac{55}{100}$

c) 48%

$\frac{48}{100}$

d) 33%

$\frac{33}{100}$

e) 42%

$\frac{42}{100}$

f) 92%

$\frac{92}{100}$

2. Convert the following fractions into percentages

a) $\frac{12}{25}$ %

$\frac{12 \times 4}{25 \times 4} = \frac{48}{100} = 48\%$

b) $\frac{18}{20}$ %

$\frac{18 \times 5}{20 \times 5} = \frac{90}{100} = 90\%$

a) $\frac{4}{5}$ %

$\frac{4 \times 20}{5 \times 20} = \frac{80}{100} = 80\%$

a) $\frac{19}{50}$ %

$\frac{19 \times 2}{50 \times 2} = \frac{38}{100} = 38\%$

b) $\frac{23}{25}$ %

$\frac{23 \times 4}{25 \times 4} = \frac{92}{100} = 92\%$

a) $\frac{9}{20}$ %

$\frac{9 \times 5}{20 \times 5} = \frac{45}{100} = 45\%$

3. Convert the following percentages into decimals:

a) 15%

$\frac{15}{100} = 0.15$

b) 47%

$\frac{47}{100} = 0.47$

c) 62%

$\frac{62}{100} = 0.62$

d) 96%

$\frac{96}{100} = 0.96$

e)16%

$\frac{16}{100} = 0.16$

f) 74%

$\frac{74}{100} = 0.74$

4. Convert the following decimal numbers into percentages

a) 0.75%

$0.75\% = \frac{75}{100} = 75\%$

b) 0.02%

$0.02\% = \frac{2}{100} = 2\%$

c) 0.4%

$0.4\% = \frac{4}{10} = \frac{4}{10} = \frac{4}{100} = 40\%$

d) 0.04%

$0.04\% = \frac{4}{100} = 4\%$

c) 0.8%

$0.8\% = \frac{8}{10} = \frac{8}{10} = \frac{8}{100} = 80\%$

c) 0.9%

$0.9\% = \frac{9}{10} = \frac{9}{10} = \frac{9}{100} = 90\%$

5. Sarab scored 35 marks out of 50, what percentage did he score?

$$\frac{35 \times 2}{50 \times 2} = \frac{70}{100} = 70\%$$

6. In an exam seventy five students appeared, thirty got first division . Find the percentage of the students who got first division.

$$\frac{30}{75} \times 100 = \frac{3000}{75} = 40\%$$

$$0.4 \times 100 = 40\%$$

7. There were eighty students in a class twenty were absent. Find the percentage of the students who were present in the class.

$$80 - 20 = 60 = \frac{60}{80} \times 100 = \frac{6000}{80} = 75\%$$

8. Freeha got 8 marks out of 10 in urdu and 35 marks out of 50 in English . In which subject her performance is better?

$\frac{8}{10}$ in urdu $\frac{35 \times 2}{50 \times 2} = \frac{70}{100} = 70\%$ in english

80% in urdu her performance is good.

Review Exercise

1. Compare the decimal number using signs <,> or =.

a) 2.35 < 4.12

b) 7.23 > 5.72

c) 3.12 > 1.23

d) 2.34 < 2.34

2. Add the following decimal numbers.

a) 2.345 + 4.234
2.345 + 4.234 = 6.579

b) 7.234 + 3.213
7.234 + 3.213 = 10.447

c) 1.234 + 3.456
1.234 + 3.456 = 4.69

d) 1.231 + 2.432
1.231 + 2.432 = 3.663

3. Subtract the following

a) 4.523 - 2.345
4.523 - 2.345 = 2.178

b) 7.21 -3.412
7.21 -3.412 = 3.801

c) 7.111 - 3.222
7.111 - 3.222 = 3.889

d) 6.123 - 1.213
6.123 - 1.213 = 4.91

4. Solve the following

a) 2.34 × 21

2.34 × 21 = 49.14

b) 4.56 × 98

4.56 × 98 = 446.88

c) 4.12 × 35

4.12 × 35 = 144.20

d) 7.23 × 29

7.23 × 29 = 209.67

5. Solve the following

a) 2.36 × 4.35

2.36 × 4.35 = 10.1790

b) 4.73 × 2.13

4.73 × 2.13 = 10.0749

c) 1.12 × 2.31

1.12 × 2.31 = 2.5872

d) 1.11 × 2.22

71.11 × 2.22 = 2.4642

6. Covert decimal number to fraction

a) 0.75

$\frac{75}{100}$

b) 0.8

$\frac{8 \times 10}{10 \times 10} = \frac{80}{100}$

c) 0.6

$\frac{6 \times 10}{10 \times 10} = \frac{60}{100}$

7. Solve the following

a) 2.34 ÷ 10

2.34 ÷ 10 = 0.234

b) 3.45 ÷ 100

3.45 ÷ 100 = 0.0345

c) 4.72 ÷ 1000

4.72 ÷ 1000 = 0.00472

d) 7.92 ÷ 10

7.92 ÷ 10 = 0.792

e) 3.66 ÷ 3

3.66 ÷ 3 = 1.22

f) 4.54 ÷ 4

4.54 ÷ 4 = 1.21

g) 7.02 ÷ 22

7.02 ÷ 22 = 0.319

h) 14.3 ÷ 22

14.3 ÷ 22 = 0.65

i) 6.50 ÷ 25

6.50 ÷ 25 = 0.26

j) 6.05 ÷ 55

6.05 ÷ 55 = 0.11

8. Solve the following

a) 29.4 ÷ 2.1

29.4 ÷ 2.1 = 14

b) 44.8 ÷ 3.2

44.8 ÷ 3.2 = 14

c) 35.5 ÷ 2.3

35.5 ÷ 2.3 = 15

d) 52.5 ÷ 2.5

52.5 ÷ 2.5 = 21

e) 94.5 ÷ 4.5

94.5 ÷ 4.5 = 21

e) 50.4 ÷ 1.2

50.4 ÷ 1.2 = 42

9. Convert fraction to decimal numbers

a) $\frac{3}{4}$

$\frac{3}{4} = \frac{3 \times 25}{4 \times 25} = \frac{75}{100}$

0.75

a) $\frac{4}{5}$

$\frac{4}{5} = \frac{4 \times 20}{5 \times 20} = \frac{80}{100}$

0.8

a) $\frac{3}{5}$

$\frac{3}{5} = \frac{3 \times 20}{5 \times 20} = \frac{60}{100}$

0.6

10. Round off the given decimal numbers to the nearest tenth

a) 3.456

3.456 ≈ 3.46

b) 4.312

4.312 ≈ 4.31

c) 2.349

2.349 ≈2.35

11. Round off the given decimal numbers to the nearest hundredth

a) 4.345

4.345 ≈ 4.350

b) 7.239

7.239 ≈ 7.240

c) 8.312

8.312 ≈ 8.310

12. Estimate sum of the decimal number by rounding off to the nearest

a) 4.345 + 3.459

4.345 + 3.459 = 7.804 ≈ 7.80

b) 4.789 + 1.234

4.789 + 1.234 = 6.023 ≈ 6.02

c) 2.123 + 3.121

2.123 + 3.121 = 5.244 ≈ 5.24

c) 7.892 + 1.112

7.892 + 1.112 = 9.004 ≈ 9.00

13. Estimate difference of the decimal numbers by rounding off to the nearest hundredth

a) 7.239 - 3.456

7.239 - 3.456 = 3.783 ≈ 3.780

b) 4.231 - 2.123

4.231 - 2.123 = 2.108 ≈ 2110

c) 8.123 - 7231

8.123 - 7231 = 0.892 ≈ 0.890

d) 8.123 - 2.345

48.123 - 2.345 = 5..778 ≈ 5.780

14. Convert the percentage to fraction.

a) 78%

$\frac{75}{100}$

b) 68%

$\frac{68}{100}$

c) 84%

$\frac{84}{100}$

d) 12%

$\frac{12}{100}$

e) 28%

$\frac{28}{100}$

f) 25%

$\frac{25}{100}$

Unit 5 Distance and Time

Exercise 1

1. Add or subtract the following.

a)

m	cm
6	54
+ 3	22
9	76

b)

cm	cm
10	6
- 8	3
2	3

c)

m	mm
78	79
- 51	26
27	53

d)

m	cm
45	68
+ 23	25
68	93

e)

km	m
276	358
+ 713	141
989	499

f)

m	mm
25	95
- 13	84
12	11

g)

155.45 km
- 121.31 km
034.23km

h)

658.72 km
- 235.89 km
894.61km

i)

502.95km
- 311.58 km
194.35 km

2. Find

i) 25 % of 300 km

$\frac{25}{100} \times 300 = 25 \times 3 = 75$

ii) 40 % of 450 km

$\frac{40}{100} \times 450 = 0.4 \times 450 = 180$

iii) 60 % of 275 m

$\frac{60}{100} \times 275 = 0.6 \times 275 = 0.7 \times = 365$

iv) 70 % of 365 mm

$\frac{70}{100} \times 275 = 0.7 \times 365 = 255.5$

1. Ahmed's ruler is 15 cm 8mm long and that of Sara's ruler is 15 cm 6 mm long. Find:

a) The total length of both the rulers.

	15cm	8mm
	15cm	6mm
	31cm	4mm

Total length of both ruler are 31cm 4mm

b) Whole ruler's is shorter and how much?

	15cm	8mm
-	15cm	6mm
	0cm	2mm

Sara ruler is 2mm shoprter than Ahmed ruler.

2. Ali's book is 20 cm 6 mm long and 11.5 cm wide. What is the difference between length and breadth?

length

	20cm	6mm
-	11cm	5mm
	09cm	1mm

The differnce of length and breadth is 9.1cm _ 9cm 1mm.

