TRADE MARK
MEHRAN SERIES

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MATHS
For Class Five

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Chapter 1

CALCULATION AND NUMBERS

Reading and writing of numbers upto one billion.

We have studied and familiar with the number upto ten million in previous classes. Now we shall study and write the numbers upto one billion.

Billion	Million			Thousands			Units		
Billion	Hundred Million	Ten Million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units

One billion = one thousand million:

We know that place of number is shown in four blanks.

First blank = units second blank = Thousand

Third blank = Million Fourth blank = Billion

Example: Write the following numbers into million and billion. 8459413572

Solution first of all separate the numbers in four boxes. 8,459,413,572

Billion	Million			Thousands			Units		
Billion	Hundred Million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
8	4	5	9	4	1	3	5	7	2

Number in words:

Eight billion four hundred fifty nine million, four hundred thirteen thousands, five hundred seventy two.

Example: Write the numbers in million and billion. 9375632512

Solution: first of all separate the numbers in four boxes. 9,375,632,512

Billion	Million			Thousands			Units		
Billion	Hundred Million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
9	3	7	5	6	3	2	5	1	2

Number in words:

Nine billion three hundred seventy five million, six hundred thirty two thousands, five hundred twelve.

Number in digits

Four billions eight hundred twelve million, three hundred ninety two thousand one hundred and two. 4,812,392,102

ii Seven hundred thirteen million, eight hundred seventy one thousands two hundred fifty. 713,871,250

EXERCISE 1.1

Q.1. Write the numbers in words:

1 28, 341, 495

Twenty eight million three hundred forty o ne thousand four hundred ninety five.

2 700, 315, 410

Seven hundred million three hundred fourteen thousand four hundred ten.

3 244, 873, 445

Two hundred forty four million eight hundred seventy three thousand four hundred forty five.

4 85, 800, 237

Eighty five million eight hundred thousand two hundred thirty seven.

5 191, 825, 100

One hundred ninety one million eight hundred twenty five thousand one hundred.

6 327, 016, 257

Three hundred twenty seven million sixteen thousand two hundred fifty seven.

7 705, 245, 126

Seven hundred five million two hundred forty five thousand one hundred twenty six.

8 876, 500, 409

Eight hundred seventy six million five thousand four hundred nine.

Q.2. Write the numbers in boxes.

1 412592512

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
4	1	2	5	9	2	5	1	2

2 176150321

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
1	7	6	1	5	0	3	2	1

3 435050020

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
4	3	5	0	5	0	0	2	0

4 45234505

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
-	4	5	2	3	4	5	0	5

5 834379082

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
8	3	4	3	7	9	0	8	2

6 67863050

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
-	6	7	8	6	3	0	5	0

7 70000000

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
-	7	0	0	0	0	0	0	0

8 67799581

Hundred million	Ten million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundreds	Tens	Units
-	6	7	7	9	9	5	8	1

Q.3. Write the numbers in digits.

1 Two million, four thousand, six hundred, ninety one.
Ans: 2,004,691

2 Two billion, five hundred fourty two million. Five hundred seventy two thousand and thirty four.
Ans: 2,542,572,034

3 Six hundred seventy nine million, eight hundred nineteen thousand and twenty.
Ans: 679,819,020

4 Nine billion, seven hundred eighty six million, three hundred five thousand four hundred and one.
Ans: 9,786,305,401

5 Four billion one hundred fifty two million, five hundred sixty two thousand.

Ans: 4,152,562,000

6 Three million, five hundred fourty two thousand, one hundred and six.

Ans: 3,542,106

7 Eight billion, three hundred twenty seven million.

Ans: 8,327,000,000

8 Four million Nine hundred seventy three thousand one hHundred fourteen.

Ans: 4,973,144

Addition of numbers upto billion

The way of addition natural number is always same units with units, tens with ten and hundred with hundreds.

Important Information

In addition numbers are written acending to their number place and then are added.

Example: Add 495459210 with 853795125

Hundred Million	Ten Million	Million	Hundred thousand	Ten thousand	Thousand	Hundred	Tens	Units
4	9	5	4	5	9	2	1	0
+ 8	5	3	7	9	5	1	2	5
13	4	9	2	5	4	3	3	5

Hence; 495459210 + 853795125 = 1349254335

Example: Add 2485372 with 1326650

Solution

2485372
+ 1326650
3812022

Example: Add 9463152 with 7935216

Solution

9463152
+ 7935216
17398368

Important Information

In addition numbers are written according to their number place and then are added.

EXERCISE 1.2

Q.I: Perform the indicated operation the following:

1. 5389725 + 1795675 = 7185400
2. 76132042 + 64852503 = 140984545
3. 345322 + 241231 = 586553
4. 3162402 + 2373237 = 5535639
5. 3444525 + 4135523 = 7580048
6. 68342152 + 52445211 = 120787363
7. 3251244 + 50721323 = 53972567
8. 43753402 + 41788211 = 85541613
9. 3366720 + 5905543 = 9272263
10. 5319360 + 607267 = 5926627
11. 438967722 + 576169798 = 1015137520
12. 68018832 + 84011365 = 152030197
13. 693624 + 154635 = 848259
14. 493529 + 367615 = 861144
15. 546811 + 353642 = 900453
16. 452611 + 358591 = 811202
17. 311121 + 988722 = 1299843
18. 492193 + 621541 = 1113734
19. 608906 + 512627 = 1121533
20. 758501 + 889228 = 1647729

ii Add the following:

1. 81073085 + 21254359 = 102,327,444
2. 2543894 + 35184496 = 37,728,390
3. 567258 + 373267 = 940,525
4. 25066432 + 43326514 = 68,392,946
5. 759120 + 634822 = 1,393,942
6. 40173432 + 78829033 = 119,002,465

Subtraction of numbers upto billion:

Example: subtract 357821 to 945678

Solution:

Hundred thousand	Ten thousands	Thousand	Hundreds	Tens	Units
9	4	5	6	7	8
– 3	5	7	8	2	1
5	**8**	**7**	**8**	**5**	**7**

OR 357821 – 945678 = 587857

Subtract

Example: 24685327 from 55663504

Solution 55663504
– 24685327
30978177

OR 24685327 – 55663504 = 30978177

Subtract

Example: 10754937 from 35851059

Solution 35851059
– 10754937
25096122

OR 10754937 – 35851059 = 25096122

EXERCISE 1.3

Q.1: Find the difference.

1. 1625739 – 783250 = **842489**
2. 493267 – 301530 = **191737**
3. 524314 – 172998 = **351316**
4. 1975672 – 854392 = **1121280**
5. 629438 – 75726 = **553712**
6. 6784567 – 4632190 = **2152377**
7. 79643219 – 60324312 = **19318907**
8. 386594320 – 119994964 = **266599356**
9. 33333444 – 11229777 = **22103667**
10. 629938 – 512726 = **117212**
11. 9721830 – 7927931 = **1793899**
12. 92139302 – 85466831 = **6672471**

Q.2: Subtract the following.

1. **326329 785972**

Sol: 785972
– 326329
459643

2. **232625 422137**

Sol: 422137
– 232625
189512

3. **208070 388776**

Sol: 388776
– 208070
180706

4. **125336 526329**

Sol: 526329
– 125336
400993

5. **763249 979615**

Sol: 979615
– 763249
216366

6. **3558521 4321218**

Sol: 4321218
– 3558521
0762697

Multiplication of Numbers

Multiply the numbers with 10, 100 an 1000

Example: 4959876 by 100

Solution 4959876
× 100
0000000
0000000×
4959876××
495987600

Example: 152152 by 10

Solution 152152
× 10
000000
152152×
1521520

Multiplication of a digit number by 2 digit and 3 digit number.

Example: 967252 by 105

Solution 967252
× 105
4836260
000000×
967252××
101561460

Example: 415799 by 35

Solution 415799
× 35
2078995
1247397×
14552965

EXERCISE 1.4

Q.1: Perform the multiplication.

1. **915859 × 100**

Sol: 915859
× 100
000000
000000×
915859××
91585900

2. **267729 × 1000**

Sol: 267729
× 1000
000000
000000×
000000××
267729×××
267729000

3 **1995 × 10**

Sol:
```
   1995
 ×   10
-------
  00000
 +1995×
-------
  19950
```

4 **280916 × 100**

Sol:
```
    280916
 ×     100
----------
    000000
   000000×
 +280916××
----------
  28091600
```

5 **487623 × 91**

Sol:
```
    487623
 ×      91
----------
    487623
 +4388607×
----------
  44373693
```

6 **422331 × 83**

Sol:
```
    422331
 ×      83
----------
   1266993
 +3378648×
----------
  35053473
```

7 **532322 × 241**

Sol:
```
      532322
 ×       241
------------
      532322
    2129288×
 +1064644××
------------
   128289602
```

8 **331792 × 37**

Sol:
```
    331792
 ×      37
----------
   2322544
  +995376×
----------
  12276304
```

9 **487322 × 40**

Sol:
```
    487322
 ×      40
----------
    000000
 +1949288×
----------
  19492880
```

10 **124733 × 125**

Sol:
```
    124733
 ×     125
----------
    623665
   249466×
 +124733××
----------
  15591625
```


11 **212784 × 235**

Sol:
```
     212784
 ×      235
-----------
    1063920
    638352×
 +425568××
-----------
   50004240
```

12 **429735 × 745**

Sol:
```
     429735
 ×      745
-----------
    2148675
   1718940×
 +3008145××
-----------
   32015275
```

Division of numbers and functions:

Division of 6 digit number by 2 digit and three digit numbers.

Example: Divide 427935 by 235

```
        1821
235 | 427935
     -235
     ------
      1929
     -1880
     ------
        493
       -470
     ------
        235
       -235
     ------
          0
```

Division	=	235
Dividend	=	427935
Answer	=	1821
Remainder	=	0

Example Divide 189375 by 125

```
        1515
125 | 189375
     -125
     ------
       643
     - 625
     ------
        187
      - 125
     ------
         625
        -625
     ------
           0
```

Divisor	=	125
Dividend	=	189375
Answer	=	1515
Remainder	=	0

Example Divide 537809 by 35

```
        15365
35 | 537809
     -35
     187
    -175
     128
    -105
      230
     -210
       209
      -175
        34
```

Divisor = 35

Dividend = 537809

Answer = 15365

Remainder= 34

EXERCISE 1.5

Q.1: Perform the division the following:

1. **212784 ÷ 52**

Sol:

```
        4092
52 | 212784
    -2080
      478
     -468
      104
     -104
      000
```

Ans: 4092

2. **312920 ÷ 40**

Sol:

```
        7823
40 | 312920
    -280
      329
     -320
       92
      -80
      120
     -120
      000
```

Ans: 7823

3. **254375 ÷ 275**

Sol:

```
          925
275 | 254375
     -2475
        687
       -550
       1375
      -1375
       0000
```

Ans: 925

4. **392604 ÷ 12**

Sol:

```
       32717
12 | 392604
    -36
      32
     -24
      86
     -84
      20
     -12
      84
     -84
      00
```

Ans: 32717

5. **718201 ÷ 109**

Sol:

```
         6589
109 | 718201
     -654
       642
      -545
       970
      -872
       981
      -981
       000
```

Ans: 6589

6. **274470 ÷ 35**

Sol:

```
        7842
35 | 274470
    -245
      294
     -280
      147
     -140
       70
      -70
       00
```

Ans: 7842

7. **914056 ÷ 572**

Sol:

```
         1598
572 | 914056
     -572
      3420
     -2860
      5605
     -5148
      4576
     -4576
      0000
```

Ans: 1598

8. **570152 ÷ 124**

Sol:

```
         4598
124 | 570152
     -496
       741
      -620
      1215
     -1116
       992
      -992
       000
```

Ans: 4598

9 **337488 ÷ 89**

Sol:

```
       3792
89 | 337488
    -267
     704
    -623
      818
     -801
       178
       178
       000
```

Ans: 3792

10 **371784 ÷ 84**

Sol:

```
       4426
84 | 371784
    -336
     357
    -336
      218
     -168
       504
       504
       000
```

Ans: 4426

11 **253593 ÷ 19**

Sol:

```
       13347
19 | 253593
    -19
     63
    -57
      65
     -57
       89
      -76
       133
      -133
       000
```

Ans: 13347

12 **421960 ÷ 385**

Sol:

```
        1096
385 | 421960
     -3850
      3696
     -3465
       2310
      -2310
       0000
```

Ans: 1096

13 **782314 ÷ 20**

Sol:

```
       39115.7
20 | 782314
    -60
     182
    -180
      23
     -20
       114
      -100
       140
      -140
       000
```

Ans: 39115.7

14 **792325 ÷ 205**

Sol:

```
        3865
205 | 792325
     -615
      1773
     -1640
       1332
      -1230
        1025
       -1025
        0000
```

Ans: 3865

15 **537556 ÷ 92**

Sol:

```
       5843
92 | 537556
    -460
     775
    -736
      395
     -368
       276
      -276
       000
```

Ans: 5843

Function of BODMAS Rules:

Bracket	B	=	( )
OF	O	=	Multiply
Divide	D	=	÷
Multiply	M	=	×
Add	A	=	+
Subtract	S	=	–

Important Information

First of all the process of division is performed then multiplication.