3. Qamar ran for 300 m and then further 530 m to complete one round. What is the total distance he ran?

	300m	
+	530m	
	830m	

Total distance he ran is 830m.

4. Hashan's father goes on a business trip traveling 105.66 km for city A and then further to city B 52.24 km. Find the:

a) Total distance traveled by Hashan's father upto city B.

$$\begin{array}{r} {}^{1}105.66\text{km} \\ +\quad 52.24\text{km} \\ \hline 157.90\text{km} \end{array}$$

Total distance 157.90km upto city B

b) Difference of distance between city A and city B.

$$\begin{array}{r} 105.66\text{km} \\ -\quad 52.24\text{km} \\ \hline 53.42\text{km} \end{array}$$

Difference of city A ad B is 53.42km

c) If his father comes back to his home from city B, find the total distance traveled from home to city B and then back to home.

Total distance from city to hone 157.90km and the same distance he travelled to bach to hone.

5. The distance from Ajmal's home to school is 4 km. He covers 25% of the distance on foot and the remaining distance by bus. Find the distance that he covers on foot.

He covers 25% of the distance on foot remaining by bus find he distance he covers on foot

25% of 4 km

$$\frac{25}{100} \times \frac{4}{1} = \frac{\cancel{100}}{\cancel{100}} = 1 \text{ km.}$$

He covers 1 km on foot

Exercise 2

1. Convert into min

a) $\frac{2}{5}$ hr

$$\frac{2}{5}\text{ hr} = \frac{2}{\cancel{5}_{1}} \times \cancel{60}^{12}$$

2 × 12 = 24 minutes

0.4 hr × 60 = 24 minutes

b) $\frac{11}{2}$ hr

$$\frac{11}{2}\text{ hr} = \frac{11}{\cancel{2}_{1}} \times \cancel{60}^{30}$$

11 × 12 = 330 minuts

0.5 hr × 60 = 330 minutes

c) $\frac{3}{4}$ hr

$\frac{3}{4}$ hr = $\frac{3}{\cancel{4}_{1}} \times \cancel{60}^{15}$

3 × 15 = 30 minutes

0.5 hr × 60 = 30 minutes

d) $\frac{1}{12}$ hr

$\frac{1}{12}$ hr = $\frac{1}{\cancel{12}_{1}} \times \cancel{24}^{2}$

$\frac{2}{1}$ minutes

e) $\frac{1}{365}$ of an year.

$\frac{1}{365} \times 525960$

= 1,440.9863 minuutes

d) 30% of 2 hrs

2hr = 120minutes

$\frac{30}{100} \times 120 = 36$

36 minutes

g) $\frac{7}{30}$ of a month

$\frac{7}{30} \times 43800$

= 10220.0112 minuutes

2. Convert into hrs

a) 360 mn into hrs

360 ÷ 60

6 hours

b) 54 % of day

$\frac{54}{100} \times \frac{24}{1} = \frac{1296}{100}$

= 12.96 hrs

c) $\frac{4}{5}$ of an year

1 year = 8765.82 hrs

$\frac{4}{5} = 0.8$

0.8 ×8.765.82

7012.656 hrs

d) $\frac{1}{10}$ × 880 min

$\frac{88}{60}$ = 1.467 hours

3. It took Rizwan 25min to reach his school. He left his home at 6.55am. At what time will he reach school?

$6^{1} : 55^{1}$am

\+ 25

7 : 80

80 - 60 = 20 min

He reach school at 7: 20 am

4. The cricket T-20 match started at 5.30pm and finished at 9.40pm. How long the match continue? Give your answer in hrs and min.

$$\begin{array}{r} 9:40 \\ +\ 5:30 \\ \hline 4:10 \\ \hline \end{array}$$

→ 4 hrs 10 min

5. A football game remains undecided in a 90 min play. They are given 20 min further. Find the total time in hrs and in min?

$$\begin{array}{r} 90 \text{ min} \\ 20 \text{ min} \\ \hline 110 \text{ min} \\ \hline \end{array}$$

110 - 60 = 50 min = 1 hrs 50 min

6. Ahsan spends $\frac{1}{3}$ of the day in sleeping , $\frac{1}{4}$ of the day at school and $\frac{1}{12}$ of the day in playing. Find the remaining time giving your answer as percentage.

$\frac{1}{3}$ of $\cancel{24}^{8}$ = 8 hrs in sleeping

$\frac{1}{4}$ of $\cancel{24}^{6}$ = 6 hrs in school

$\frac{1}{12}$ of $\cancel{24}^{2}$ = 2 hrs in playing

8 hrs in persantage

$\frac{8}{12} \times 100 = 33.3\%$

Exercise 3

1. Change the years into months

1) 10 year into months

12 months in a year

10 × 12 = 120 months

1) 5 years into month

12 month in a year

5 × 12 = 60 months

3) 8 years into months

12 month in a year

8 × 12 = 72 month

2. Change the followings into days.

a) 5 month into days

5×30

150 days

b) 6 weeks

6×30

180 days

c) $\frac{1}{2}$ month

15days

d) $\frac{1}{7}$ of 49 weeks

$\frac{1}{7} \times \cancel{49}^{7} = 7$ week

7×30

210 days

d) $\frac{3}{2}$ month

$\frac{3}{2} = 1.5$

1.5×30

45 days

3. Look at the month of October 2021. Anas goes to school every day except Saturday and Sunday. How many days did Anas go to school?

October = 31 days

31 - 10 = 21

Anas go to school for 21 days in the month of october 2021

4. Saad went for football training for 1 hours each day for 6 weeks. How many hours did he spend in training?

One week

$1\frac{1}{2}$ hr $\times 7$

$\frac{3}{2} \times \frac{7}{1}$

$\frac{21}{2} = 10.5$

for week

10.5×3

63 hrs

$$\begin{array}{r} 10.3 \\ \times \quad 6 \\ \hline 63.0 \end{array}$$

5. Taha went to visit China on 27th March 2021 and return on 15th May 2021. How many days he spent in China?

March — 4 days

April — 30 days

May — 15 days

4 + 30 + 15 = 49 days.

6. Ali Raza went to Turkey in 2015 and return after 5 years. In which year he return to Pakistan?

2015 + = 2020

He returned to pakistan in 2020

Review Exercise

3. Express these lengths in metres

a) 32 km metre

32 × 1000

= 320000m

b) 56.9 km

56.9 × 1000

= 56900m

c) 2.53 km

2.53 × 1000

= 2530m

3. Express into centimetres.

a) 7m

7 × 100

7cm

b) 6.23m

6.23 × 100

62300cm

c) 2.8m

2.8 × 100

280cm

4. Express these lengths into millimetres.

a) 6000m ⟶ km

60 ÷ 1000

6km

b) 5600m ⟶ km

5600 ÷ 1000

5.6km

c) 235m ⟶ km

235 ÷ 100

0.235km

d) 400cm ⟶ m

400 ÷ 100

4m

e) 482cm ⟶ m

482 ÷ 100

4.82m

f) 52.9cm

52.9 ÷ 100

0.529m

5. Add or Subtract the following.

i) 17 km 360 m + 8 k m 472 m

	11km	360m
+	8km	472m
	25km	432m

ii) 72 km 882 m – 60 km 792 m

	72km	$^{7}8^{1}82$m
-	60km	792m
	12km	090m

iii) 10 m 60 cm + 18 m 28 cm

	10m	60cm
+	18m	28cm
	28m	88cm

v) 26 m 75 cm – 9 m 32 cm

	26m	75cm
-	9m	32cm
	17m	43cm

6. Ali has two study tables, one 2 m 18 cm long and other 1m10cm long.

i) What is the total length of both tables?

$$\begin{array}{rrr} & 2\text{m} & 18\text{cm} \\ - & 1\text{m} & 10\text{cm} \\ \hline & 1\text{m} & 08\text{cm} \end{array}$$

Difference of both study table are 1m 8cm.

7. Convert into minutes.

i) 3 hours

1 hrs = 60min

3 60 = 180 minutes

ii) 2.5 hours

1 hrs = 60min

2.5 × 6 = 150 minutes

iii) $\frac{1}{6}$ hours

1 hrs = 60min

2.5 × 6 = 150 minutes

8. Convert into sec.

i) 120 min

1 min – 60 sec

120 × 60 = 7200 sec

ii) 3 min 40 sec

3 × 60 = 180 sec

180sec + 40 sec = 220 sec

iii) 10% of an hour

$\frac{10}{100} \times \frac{60}{1} = \frac{600}{100}$ = 6 mints

6min sec

6 × 60 = 360 sec

9. Convert into hours

i) 120 min

120 ÷ 60 = 2 hrs

ii) 1200min

1200 ii) 1200min 60 = 2 hrs

iii) 60% of a day

$\frac{60}{100} \times 24 = 14.4$hrs

0.6 × 24 = 14.4 hrs

iv) 2 years

$\frac{1}{7}$ of a week

$\frac{1}{7} \times 7 = 1$ day

1 day = 24 hrs

v) 1.5 months 2 weeks

$\frac{3}{6}$ of 36 min

$\frac{3}{6} \times \overset{60}{\cancel{360}} = 180$ min

180min = 3 hrs

10. Convert into days.

i) 3 weeks

$3 \times 7 = 21$ days

ii) 2.5 months

2 month = 60 days

0.5 month 15 days

60 + 15 = 75 days

iii) 50% of 2 weeks

$\frac{50}{100} \times 2 = \frac{10}{10} = 1$ week

7 days

iv) 2 years

365 × 2

730 days

v) 1.5 month 2 week

45 days + 14 days

59 days

vi) 2 years 3 weeks

730 days + 21 days

751 days

11. Add or subtract

i) 6 hour 30 min + 12 hour 10 min

6hr	30min
12 hr	10 min
18 hr	40 min

ii) 8 months 2 weeks + 3 months 1 week

8 month	2 week
3 month	1 week
11 month	3 week

iii) 20 years 7 months – 12 years 5 months

20 years	7 month
12 year	5 month
08 year	2 month

12. Asim spent 6 hrs for study, 2 hrs playing games, 6hrs in school and rest for sleeping.

Find

i) Total time for study and playing games.