Example: $35 \times 12 \div 6$

First of all the process of division = 35×2

Next Multiplication = 70

Example: $(18 \div 2) \times 4 + 6 - 5$

First of all the process of division = $9 \times 4 + 6 - 5$

Next Multiplication = $36 + 6 - 5$

Then Addition = $42 - 5$

Last subtraction = 37

EXERCISE 1.6

Q.1: Solve according the BODMAS rule the following:

1 **(28 + 4) × 6 ÷ 2 – 9**

Sol:
= (28 + 4) × 6 ÷ 2 – 9
= 32 × 6 ÷ 2 – 9
= 32 × 3 – 9
= 96 – 9
= 85 Ans:

2 **2 + 2 × 2 ÷ 2 – 2**

Sol:
= 2 + 2 × 2 ÷ 2 – 2
= 2 + 2 × 1 – 2
= 2 + 2 – 2
= 4 – 2
= 2 Ans:

3 **3 + (28 ÷ 7) × 2 – 1**

Sol:
= 3 + (28 ÷ 7) × 2 – 1
= 3 + 4 × 2 – 1
= 3 +8 – 1
= 11 – 1
= 10 Ans:

4 **(18 ÷ 3) × 5 + 4 – 25**

Sol:
= (18 ÷ 3) × 5 + 4 – 25
= 6 × 5 + 4 – 25
= 30 + 4 – 25
= 34 – 25
= 9 Ans:

5 **(6 × 5) ÷ 6**

Sol:
= (6 × 5) ÷ 6
= 36 ÷ 6
= 6

6 **(25 ÷ 5) × 8 + 6 – 12**

Sol:
= (25 ÷ 5) × 8 + 6 – 12
= 5 × 8 + 6 – 12
= 40 + 6 – 12
= 46 – 12
= 34

7 **(54 × 150 ÷ 3) + 49**

Sol:
= (54 × 150 ÷ 3) + 49
= (54 × 50) + 49
= 2700 + 49
= 2749 Ans:

8 **60 + (72 ÷ 8) + 3 × 5**

Sol:
= 60 + (72 ÷ 8) + 3 × 5
= 60 + 9 + 3 × 5
= 60 + 9 + 15
= 84 Ans:

9 **144 ÷ 12 + 5 × 6**

Sol:
= 144 ÷ 12 + 5 × 6
= 12 + 5 × 6
= 12 + 30
= 42 Ans:

10 **80 – (70 ÷ 14 – 2)**

Sol:
= 80 – (70 ÷ 14 – 2)
= 80 – (5 – 2)
= 80 – 3
= 77

11 **21 + (81 ÷ 9) + 4 × 6**

Sol:
= 21 + (81 ÷ 9) + 4 × 6
= 21 + 9 + 4 × 6
= 21 + 9 + 24
= 54 Ans:

12 **121 ÷ 11 + 15 × 6**

Sol:
= 121 ÷ 11 + 15 × 6
= 11 + 15 × 6
= 11 + 90
= 101 Ans:

To prove the multiplication rule:

There are two rules of multiplication

i Multiplication over Addition.

ii Multiplication with multiplication over addition.

In first rule of multiplication two numbers are added in bracket the outer number is multiplied in answer. In second rule two pairs of multiplication are solved the results are added. The result in both rules is same.

(I) Example Prove that. $10 \times (13 + 5) = (10 \times 13) + (10 \times 5)$

Solution:
$10 \times (13 + 5) = (10 \times 13) + (10 \times 5)$
$10 \times (18) = 130 + 50$
$180 = 180$
L.H.S = R.H.S

Proved $10 \times (13 + 5) = (10 \times 13) + (10 \times 5)$

(ii) Example. Prove that $11 \times (13 - 7) = (11 \times 13) - (11 \times 7)$

Solution:
$11 \times (13 - 7) = (11 \times 13) - (11 \times 7)$
$11 \times (8) = 143 - 77$
$66 = 66$
L.H.S = R.H.S

Proved $11 \times (13 - 7) = (11 \times 13) - (11 \times 7)$

(iii) Example prove that $6 \times (4 + 5) = (6 \times 4) + (6 \times 5)$

Solution:
$6 \times (4 + 5) = (6 \times 4) + (6 \times 5)$
$6 \times 9 = 24 + 30$
$54 = 54$
L.H.S = R.H.S

Proved $6 \times (4 + 5) = (6 \times 4) + (6 \times 5)$

EXERCISE 1.7

Prove:

1 **14 × (6+3) = (14×6) + (14×3)**

Sol: LHS RHS

14 × (6+3) = (14×6) + (14×3)

14 × 9 = 84 + 42

126 = 126

Hence proved LHS = RHS

2 **13× (10+6) = (13 ×10) + (13×6)**

Sol: LHS RHS

13×(10+6) = 130 + 78

13 × 16 = 208

208 = 208

Hence proved LHS = RHS

3 **(14 –9) ×12 = (14×12) – (9×12)**

Sol: LHS RHS

(14 –9) ×12 = (14×12) – (9×12)

5 × 12 = 168 - 108

60 = 60

Hence proved LHS = RHS

4 **(12+6) × 8 = (12×8) + (6×8)**

Sol: LHS RHS

(12+6) × 8 = (12×8) + (6×8)

18 × 8 = 96 + 48

144 = 144

Hence proved LHS = RHS

5 **5(17–13) = (5×17) = (5×13)**

Sol: LHS RHS

5 (4) = 85 – 65

20 = 20

Hence proved LHS = RHS

6 **(26–14) × 6 = (26×6) – (14×6)**

Sol: LHS RHS

(26–14) × 6 = (26×6) – (14×6)

12 × 6 = 156 – 84

72 = 72

Hence proved LHS = RHS

7 **12 × (6+3) = (12×6) + (12×3)**

Sol: LHS RHS

12 × (6+3) = (12×6) + (12×3)

12 × 9 = 72 + 36

108 = 108

Hence proved LHS = RHS

8 **(9 +5) × 14 = (9 ×14) + (5 ×14)**

Sol: LHS RHS

(9 +5) × 14 = (9 ×14) + (5 ×14)

14 × 14 = 126 + 70

196 = 196

Hence proved LHS = RHS

9 **15 (13 – 5) = (15×13) – (15×5)**

Sol: LHS RHS

15 (13 – 5) = (15×13) – (15×5)

15 × 8 = 195 - 75

120 = 120

Hence proved LHS = RHS

10 **10 × (12 – 3) = (10×12) – (10×3)**

Sol: LHS RHS

10×(12–3) = (10×12) – (10×3)

10 × 9 = 120 - 30

90 = 90

Hence proved LHS = RHS

Addition Subtraction, Multiplication and division of daily life problems

EXERCISE 1.8

1 There are 392604 oranges in 12 boxes, find the number of oranges in one box.

Sol:

There are 392604 oranges in 12 boxes, find the number of oranges in one box.