6gr + 2hr = 8 hrs

ii) time spent on sleeping

24 - 12 = 10 hrs on slepping

iii) fraction of time spent in school

$\frac{6}{24} = \frac{1}{4}$

ii) time spent on sleeping

$\frac{10}{24} \times 100 = 41.3\%$

Unit 6 Unitary Method

Exercise 1

1. A car runs for 300km in 25 litres of petrol. How many Kilometres the car will run in 20 litres of petrol?

In 1km in how many much distance

$\frac{\cancel{300}^{12}}{\cancel{25}_{12}}$ = 12km

In 20litre = 20 × 12 = 240km

2. The cost of a dozen crayon is Rs. 300. Find the cost of 20 crayons.

1 crayon lost $\frac{\cancel{300}^{25}}{\cancel{12}_{1}}$ = 25Rs.

1 crayon 25 Rs.

20 × 25 = 500 Rs.

3. Qadir bought 3 dozens of banana for Rs. 300. Find the cost of (i) 5 dozens (ii) 1 banana

1 dozen lost $\frac{300}{3}$ 100Rs.

5 dozen 5 × 100 = 500Rs.

1 banana = $\frac{100}{12}$ = 8.3Rs.

4. Aqeel has two brothers and two sisters. His father bought 8 ice cream bars for his children. But one sister didn't like ice cream. How many ice cream bars can each child have if each child got equal number of ice cream bars.

8 ice creams bars

4 children

1 child got $\frac{8}{4}$ = 2.

2 icecream bar each child will get

Review Exercise

1. Find the followings

i) The cost of 5 glasses is Rs. 350, Find the cost of one glass.

Cost 1 glass = $\frac{350^{70}}{5_1}$ = 70Rs.

ii) The cost of 12 similar locks is Rs. 3600. Find the cost of one lock.

Cost 1 lock = $\frac{3600^{300}}{12_1}$ = 300Rs.

iii) The cost of 13 similar bags is Rs. 5200. Find the cost of one bag.

Cost 13 similar vags = $\frac{5200^{400}}{13_1}$ = 400Rs.

2. A motorbike runs 120 km using 2 ℓ petrol.

in 1 litre $\frac{120}{2}$ = 60km

i) How many kilometre it runs 4.5 ℓ?

60 × 4.5 = 270km

ii) How much petrol is used if it runs 210 km?

$\frac{210}{60}$ = 3.5 litre.

3. Yasir bought 4 dozen of oranges for Rs. 420.

i) Find the cost of one orange

1 orange cost $\frac{420}{48}$ = 8.75

ii) Find the cost of 5 dozen oranges.

2.75 × 60 = 525Rs.

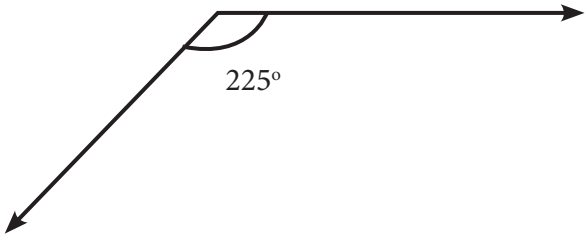
iii) How many dozens of oranges can be bought for Rs. 630?

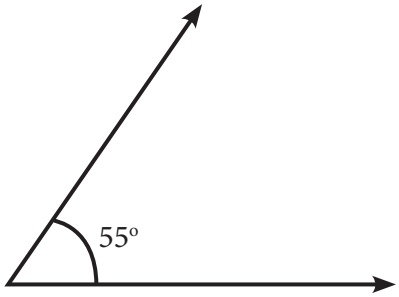
$\frac{630}{8.75} = \frac{72}{12}$ orange = 6 dozen

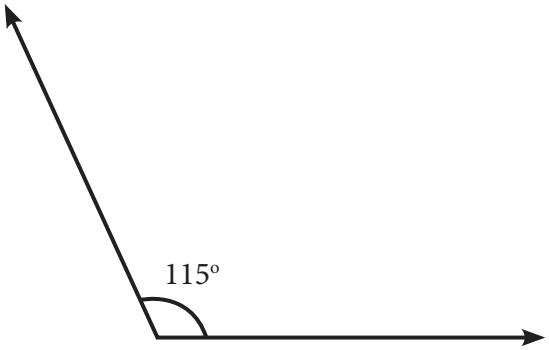
Unit 7 Geometry

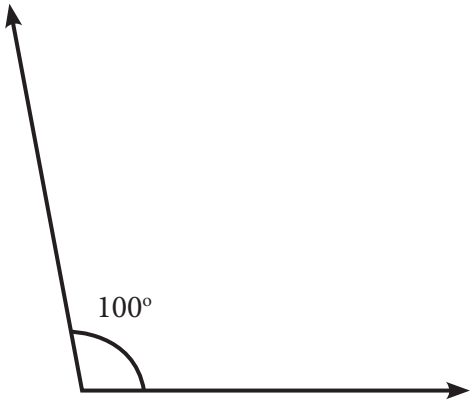
Exercise 1

1. Measure the angles

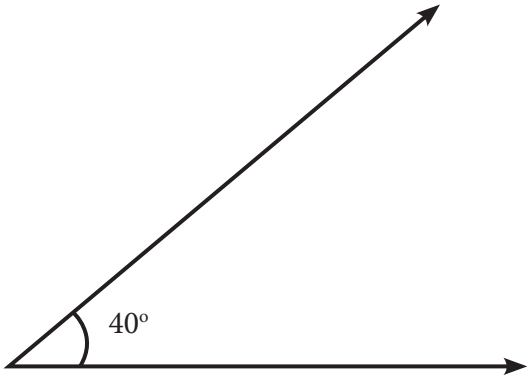


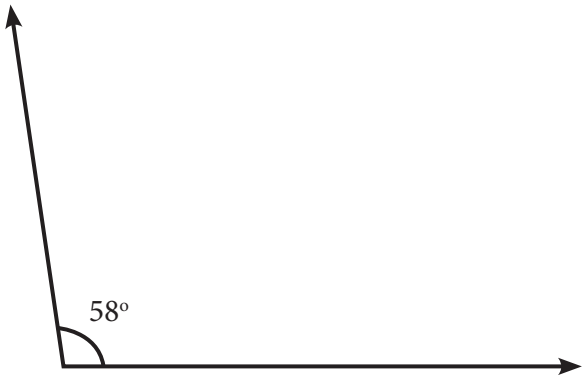


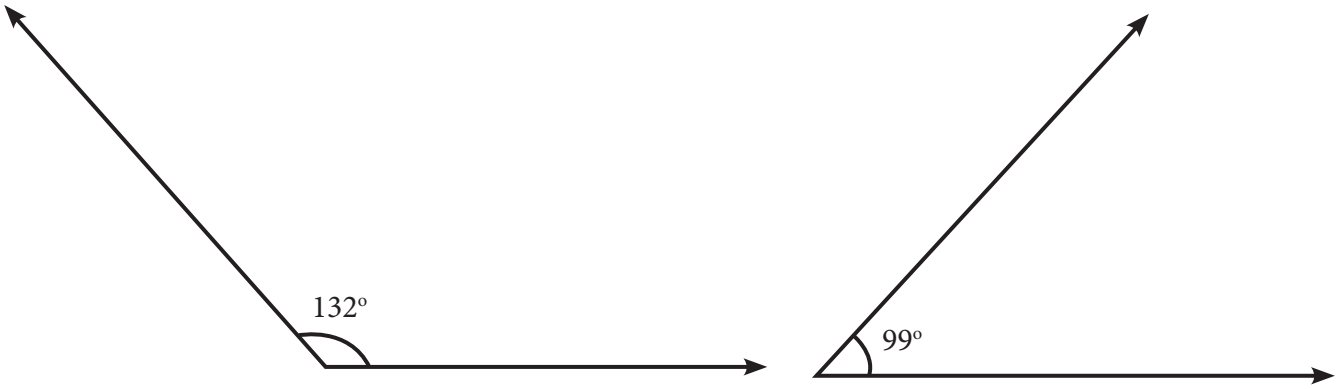




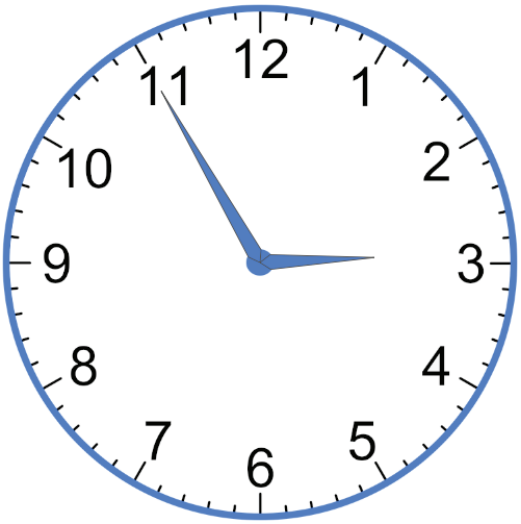
2. Draw the angles 40° , 58° , 132° , 99°