Then,

```
        32717
   12 | 392604
      -36
      ----
        32
       -24
       ---
         86
        -84
        ---
          20
         -12
         ---
          84
         -84
         ---
          00
```

Ans: There are 32717 oranges in one box.

2 A library is full with 32435 books, if there are 237shelves then find the number of books in each shelf.

Sol:

There are 32435 books in 237 shelves in a library.

Book in one shelf = ?

Then,

```
       136.856
  237 | 32435
      -237
      ----
        873
       -711
       ---
        1625
       -1422
       ----
         2030
        -1896
        ----
          1340
         -1185
         ----
          1550
         -1422
         ----
           128
```

Ans: There are 136.856 books in one shelf.

3. A car is cost of Rs 594510, if Jahanzeb has Rs 394521 How many rupees he has required to purchase this car?

Sol:

The cost of a car is Rs:594510.
Amount of Jahanzeb=Rs:394521.
Amount required to purchase a car = ?
Then,

594510
-394521
199989

Ans: Jahanzeb will require 199989 rupees to purchase a car

5. A stadium is consisted of 224378 seats, if 1575 more onlookers enter in stadium, Tell the total numbers of onlookers?

Sol:

The seats in a stadium=224378.
1575 more onlookers enter in stadium.
Total numbers of no lookers = ?
Then,

224378
+ 1575
225953

Ans: The total numbers of no lookers = 225953.

4. If the cost of a roof is Rs 995824 then find the cost of 20 roofs.

Sol:

The cost of a car is Rs:594510.
Amount of Jahanzeb=Rs:394521.
Amount required to purchase a car = ?
Then,

995824
× 20
000000
+1991648×
19916480

Ans: The cost of 20 roofs = 19916480

6. There are 991 rows in a hall, Total number of people is 221373. Then find number of people in each row.

Sol:

There are 991 rows in a hall.
Total numbers of people is221373 in 991 rows.
Number of people in each row = ?
Then,

223.38
991 | 221373
-1982
2317
-1982
3353
-2973
3800
-2973
8270
-7928
3420
-2973
447

Ans: There are 223.38 people in each row.

7. Ali has 756795 rupees. He gave Rs 58972 to his friend as loan. How many rupees he has now.

Sol:

Ali has 756795 rupees.
He gave Rs. 58972 to his friend as loan.
Remaining amount = ?
Then,

756795
-58972
697823

Ans: The remaining amount of Ali is Rs. 697823.

9. A company makes 295845 shoes pairs, in 33 days. How many shoe pair are made by company in a day.

Sol:

A company makes 295845 shoes pair in 33 days. Shoes pairs are made by a company in a day=?
Then,

8965
33 | 295845
-264
318
-297
214
-198
165
-165
000

Ans: a company is made 8965 shoes pairs in one day.

8. A drum is filled with 93750 liters of petrol. How much liters of petrol in 375 drum.

Sol:

A drum is filled with 93750 litres of petrol.
Petrol in 375 drums = ?
Then,

93750
× 375
468750
656250×
281250××
35156250

Ans: The is 35156250 litres of petrol in 375 drums.

10. How much cost yasmeen saved if she bought a motorcycle in 6430 rupees of 286313.

Sol:

Saving amount of Yasmeen = ?
Price of a motorcycle = 64300
Total amount of Yasmen =286313
Then,

286313
-64300
222013

Ans: Yasmeen saved Rs.222013 rupees.

Greatest common divisoner and least common multiple

G.C.D

G.C.D means the greatest number that can divide all given number.
It can be found two ways:

i By factorization method

ii By Division method.

We have learnt the greatest common divisioner in previous classes let'us learn more.

Example: G.C.D by factorization. i 18 , 24 ii 16,48,56 iii 36, 60

i 18 , 24

Multiplication of 24 = $\boxed{2} \times 2 \times 2 \times \boxed{3}$

Multiplication of 18 = $\boxed{2} \times 3 \times \boxed{3}$

Common factors = 2×3

G.C.D = 6

2 | 18
3 | 9
3 | 3
1

2 | 24
2 | 12
2 | 6
3 | 3
1

ii 16,48,56

Multiplication of 48 = $\boxed{2} \times \boxed{2} \times \boxed{2} \times 2$

Multiplication of 16 = $\boxed{2} \times \boxed{2} \times \boxed{2} \times 2 \times 3$

= $\boxed{2} \times \boxed{2} \times \boxed{2} \times 7$

Common factors = $2 \times 2 \times 2$

G.C.D = 8

2 | 56
2 | 28
2 | 14
7 | 7
7

2 | 48
2 | 24
2 | 12
2 | 6
3 | 3
1

2 | 16
2 | 8
2 | 4
2 | 2
1

iii 36, 60

Multiplication of 60 = $\boxed{2} \times \boxed{2} \times \boxed{3} \times 5$

Multiplication of 36 = $\boxed{2} \times \boxed{2} \times \boxed{3} \times 3$

Common factors = $2 \times 2 \times 3$

G.C.D = 12

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

2 | 60
2 | 30
3 | 15
5 | 5
1

EXERCISE 2.1

Q.1: Find the G.C.D by factorization.