3. Identify the angles as acute, obtuse and right in the following real life examples.



obtuse angle

right angle

acute angle

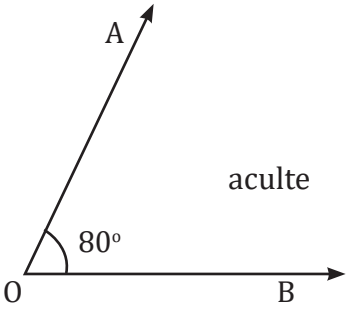
right angle

obtuse angle

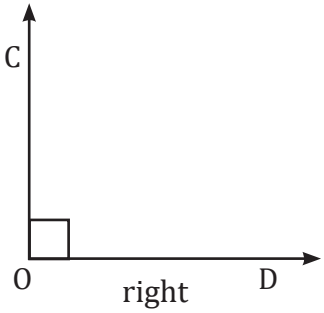
Exercise 2

1. Identify acute , obtuse, right, straight, reflex , adjacent, non-adjacent, complementary and supplementary angles of the followings:

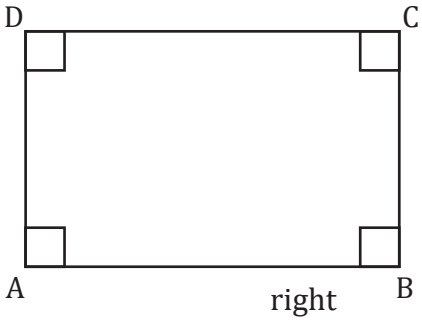
a)



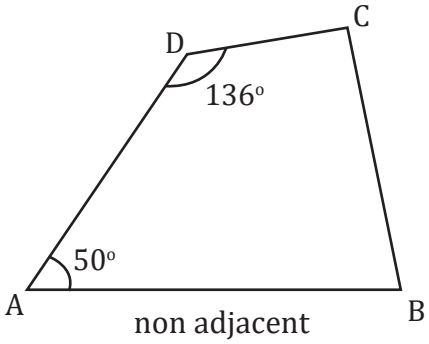
b)



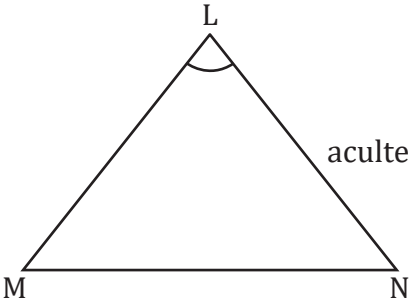
c)



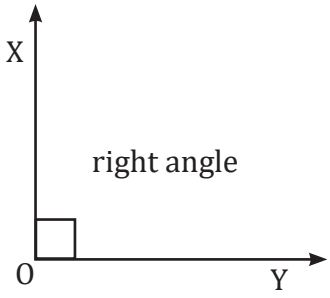
d)



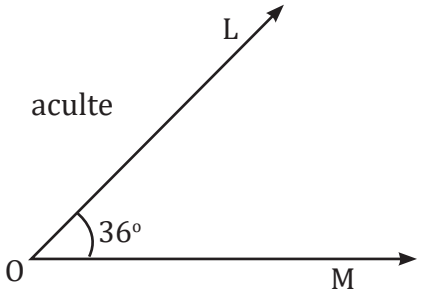
e)



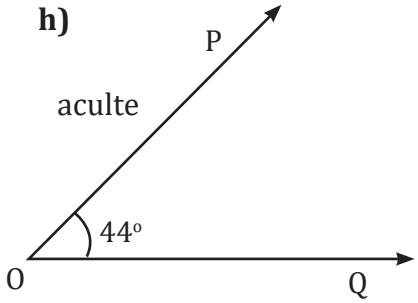
f)



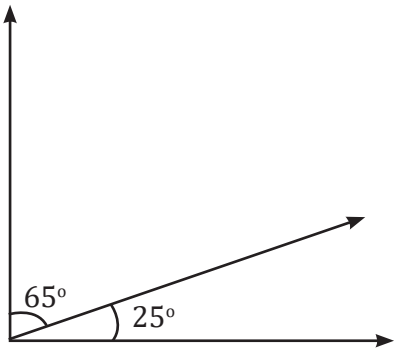
g)



h)

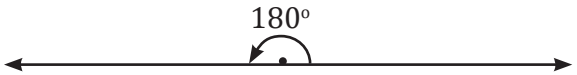


i)



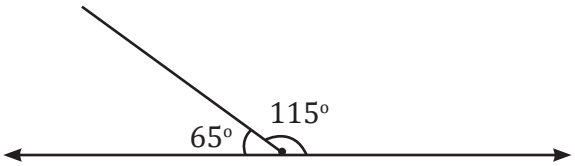
complementary

j)



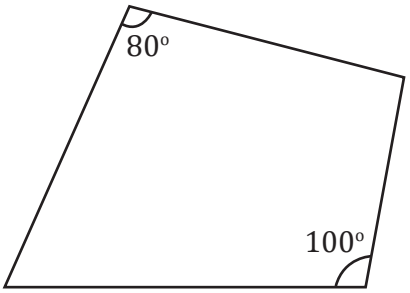
Straight

k)



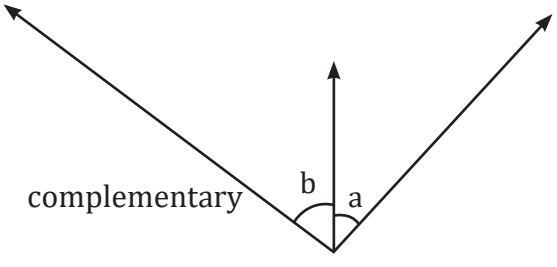
Suplementary

l)

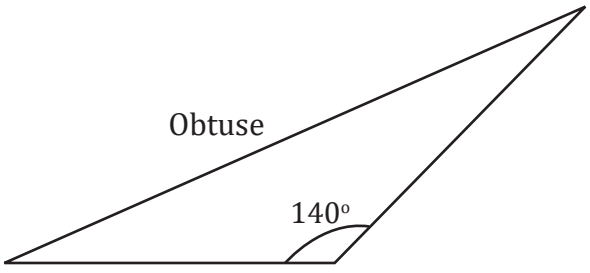


non adjacent

m)

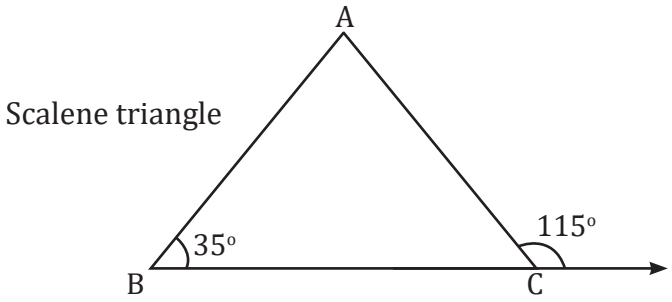


n)



Exercise 3

1. a) What type of triangle ABC is?



b) m∠PNL = 60°

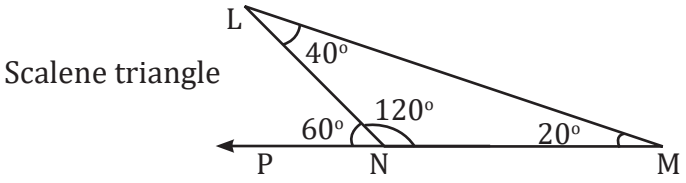
i) Calculate m∠LMN

∠ L = 40°

∠ M = 120°

∠ N = 180 -120 - 40 = 20°

ii) What type of triangle LMN is?

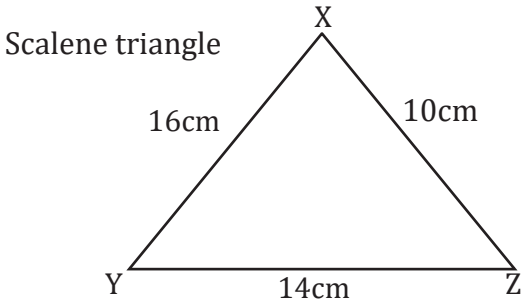


c) Total length of 3 sides of XYZ is 40cm.

i) Calculate m$\overline{XZ}$

Calculate m$\overline{XZ}$ = 10cm (40-30)

ii) What type of triangle is XYZ?



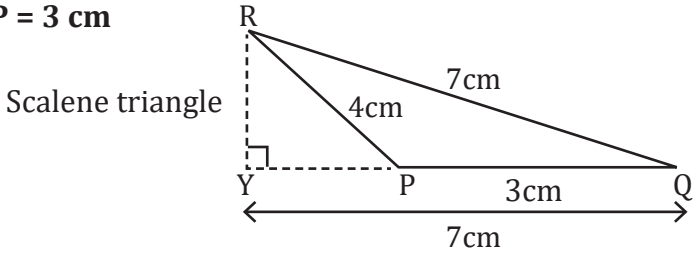
Total boundary length of a 2-D figure is called perimetre

d) In the figure , m$\overline{YQ}$ = 7cm , m$\overline{YP}$ = 3 cm

m$\overline{PR}$ = 4cm , m$\overline{RQ}$ = 7cm

i) Calculate m$\overline{PQ}$

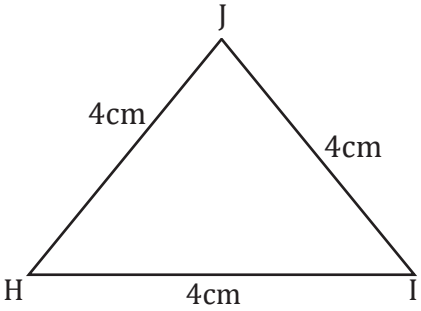
ii) What type of triangle PQR is?



e) The HIJ is equilateral

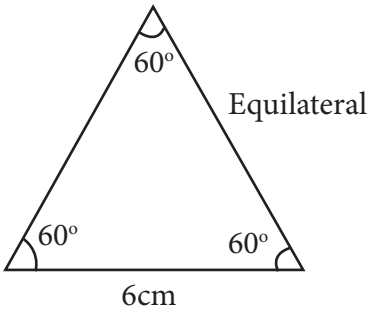
m$\overline{HI}$ = 4cm

Calculate m$\overline{HJ}$ = 4cm

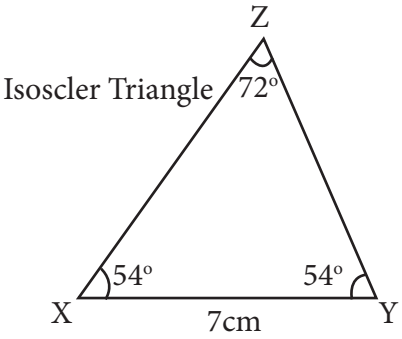


Exercise 4

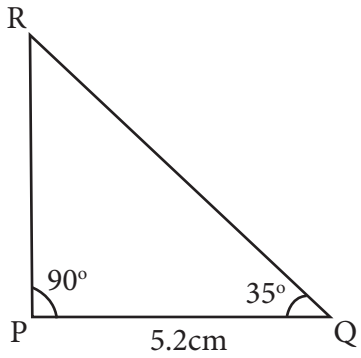
1. Construct an equilateral triangle of side 6 cm .



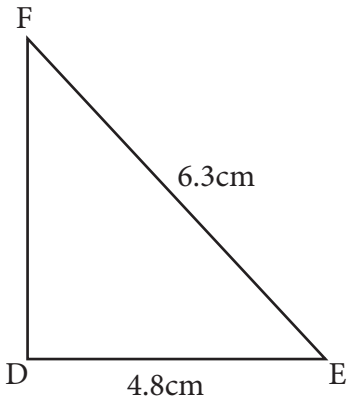
2. Construct an isosceles triangle XYZ in which m∠X = m∠Y = 54° and mXY = 7cm.



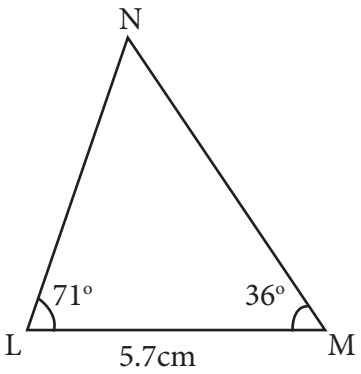
3. Construct a right angle triangle PQR in which m∠P = 90° , m∠Q = 35° and mPQ = 5.2 cm.



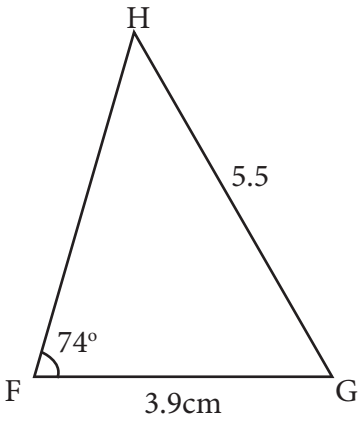
4. Construct a right angle triangle DEF in which m∠D = 90° mDE = 4.8 cm and mDF = 6.3cm.



5. Construct a triangle LMN in which m ∠ L = 71° m∠M = 36° and mLM = 5.7 cm.



6. Construct a triangle FGH in which m∠F = 74° , mFG = 3.9cm and mGH = 5.5cm



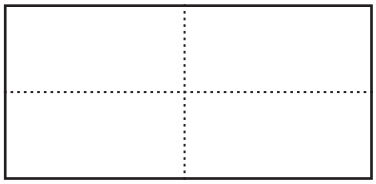
Exercise 4

1. Construct a rectangle with one side of 7cm and other 4.8 cm.

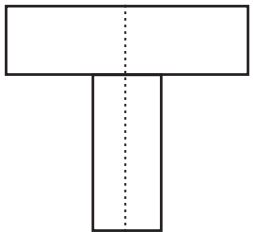
2. Construct a square of side 6.5 cm.

3. Draw lines of symmetry.

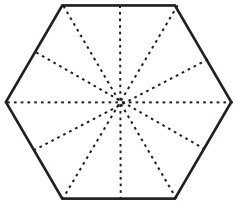
i)



ii)

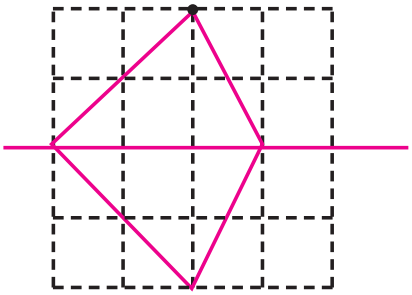


iii)

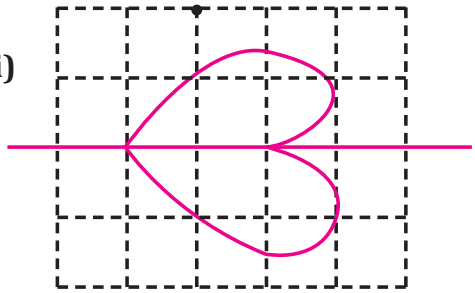


4. Complete the following diagrams using their lines of symmetry in the grid.

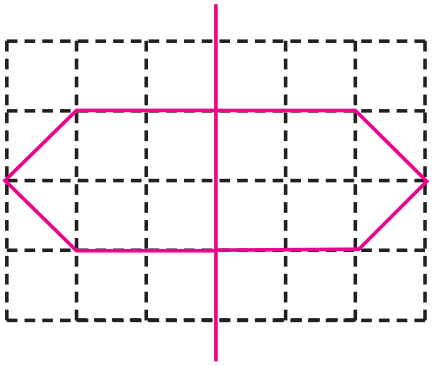
i)



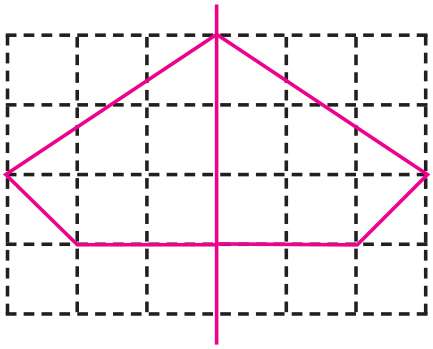
ii)



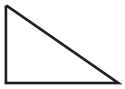
iii)



iv)

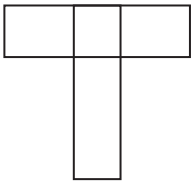


5. What is the order of rotational symmetry of the following shapes.

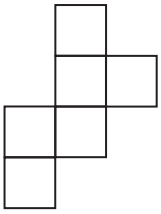
S.no	Figure's name	Daigram with symmetary	number of lines
i)	Isosceles Triangle		01
ii)	Scalene Triangle		01
iii)	Right angle Triangle		01
iv)	Parallelogram		2
v)	Kite		none
vi)	Rhombus		2
vii)	Equilateral Triangle		3

Exercise 5

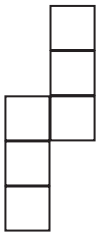
1. Draw three nets of cube.

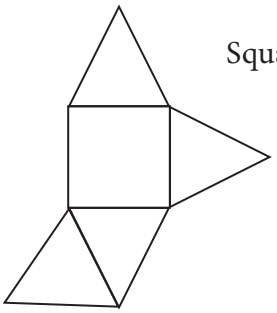


2. Draw 2 nets of cuboid

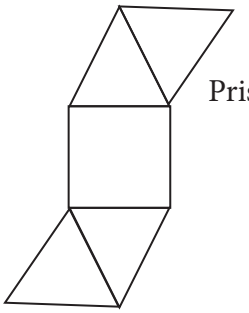


3. Which of the following are nets of pyramid?

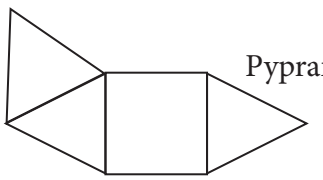


i) 

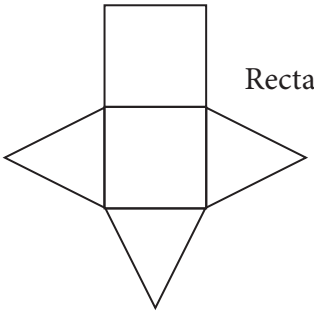
Square base pyramid

ii) 

Prism

iii) 

Pypramid

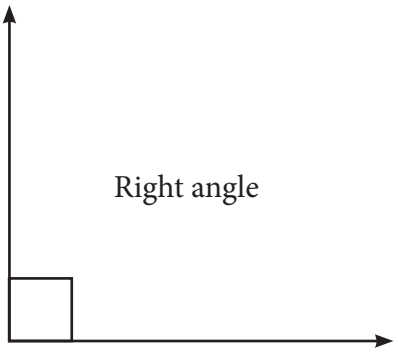
iv) 

Rectangle prism

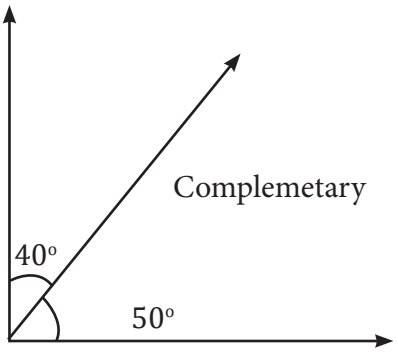
Review Exercise

1. Identify acute, obtuse, right, straight, reflex, Adjacent, complementary and supplementary angles.

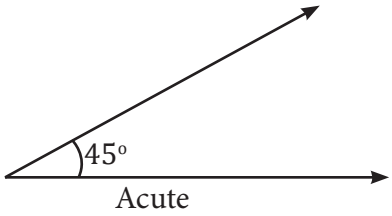
i)