1 10, 15, 25

Sol:

2 | 10
5 | 5
1

3 | 15
5 | 5
1

5 | 25
5 | 5
1

Factors of 10 = 2 x 5
Factors of 15 = 3 x 5
Factors of 25 = 5 x 5

The common factors of 10, 15 and 25 is 5. Then G.C.D of 10, 15 and 25 is 5

2 40, 20, 35

Sol:

2 | 40
2 | 20
2 | 10
5 | 5
1

2 | 20
2 | 10
5 | 5
1

5 | 35
7 | 7
1

Factors of 40 = 2 x 2 x 2 x 5
Factors of 20 = 2 x 2 x 5
Factors of 35 = 5 x 7

The common factors of 40, 20 and 35 is 5.
Ans: G.C.D of 40, 20 and 35 is 5

3 24, 36, 48

Sol:

2 | 24
2 | 12
2 | 6
3 | 3
1

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

2 | 48
2 | 24
2 | 12
2 | 6
3 | 3
1

Factors of 24 = 2 x 2 x 2 x 3
Factors of 36 = 2 x 2 x 3 x 3
Factors of 48 = 2 x 2 x 2 x 2 x 3

The common factors of 24, 36 and 48 = 2 x 2 x 3 = 12.
Ans: G.C.D of 24, 36 and 48 = 12

4 33, 66, 11

Sol:

3 | 33
11 | 11
1

2 | 66
3 | 33
11 | 11
1

11 | 11
1

Factors of 33 = 3 x 11
Factors of 66 = 2 x 3 x 11
Factors of 11 = 1 x 11

The common factors of 33, 36 and 11 = 11.
Ans: G.C.D of 33, 66 and 11 = 11

5 24, 48, 72

Sol:

2 | 24
2 | 12
2 | 6
3 | 3
1

2 | 48
2 | 24
2 | 12
2 | 6
3 | 3
1

2 | 72
2 | 36
2 | 18
3 | 9
3 | 3
1

6 40, 50, 60

Sol:

2 | 40
2 | 20
2 | 10
5 | 5
1

2 | 50
5 | 25
5 | 5
1

2 | 60
2 | 30
3 | 15
5 | 5
1

Factors of 24 = 2 x 2 x 2 x 3
Factors of 48 = 2 x 2 x 2 x 2 x 3
Factors of 72 = 2 x 2 x 2 x3 x 3

The common factors of 24, 48 and 72 = 2 x 2 x 2 x 3 = 24.
Ans: G.C.D of 24, 48 and 72 = 24

7 **46, 69, 92**

Sol:

2 | 46	3 | 69	2 | 92
23 | 23	23 | 23	2 | 46
1	1	23 | 23
		1

Factors of 46 = 2 x 23
Factors of 69 = 3 x 23
Factors of 92 = 2 x 2 x 23

The common factors of 46, 69 and 92 = 23.
Ans: G.C.D of 46, 69 and 92 = 23

9 **16, 20, 24**

Sol:

2 | 16	2 | 20	2 | 24
2 | 8	2 | 10	2 | 12
2 | 4	5 | 5	2 | 6
2 | 2	1	3 | 3
1		1

Factors of 16 = 2 x 2 x 2 x 2
Factors of 20 = 2 x 2 x 5
Factors of 24 = 2 x 2 x 2 x 3

The common factors of 16, 20 and 24 = 2 x 2 = 4.
Ans: G.C.D of 16, 20 and 24 = 4

Factors of 40 = 2 x 2 x 2 x 5
Factors of 50 = 2 x 5 x 5
Factors of 60 = 2 x 2 x 3 x 5

The common factors of 40, 50 and 60 = 2 x 5 = 10.
Ans: G.C.D of 40, 50 and 60 = 10

8 **45, 95, 90**

Sol:

3 | 45	5 | 95	2 | 90
3 | 15	19 | 19	3 | 45
5 | 5	1	3 | 15
1		5 | 5
		1

Factors of 45= 3 x 3 x 5
Factors of 95 = 5 x 19
Factors of 90 = 2 x 3 x 3 x 5

The common factors of 45, 95 and 90 = 5.
Ans: G.C.D of 45, 95 and 90 = 5

10 **63, 21, 42**

Sol:

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

Factors of 63= 3 x 3 x 7
Factors of 21 = 3 x 7
Factors of 42 = 2 x 3 x 7

The common factors of 63, 21 and 42 = 3 x 7 =21.
Ans: G.C.D of 63, 21 and 42 = 21

11 **21, 28, 56**

Sol:

3 | 21	2 | 28	2 | 56
7 | 7	2 | 14	2 | 28
1	7 | 7	2 | 14
	1	7 | 7
		1

Factors of 21 = 3 x 7
Factors of 28 = 2 x 2 x 7
Factors of 56 = 2 x 2 x 2 x 7

The common factors of 21, 28 and 56 = 7.
Ans: G.C.D of 21, 28 and 56 = 7

13 **24, 48, 96**

Sol:

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

Factors of 24 = 2x2x2x3
Factors of 48 = 2x2x2x2x3
Factors of 96 = 2x2x2x2x2x3

The common factors of 24, 48 and 96 = 2 x 2 x 2 x 3 =24.
Ans: G.C.D of 24, 48 and 96 = 24

15 **35, 55, 105**

Sol:

3 | 35	5 | 55	3 | 105
7 | 7	11 | 11	5 | 35
1	1	7 | 7
		1

Factors of 35 = 3 x 7
Factors of 55 = 5 x 11
Factors of 105 = 3 x 5 x 7

The common factors of 35, 55 and 105 = 1.
Ans: G.C.D of 35, 55 and 105 = 1

12 **20, 40, 100**

Sol:

2 | 20	2 | 40	2 | 100
2 | 10	2 | 20	2 | 50
5 | 5	2 | 10	5 | 25
1	5 | 5	5 | 5
	1	1

Factors of 20= 2 x 2 x 5
Factors of 40 = 2 x 2 x 2 x 5
Factors of 100 = 2 x 2 x 5 x 5

The common factors of 20, 40 and 100 = 10.
Ans: G.C.D of 20, 40 and 100 = 10

14 **39, 52, 91**

Sol:

3 | 39	2 | 52	7 | 91
13 | 13	2 | 26	13 | 13
1	13 | 13	1
	1	

Factors of 39= 3 x 13
Factors of 52 = 2 x 2 x 13
Factors of 91 = 7 x 13

The common factors of 39, 52 and 91 = 13.
Ans: G.C.D of 39, 52 and 91 = 13

16 **70, 105, 140**

Sol:

2 | 70	3 | 105	2 | 140
5 | 35	5 | 35	2 | 70
7 | 7	7 | 7	5 | 35
1	1	7 | 7
		1

Factors of 70 = 2 x 5 x 7
Factors of 105 = 3 x 5 x 7
Factors of 140 = 2 x 2 x 5 x 7

The common factors of 70, 105 and 140 = 5 x 7 = 35.
Ans: G.C.D of 70, 105 and 140 =35

G.C.D by Division method

Exercises by division method.

Example: Find G.C.D 57, 114 and 95

```
     3           1
19 | 57     95 | 114
     57           95   5
     0        19 | 95
                   95
     1             0
75 | 85
     75   7
   10 | 75
        70
        5
```

G.C.D= 19

Example Find G.C.D of 24, 88, 76

```
    6           1
4 | 24     76 | 88
    24          76   6
    0        12 | 76
                  72   3
                 4 | 12
                     12
                     0
```

G.C.D= 4

EXERCISE 2.2

Q.1: Find G.C.D by Division method.