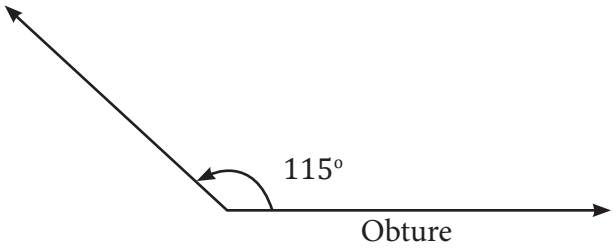
ii)



iii)

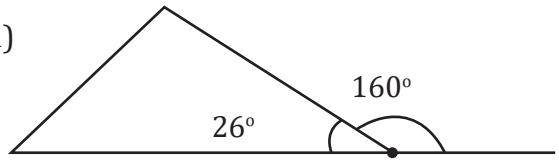


iv)

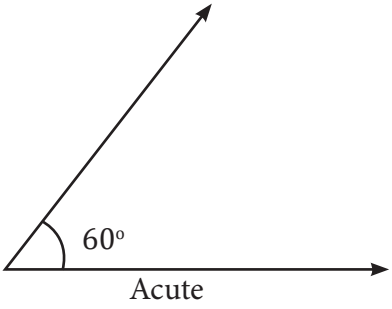


v)

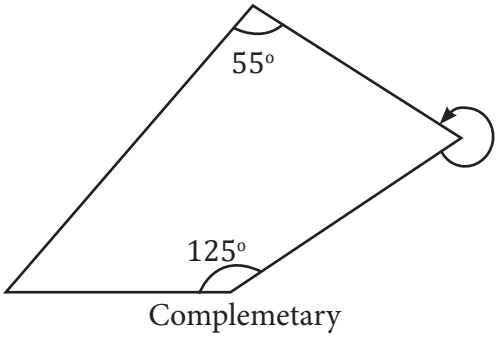
vi)



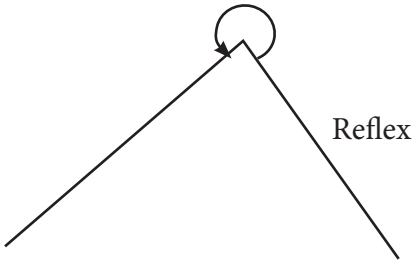
vii)



viii)



ix)

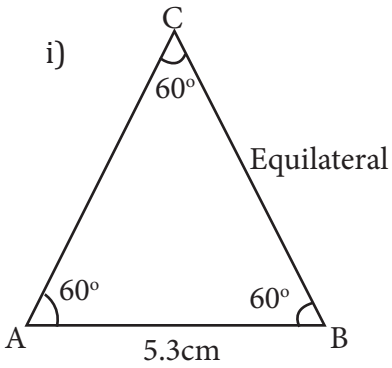


2. i) Construct an equilateral △ABC of side 5.3cm

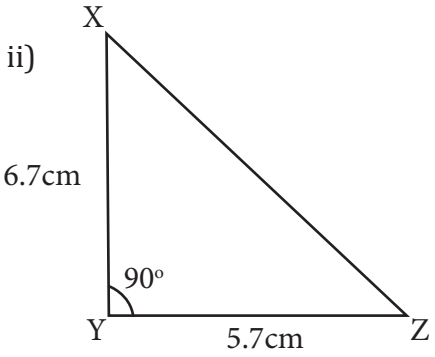
ii) Draw an right angle triangle XYZ in which mXY = mYZ = 6.7 cm and m∠Y = 90°

iii) Construct a △FGH such that m∠F = 650 and mFG = 4.5cm and mFH = 5.8cm.

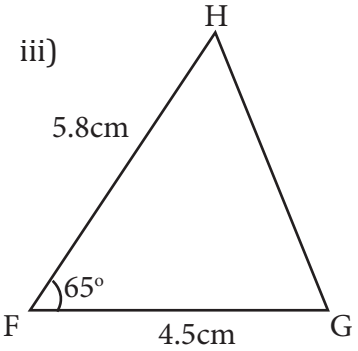
i)



ii)



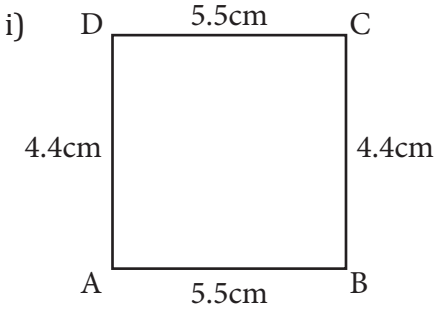
iii)



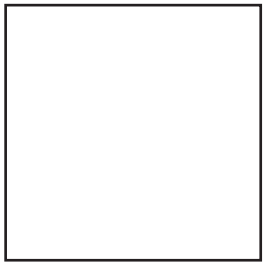
3. i) Draw a rectangle ABCD such that mAB = 5.5cm and mBC = 4.4cm.

ii) Draw square of sides 5.4 cm

i)



ii)



4. Write down the lines of symmetry of the followings.

i) Equilateral triangle

The number of lines of symmetry = 3

ii) Square

The number of lines of symmetry = 4

iii) Rectangle

The number of lines of symmetry = 2

iv) Rhombus

The number of lines of symmetry = 2

v) Parallelogram

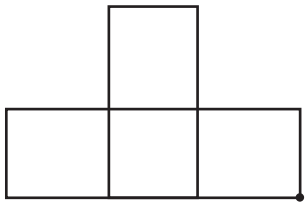
The number of lines of symmetry = 0

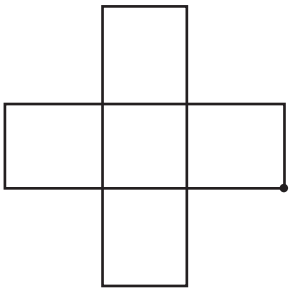
vi) Circle

The number of lines of symmetry = Infinite

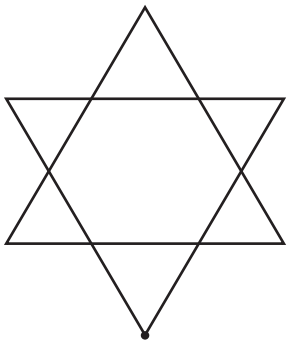
5. What are the order of rotational symmetry of the followings. Also mark the point of rotation.

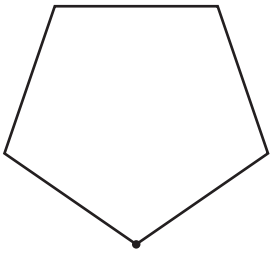
i) A triangle with no equal sides

ii) 

iii) 

iv) 

v) 

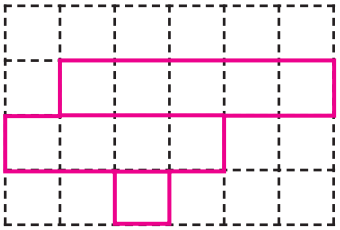
vi) 

Unit 8 Perimeter and Area

Exercise 1

1. Find area of the following: Each square in the grid is 1 cm²

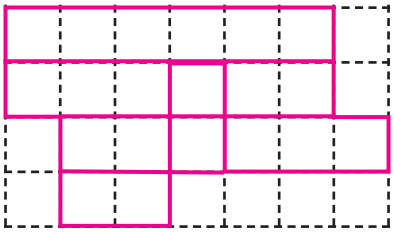
a)



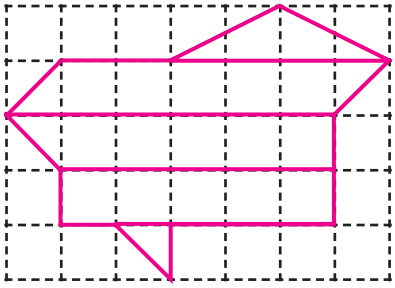
10cm²

b)

18cm²



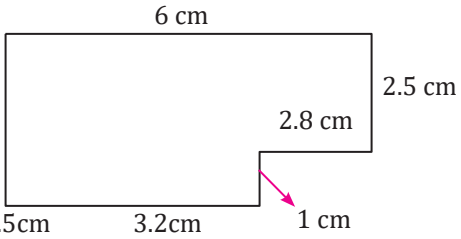
c)



17cm²

2. Find perimeter and area of the following figures.

a)

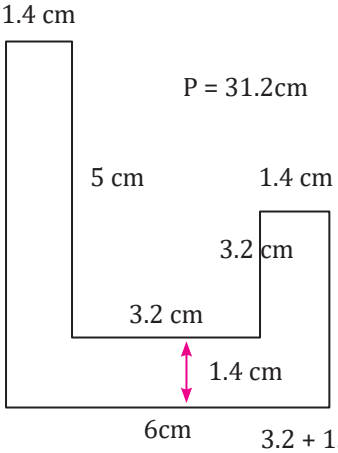


(2.5+1cm)=3.5cm

P = 19

(6 - 2.8) = 3.2cm

b)



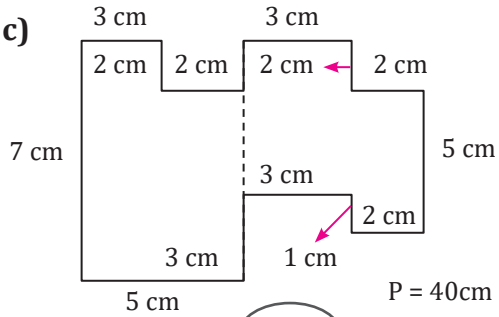
P = 31.2cm

(5 + 1.4) = 6.4cm

3.2 + 1.4 = - 4.6

3.2 + 1.4 + 1.4 = 6cm

c)