1. **40, 45, 55**

Sol:

```
     1              9
40 | 55        5 | 45
    -40   8        -45
    5 | 40          00
       -40
        00         11
               5 | 55
                  -55
                   00
```

Ans: The G.C.D of 40, 45 and 55 is 5.

2. **12, 45, 21**

Sol:

```
     3                  15
12 | 45             3 | 45
    -36   1             -3
    9 | 12              15
        -9   3         -15
        3 |  9          00
            -9
             0           7
                    3 | 21
                       -21
                        00
```

Ans: The G.C.D of 12 45 and 21 is 3.

3. **96, 144**

Sol:

```
     1             3
96 | 144     48 | 144
    -96   2      -144
    48 | 96       000
        -96
         00
```

Ans: The G.C.D of 96, 144 is 48.

4. **39, 65, 26**

Sol:

```
     2             2
26 | 65      13 | 26
    -52   2      -26
    13 | 26       00
        -26        5
         00   13 | 65
                  -65
                   00
```

Ans: The G.C.D of 39, 65 and 26 is 13.

5. **75, 85, 105**

Sol:

```
     1              17          15
75 | 85         5 | 85     5 | 75
    -75   7         -5         -5
    10 | 75          35         25
         70   2     -35        -25
         5 | 10      00         00
            -10
             00
```

Ans: The G.C.D of 75, 85 and 105 is 5.

6. **22, 99, 77**

Sol:

```
     4              2           7
22 | 99       11 | 22     11 | 77
    -88   2       -22         -77
    11 | 22        00          00
        -22
         00
```

Ans: The G.C.D of 22, 99 and 77 is 11.

7. **51, 68, 34**

Sol:

```
                    4           2
     1        17 | 68     17 | 34
34 | 51           -68         -34
    -34   2        00          00
    17 | 34
        -34
         00
```

Ans: The G.C.D of 51, 68 and 34 is 17.

8 **12, 48, 78**

Sol:

```
     6
12 | 78
    -72   2
    ------
     6 | 12
        -12
        ---
         00
```

```
    2
6 | 12
   -12
   ---
    00
```

```
    8
6 | 48
   -48
   ---
    00
```

Ans: The G.C.D of 12, 48 and 78 is 6.

9 **28, 72, 96**

Sol:

```
     3
28 | 96
    -84   2
    -------
     12 | 28
         -24   3
         -------
          4  12
            -12
            ---
             00
```

```
    7
4 | 28
   -28
   ---
    00
```

```
    18
4 | 72
    -4
    --
    32
   -32
   ---
    00
```

Ans: The G.C.D of 28, 72 and 96 is 4.

10 **16, 64, 92**

Sol:

```
     5
16 | 92
    -80   1
    -------
     12 | 16
         -12   3
         -------
          4  12
            -12
            ---
             00
```

```
    16
4 | 64
    -4
    --
    24
   -24
   ---
    00
```

```
    4
4 | 16
   -16
   ---
    00
```

Ans: The G.C.D of 16, 64 and 92 is 4.

11 **88, 24, 76**

Sol:

```
     1
76 | 88
    -76   6
    -------
     12 | 76
         -72   3
         -------
          4  12
            -12
            ---
             00
```

```
    6
4 | 24
   -24
   ---
    00
```

```
    19
4 | 76
    -6
    --
    36
    36
    --
    00
```

Ans: The G.C.D of 88, 24 and 76 is 4.

12 **121, 11**

Sol:

```
     11
11 | 121
    -121
    ----
     000
```

```
     1
11 | 11
    -11
    ---
     00
```

Ans: The G.C.D of 121 and 11 is 11.

13 **169, 91, 13**

Sol:

```
     13
13 | 169
     -13
     ---
      39
      39
      --
      00
```

```
     1
13 | 13
    -13
    ---
     00
```

```
     7
13 | 91
    -91
    ---
     00
```

Ans: The G.C.D of 169, 91 and 13 is 13.

14 **63, 21, 42**

Sol:

```
     3
21 | 63
    -63
    ---
     00
```

```
     1
21 | 21
    -21
    ---
     00
```

```
     2
21 | 42
    -42
    ---
     00
```

Ans: The G.C.D of 63, 21 and 42 is 21.

15 **10, 15, 25**

Sol:

10) 25 (2
-20
5) 10 (2
-10
00

5) 15 (3
-15
00

5) 10 (2
-10
00

Ans: The G.C.D of 10, 15 and 25 is 5.

16 **144, 96, 48**

Sol:

48) 144 (3
-144
000

48) 48 (1
-48
00

48) 96 (2
-96
00

Ans: The G.C.D of 144, 48 and 96 is 48.

Least Common multiple:

Least common multiple means the number that can be divided by given numbers.

L.C.M can be found by two ways.

i By factorization   ii By division method

L.C.M by factorization method:

We have learnt L.C.M in previous classes now we shall learn more.

Example: Find L.C.M by factorization.

i **12, 36, 56**   ii **15, 25, 50**   iii **15, 18,36**

(i) Solution:

i **12, 36, 56**

Factors of 12 = 2 × 2 × 3
Factors of 36 = 2 × 2 × 3 × 3
Factors of 56 = 2 × 2 × 2 × 7
Common factors = 2 × 2
Separate factors = 3 × 3 × 7
Total factors = 2 × 2 × 3 × 3 × 2 × 7
L.C.M = 504

2	56
2	28
2	14
7	7
	1

2	36
2	18
3	9
3	3
	1

2	12
2	6
3	3
	1

ii **15, 25, 50**

Factors of 15 = 3 × 5
Factors of 25 = 5 × 5
Factors of 50 = 2 × 5 × 5
Common factors = 5
Separate factors = 3 × 2 × 5
Total factors = 5 × 5 × 3 × 2
L.C.M = 150

2	50
5	25
5	5
	1

5	25
5	5
	1

3	15
5	5
	1

iii **15, 18,36**

Factors of 15 = 3 × 5
Factors of 18 = 2 × 3 × 3
Factors of 36 = 2 × 2 × 3 × 3
Common factors = 3
Separate factors = 2 × 2 × 2 × 3 × 3 × 5
Total factors = 2 × 2 × 2 × 3 × 3 × 3 × 5
L.C.M = 1080

2	36
2	18
3	9
3	3
	1

2	18
3	9
3	3
	1

3	15
5	5
	1

EXERCISE 2.3

Q.1: Find the L.C.M by factorization

1 **18, 90, 15**

Sol:

2 | 18	2 | 90	3 | 15
3 | 9	3 | 45	5 | 5
3 | 3	3 | 15	1
1	5 | 5	
	1	

Factors of 18 = 2 x 3 x 3
Factors of 90 = 2 x 3 x 3 x 5
Factors of 15 = 3 x 5
common factors = 3
Separate factors = 2 x 2 x 3 x 5 x 5
Total factors = 2 x 2 x 3 x 3 x 5 x 5
L.C.M = 900 Ans:

2 **26, 39, 13**

Sol:

2 | 26	3 | 39	13 | 13
13 | 13	13 | 13	1
1	1	

Factors of 26 = 2 x 13
Factors of 39 = 3 x 13
Factors of 13 = 1 x 13
common factors = 13
Separate factors = 2 x 3
Total factors = 2 x 3 x 13
L.C.M = 78 Ans:

3 **12, 36, 54**

Sol:

2 | 12	2 | 36	2 | 54
2 | 6	2 | 18	3 | 27
3 | 3	3 | 9	3 | 9
1	3 | 3	3 | 3
	1	1

Factors of 12 = 2 x 2 x 3
Factors of 36 = 2 x 2 x 3 x 3
Factors of 54 = 2 x 3 x 3 x 3
common factors = 2 x 3
Separate factors = 2 x 2 x 3 x 3 x 3
Total factors = 2 x 2 x 3 x 3 x 3 x 3
L.C.M = 324 Ans:

4 **15, 25, 75**

Sol:

3 | 15	5 | 25	3 | 75
5 | 5	5 | 5	5 | 25
1	1	5 | 5
		1

Factors of 15 = 3 x 5
Factors of 25 = 5 x 5
Factors of 75 = 3 x 5 x 5
common factors = 5
Separate factors = 3 x 3 x 5 x 5
Total factors = 3 x 3 x 5 x 5 x 5
L.C.M = 1125 Ans:

5 **36, 21**

Sol:

2 | 36	3 | 21
2 | 18	7 | 7
3 | 9	1
3 | 3	
1	

6 **24, 48, 72**

Sol:

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

Factors of 21 = 2 x 7
Factors of 36 = 2 x 2 x 3 x 3
common factors = 3
Separate factors = 2 x 2 x 3 x 7
Total factors = 2 x 2 x 3 x 3 x 7
L.C.M = 252 Ans:

7 **20, 25, 35**

Sol:

2 | 20	5 | 25	5 | 35
2 | 10	5 | 5	7 | 7
5 | 5	1	1
1		

Factors of 20 = 2 x 2 x 5
Factors of 25 = 5 x 5
Factors of 35 = 5 x 7
common factors = 5
Separate factors = 2 x 2 x 5 x 7
Total factors = 2 x 2 x 5 x 5 x 7
L.C.M = 700 Ans:

8 **44, 36, 22**

Sol:

2 | 44	2 | 36	2 | 22
2 | 22	2 | 18	11 | 11
11 | 11	3 | 9	1
1	3 | 3	
	1	

Factors of 44 = 2 x 2 x 11
Factors of 36 = 2 x 2 x 3 x 3
Factors of 22 = 2 x 11
common factors = 2
Separate factors = 2 x 2 x 3 x 3 x 11 x11
Total factors = 2 x 2 x 2 x 3 x 3 x11 x 11
L.C.M = 8712 Ans:

9 **30, 25, 65**

Sol:

2 | 30	5 | 25	5 | 65
3 | 15	5 | 5	13 | 13
5 | 5	1	1
1		

Factors of 30 = 2 x 3 x 5
Factors of 25 = 5 x 5
Factors of 65 = 5 x 13
common factors = 5
Separate factors = 2 x 3 x 5 x 13
Total factors = 2 x 3 x 5 x 5 x 13
L.C.M = 1950 Ans:

10 **21, 24, 18**

Sol:

3 | 21	2 | 24	2 | 18
7 | 7	2 | 12	3 | 9
1	2 | 6	3 | 3
	3 | 3	1
	1	

Factors of 21 = 3 x 7
Factors of 24 = 2 x 2 x 2 x 3
Factors of 18 = 2 x 3 x 3
common factors = 3
Separate factors = 2 x 2 x 2 x 3 x 2 x7
Total factors = 2 x 2 x 2 x 2 x 3 x3 x 7
L.C.M = 1008 Ans:

Factors of 24 = 2 x 2 x 2 x 3
Factors of 48 = 2 x 2 x 2 x 2 x 3
Factors of 72 = 2 x 2 x 2 x 3 x 3
common factors = 2 x 2 x 2 x 3
Separate factors = 2 x 3
Total factors = 2 x 2 x 2 x 2 x 3 x3
L.C.M = 144 Ans:

11 **36, 18, 27**

Sol:

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

2 | 18
3 | 9
3 | 3
1

3 | 27
3 | 9
3 | 3
1

Factors of 36 = 2 x 2 x 3 x 3
Factors of 18 = 2 x 3 x 3
Factors of 27 = 3 x 3 x 3
common factors = 3 x 3
Separate factors = 2 x 2 x 2 x 3
Total factors = 2 x 2 x 2 x 3 x 3 x 3
L.C.M = 216 Ans:

12 **35, 105, 70**

Sol:

5 | 35
7 | 7
1

3 | 105
5 | 35
7 | 7
1

2 | 70
5 | 35
7 | 7
1

Factors of 35 = 5 x 7
Factors of 105 = 3 x 5 x 7
Factors of 70 = 2 x 5 x 7
common factors = 5 x 7
Separate factors = 2 x 3
Total factors = 2 x 3 x 5 x 7
L.C.M = 210 Ans:

Least common multiple by division method:

In division method all given numbers are divided in group shape is divided by only one number and all divisors are multiplied each other the result is called multiplication of any number is not divided then it is placed in same shape and in next round it is divided by any number.

Important Information

If any number has no divisor then it is placed in same shape.

Example: Find L.C.M by division method.

i **28, 42, 56** ii **54, 60, 72** ii **45, 60, 75**

i **28, 42, 56**

L.C.M = 2 × 2 × 2 × 3 × 7
= 168

2 | 28 , 42 , 56
2 | 14 , 21 , 28
2 | 7 , 21 , 14
3 | 7 , 21 , 7
7 | 7 , 7 , 7
1 , 1 , 1

ii **54, 60, 72**

L.C.M = 2 × 2 × 2 × 3 × 3 × 3 × 5
= 1080

2 | 54 , 60 , 72
2 | 27 , 30 , 36
2 | 27 , 15 , 18
3 | 27 , 15 , 9
3 | 9 , 5 , 3
3 | 3 , 5 , 1
5 | 1 , 5 , 1
1 , 1 , 1

ii **45, 60, 75**

L.C.M = 2 × 2 × 3 × 3 × 5 × 5
= 900

2 | 45 , 60 , 75
2 | 45 , 30 , 75
3 | 45 , 15 , 75
3 | 15 , 5 , 25
5 | 5 , 5 , 25
5 | 1 , 1 , 5
1 , 1 , 1

EXERCISE 2.4

Q.1: Find L.C.M by Division method.