P = 40cm

3. a) The area of rectangle is 42 cm^2 and its length is 10 cm. Find its breadth and perimeter.

b) The area of a square is 49 cm^2. Find its length and perimeter.

c) The perimeter of a square is 48 cm. Find its length and area.

a) $A = l \times b$

$42 = 10 \times b$

$b = \frac{42}{10}$

$b = 4.2$

b) $A = l \times l$

$49 = 7 \times 7$

$l = 7cm^2$

c) $p = l \times 4$

$l = \frac{p}{4} = \frac{48}{4} = 12$

$l = 12cm$

$A = 12 \times 12 = 14\ xm^2$

4. Find area and perimeter of rectangle using formula.

a) $\ell = 5.2$ cm

$b = 4$ cm

$p = 2\ (l + b)\ p = 2\ (9.2)\ p = 18.4cm$

$A = l \times b = 5.2 \times 4 = 20.8cm^2$

b) b) $\ell = 32m$

$b = 8$ m

$p = 2\ (l + b)\ p = 2\ (40)\ p = 80cm$

$A = l \times b = 32 \times 8 = A = 256cm^2$

c) $\ell = 2.5$ mm

$b = 2$ mm

$p = 2\ (l + b)\ p = 2\ (4.5) = 9cm$

$A = l \times b = A = 2.5 \times 2 = A = 5cm^2$

d) $\ell = 20$ km

$b = 12.5$ km

$p = 2\ (l + b)\ p = 2\ (32.5)\ P = 65cm$

$A = l \times b = A = 20 \times 12 = A = 250cm^2$

5. Find area and perimeter of square using formula.

a) $\ell = 2.1$ cm

$p = 4 \times 2.1 = 8.4cm$

$A = 2.1 \times 2.1 = 4.41cm^2$

b) $\ell = 8$ cm

$p = 4 \times 8 = 23cm$

$A = 8 \times 8 = 64cm^2$

c) $\ell = 11$ cm

$p = 4 \times 11 = 44cm$

$A = 11 \times 11 = 121cm^2$

b) $\ell = 8$ cm

$p = 4 \times 50 = 200cm$

$A = 50 \times 50 = 2500cm^2$

Real Life Problems

6. A field of wheat is in the form of a rectangle with 55 m long and 30m wide. Find its perimeter and area.

P = 2(l + b)
p = 2 (55m + 30m)
p = 2 (85m)
p = 170cm

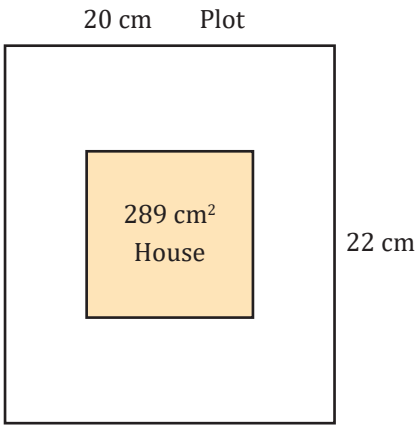
7. A door is 12 m wide and 2 m high. Find its area and perimeter.

p = 2(l + b)
P = 2(14)
P = 28m , A = l × b =12 × 12 = 24m^2

8. A window has dimension 2 m × 1.5 m. Find its perimeter and area

p = 2(l + b)
P = 2(3.5)
P = 7m , A = l × b =1.5 × 2 = 3m^2

9. A house is built in a rectangular plot 20 cm × 22 cm. The house is built in the form of a square with area 289 cm^2.



Find

a) Area and perimeter of the plot

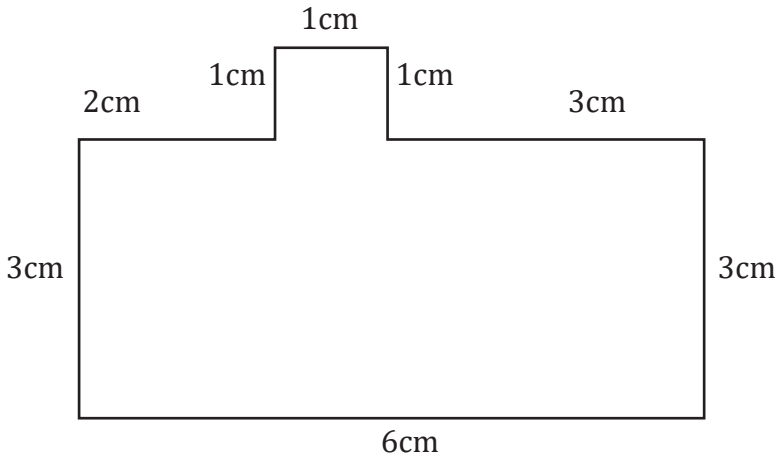
A = l × b = 20 × 22 440cm^2
p= 2 (l + b)
p = 2(20 +22)
p+ 84cm

b) Perimeter of the house

A = l × l
$l = \frac{189}{4}$
l = 47.25m
p = 47.25 × 4 = 189cm

Review Exercise

1. Find area and perimeter of



p = 3cm + 6cm + 3cm = 3cm + 1cm + 1cm + 1cm + 2cm

p = 20cm

2. Find area and perimeter of the rectangle

if , ℓ = 6.7cm, b = 10.5cm

p = 2(l + b)

p = 2(6.7 + 10.5)

p = 2(17.2)

p = 34.4cm

A = l × b = 6.7 × 10.5

A = 70.35cm^2

3. A rectangle and square have same perimeter of 60 cm each. find

a) Length of the sides of square

b) Length of the rectangle if breadth is 10 cm

$\frac{60}{4}$ = 15cm

p = 2l + 2b

60 = 2l + 20

20 - 20 = 2l

40 = 2l

$\frac{40}{2}$ = l

4. **A square field has an area of 2500 cm^2 .**

Find the length of its side and perimeter.

$$\begin{array}{r} 47.25 \\ 4\overline{)189} \\ -161 \\ \hline 49 \\ -28 \\ \hline 10 \\ -\ 8 \\ \hline 20 \\ 20 \end{array}$$

$$\begin{array}{r} 4\ 7\ .\ 2\ 5 \\ \times \qquad\quad 4 \\ \hline 1\ 8\ 9\ .\ 0\ 0 \\ \hline \end{array}$$

$A = 2500cm^2$

$A = l \times l$

$\frac{A}{4} = l$

$\frac{2500}{4} \quad l = 625cm$

$p = 4 \times l$

$p = 4 \times 625 = 2500cm$

Unit 9 Data Handling

Exercise 1

1. The numbers of people picking flowers per day were 7, 8, 2, 12, 4, 9, 5, 10. Find the average numbers of people picking flowers per day.

$$\text{Averge} = \frac{7 + 8 + 2 + 12 + 4 + 9 + 5 + 10}{8}$$

$$\frac{51}{8} = 7.125$$

2. The class teacher asked the students about their favourite subject. 5 student like Urdu, 6 like English, 4 like Maths and 8 like science. Find the average of their favourite subject.

$$\text{Averge} = \frac{5 + 6 + 4 + 8}{4}$$

$$\frac{23}{4} \quad 5.75$$

3. The salaries of workers in a factory are Rs. 11,000, Rs. 15,000, Rs.20,000 and Rs. 250,000. Find

i) The expenditure on salaries of all the workers.

ii) Average of salaries.

i) Averge = 11,000 + 15000 + 200,000 + 250,000

= 296,000

i) Averge of salaries = $\frac{11{,}000 + 15000 + 200{,}000 + 250{,}000}{4}$

$$\frac{296{,}000}{4} = 74{,}000$$

5. a) Find average of the followings:

12, 16, 18, 24, 13, 15

$$\text{Averge} = \frac{12 + 16 + 18 + 24 + 13 + 15}{6}$$

$$\frac{98}{6} \quad 16.333$$

b) i) Find total number of students in the class.

ii) Find average of their favourite colour.

$$\text{Averge} = \frac{8 + 6 + 4 + 3 + 3}{5}$$

$$\frac{24}{5} = 4.8$$

Favourite colour	Number of Students
Blue	8
Green	6
Yellow	4
White	3
Purple	3

c) Find mean of the following data.

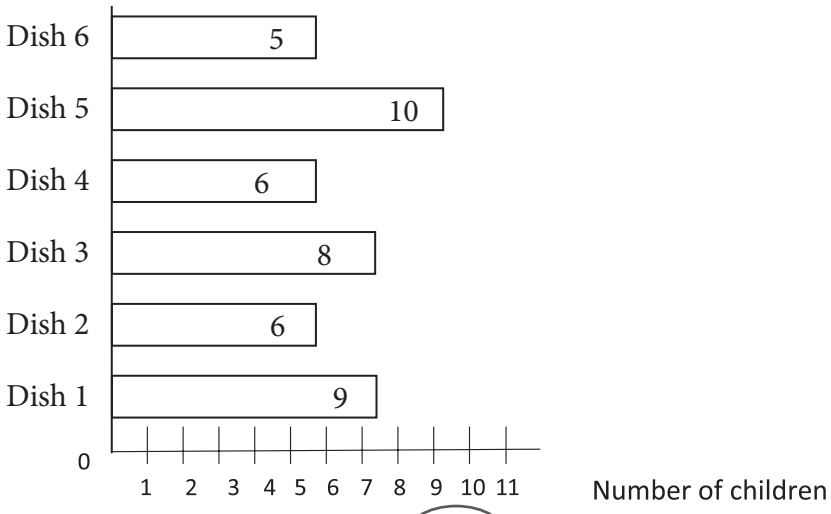
Mean = 20

Value	Number of times value secures
10	4
20	5
30	6
40	2

10 , 10 , 10 , 10 , 20 , 20 , 20 , 20 , 20 , 30 , 30 , 30 , 30 , 30 , 30 40 , 40

Exercise 2

1. Some children were asked about their favourite dishes. The bar chart shows the result.



a) How many children like dish 3?

8

b) How many more children like dish 1 as dish 6?

9 - = 4

c) What is most favourite dish?

Dish 5

d) How many children like dish 1 to 3?

9 + 6 + 8 = 23 Children

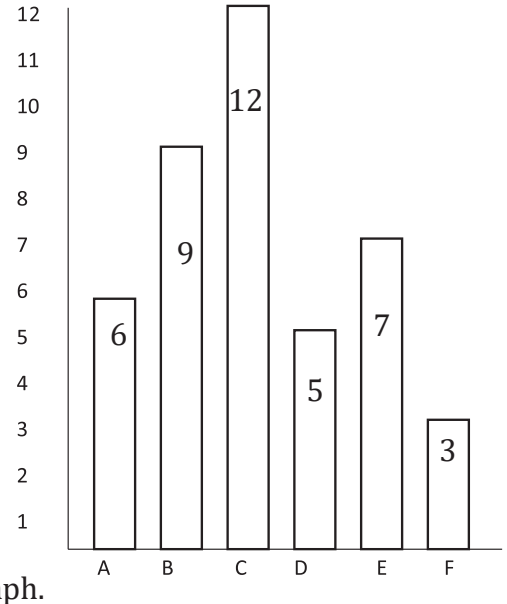
e) How many children were asked about their favourite dish?

9 + 6 + 8 + 10 + 5 = 44

f) Calculate the percentage of children who like dish 5?

$\frac{9}{42} \times 100 = 21.42\%$

2. Read the following vertical bar graph.



a) Write the data in table form.

6 + 9 + 12 + 5 + 7 + 3 = 42

b) Write down which letter has highest value.

(c)

c) How much F is less than B?

9 - 3 = 6

d) Calculate the % of B in the data.

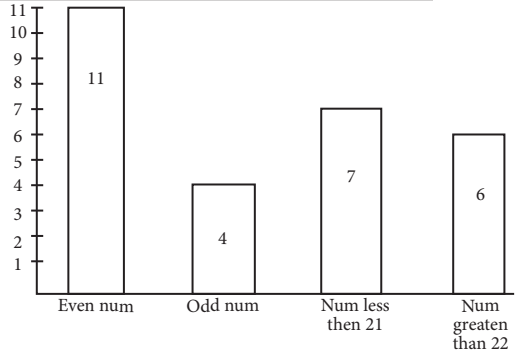
$\frac{9}{42} \times 100 = 21.42\%$

3. Given the following numbers.

10,12,14,15,16,18,20,21,22,24,25,26,27,28,30

a) Represent the data in table form and draw bar graph.

Even number	10,12,14,16,18,20,22,24,26,28,30
Odd number	15,21,25,27
Number less than 21	10,12,14,15,16,18,20
Number greater than 22	24,2,5,26,27,28,30



b) Calculate total number of values.

= 15

c) How many numbers are odd?

4

d) Find percentage of number greater than 22.

= 100%

4. The number of hours that 25 children spent on sleeping in a day is given by

a) Represent the data in bar graph

= 248

b) How many children spent 11 hours in sleeping?

(6)

c) How many children spent less than 11 hours in sleeping?'

19

d) How many hours are spent by 3 children?

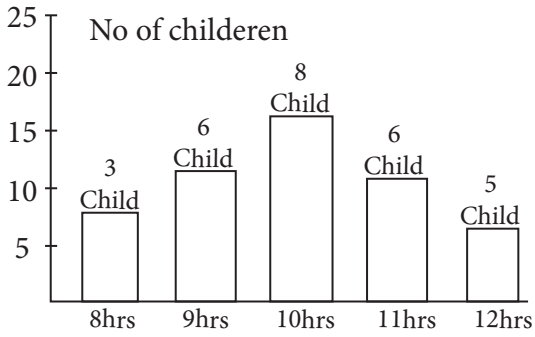
8 hrs

e) Find sum of all number of hours in the data.

= 248 hours

f) Calculate average number of hours.

$\frac{248}{25} = 9.92$



g) Find the percentage of children who spent 10 hours in sleeping.

$\frac{8}{248} \times 100 = 3.22\%$

5. Arrange the following data in table form.

100	101	102	100	100	103	102	104
103	102	103	105	104	100	101	104
102	104	103	100	103	104	103	100

a) Draw a bar chart of the above data

On answer sheet

b) The 100 comes how many time?

6 time

c) How many values are less than 104?

18 value

d) How much more number of times 100 comes as compared 101?

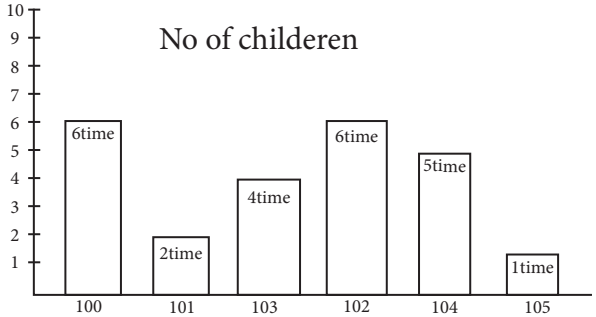
6 - 2 = time

e) Find the percentage of the number 100.

$\frac{6}{24} \times 100 = 25\%$

f) Calculate average of the above data.

Averge $= \frac{2453}{24} = 1052{,}20$



6. The following table shows the data of 100 children that which transport they use to come to school.

Transport	No. of Children
Motor Car	26
School Bus	28
Public Bus	8
Motor Cycle	10
Auto Rickshaw	16
Cycle	8
No Transport	4

a) Draw a bar graph of the data.

On answer sheet

b) How many children come to school by auto rickshaw?

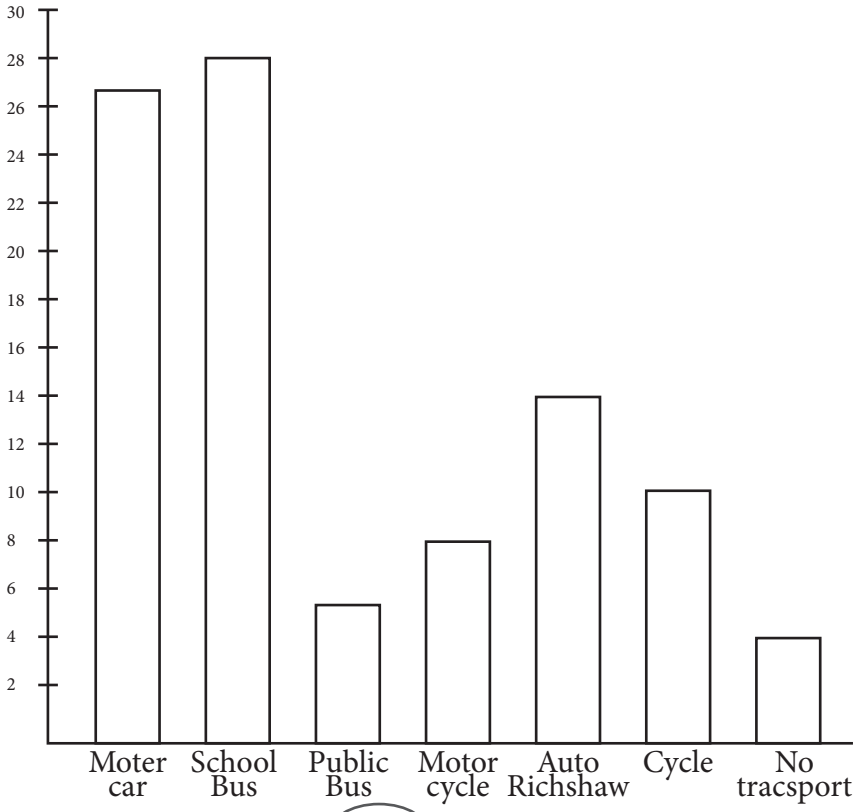
= 16

c) How many children do not use motor car and school bus?

8 + 10 + 16 + 8 + 4 + = 46

d) How many children use motor cycle and cycle?

10 + 8 + = 8



Review Exercises

1. Find the mean (average) of the following data.

i) 0,1,3,5,1,4,0

$$\text{Average} = \frac{0 + 1 + 3 + 5 + 1 + 4 + 0}{7}$$

$$\text{Average} = \frac{14}{7} = 2$$

ii)

Value	Number of times
5	10
6	12
7	15
8	7

$5 \times 10 = 50$

$6 \times 12 = 72$

$7 \times 15 = 105$

$8 \times 7 = 56$

$$\text{Average} = \frac{50 + 72 + 105 + 56}{26}$$

$$\text{Average} = \frac{283}{26} = 10.884$$

2. The number of pencils each child lost during a week are

2, 4, 3, 2, 0, 3, 5, 4, 2, 2, 1, 3, 1, 2, 3, 5, 4, 1, 2, 3, 4, 4, 3, 3, 2

i) Show the data in table form

on Answer sheet

ii) Draw horizontal and vertical bar diagram

No of pench	No of Child
0	1
1	3
2	7
3	7
4	5
5	2

iii) Calculate the mean number of pencils that each child lost

0, 1, 2, 3, 4, 5

$$\text{Mean} = 2 + 3 = \frac{5}{2} = 2.5$$