1 **25, 65, 45**

Sol:

3 | 25 , 65 , 45
3 | 25 , 65 , 15
5 | 25 , 65 , 5
5 | 5 , 13 , 1
13 | 1 , 13 , 1
1 , 1 , 1

L.C.M = 3 x 3 x 5 x 5 x 13
L.C.M = 2925 Ans:

2 **18, 27, 36**

Sol:

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

L.C.M = 2 x 2 x 3 x 3 x 3
L.C.M = 108 Ans:

3 **36, 48, 60**

Sol:

2	36 , 48 , 60
2	18 , 24 , 30
2	9 , 12 , 15
2	9 , 6 , 15
3	9 , 3 , 15
3	3 , 1 , 5
5	1 , 1 , 5
	1 , 1 , 1

L.C.M = 2 x 2 x 2 x 2 x 3 x 3 x 5
L.C.M = 720 Ans:

4 **26, 39, 65**

Sol:

2	26 , 39 , 65
3	13 , 39 , 65
5	13 , 13 , 65
13	13 , 13 , 13
	1 , 1 , 1

L.C.M = 2 x 3 x 5 x 13
L.C.M = 390 Ans:

5 **10, 20, 30**

Sol:

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

L.C.M = 2 x 2 x 3 x 5
L.C.M = 60 Ans:

6 **25, 75, 125**

Sol:

3	25 , 75 , 125
5	25 , 25 , 125
5	5 , 5 , 25
5	1 , 1 , 5
	1 , 1 , 1

L.C.M = 3 x 5 x 5 x 5
L.C.M = 375 Ans:

7 **72, 32, 64**

Sol:

2	72 , 32 , 64
2	36 , 16 , 32
2	18 , 8 , 16
2	9 , 4 , 8
2	9 , 2 , 4
2	9 , 1 , 2
3	9 , 1 , 1
3	3 , 1 , 1
	1 , 1 , 1

L.C.M = 2 x 2 x 2 x 2 x 2 x 2 x 3 x 3
L.C.M = 576 Ans:

8 **45, 75**

Sol:

3	45 , 75
3	15 , 25
5	5 , 25
5	1 , 5
	1 , 1

L.C.M = 3 x 3 x 5 x 5
L.C.M = 225 Ans:

9 **12, 36, 42**

Sol:

2	12 , 36 , 42
2	6 , 18 , 21
3	3 , 9 , 21
3	1 , 3 , 7
7	1 , 1 , 7
	1 , 1 , 1

L.C.M = 2 x 2 x 3 x 3 x 7
L.C.M = 252 Ans:

10 **24, 60, 64**

Sol:

2	24 , 60 , 64
2	12 , 30 , 32
2	6 , 15 , 16
2	3 , 15 , 8
2	3 , 15 , 4
2	3 , 15 , 2
3	1 , 15 , 1
5	1 , 5 , 1
	1 , 1 , 1

L.C.M = 2 x 2 x 2 x 2 x 2 x 2 x 3 x 5
L.C.M = 960 Ans:

11 **18, 36, 108**

Sol:

2	18 , 36 , 108
2	9 , 18 , 54
3	9 , 9 , 27
3	3 , 3 , 9
3	1 , 1 , 3
	1 , 1 , 1

L.C.M = 2 x 2 x 3 x 3 x 3
L.C.M = 108 Ans:

12 **19, 95, 135**

Sol:

3	19 , 95 , 135
3	19 , 95 , 45
3	19 , 95 , 15
5	19 , 95 , 5
19	19 , 19 , 1
	1 , 1 , 1

L.C.M = 3 x 3 x 3 x 5 x 19
L.C.M = 2565 Ans:

Solution of daily life problem by L.C.M and G.C.D:

EXERCISE 2.5

1 Find the least number of oranges that can be divided in 12boys 15 girls and 10 children equally.

Sol:

2	12 , 15 , 10
2	6 , 15 , 5
3	3 , 15 , 5
5	1 , 5 , 5
	1 , 1 , 1

L.C.M = 2 x 2 x 3 x 5
L.C.M = 60 Ans:
Ans: The last number of oranges is 60

2 Find the greatest number can be divided by 24, 36 and 48.

Sol:

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

Factors of 24 = 2 x 2 x 2 x3
Factors of 36 = 2 x 2 x 3 x 3
Factors of 48 = 2 x 2 x 2 x 2 x 3
common factors = 24, 36 and 48 is 2x2x3
Ans: The greates is 12

3 Find the least number that can be divided by 15, 18, 20 completely.

Sol:

2	15 , 18 , 20
2	15 , 9 , 10
3	15 , 9 , 5
3	5 , 3 , 5
5	5 , 1 , 5
	1 , 1 , 1

L.C.M = 2 x 2 x 3 x 3 x 5
L.C.M = 180 Ans:

5 Nadia thinks a number that is divisible by 24 and 28completely. Find the number?

Sol:

2	24 , 28
2	12 , 14
2	6 , 7
3	3 , 7
7	1 , 7
	1 , 1

L.C.M = 2 x 2 x 2 x 3 x 7
L.C.M = 168
Ans: The required numbers is 168.

7 Find the least number, that is divisible by 22, 33 and 44 but has no remainder.

Sol:

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

L.C.M = 2 x 2 x 3 x 11
L.C.M = 132

4 Find the greatest number whose remainder is zero, if it is divided by 27, 18, 36

Sol:

3	27	2	18	2	36
3	9	3	9	2	18
3	3	3	3	3	9
	1		1	3	3
					1

Factors of 27 = 3 x 3 x 3
Factors of 18 = 2 x 3 x 3
Factors of 36 = 2 x 2 x 3 x 3
common factors = 27, 18 and 36 is 3x3=9
Ans: The greatest number is 9

6 How many toffees can be divided in 10, 20 and 40 boys.

Sol:

2	10 , 20 , 40
2	5 , 10 , 20
2	5 , 5 , 10
5	5 , 5 , 5
	1 , 1 , 1

L.C.M = 2 x 2 x 2 x 5
L.C.M = 40

8 The height of three trees is 32, 48 and 50 metres respectively. Find the scale by which all trees can be measured correctly.

Sol:

2	32 , 48 , 50
2	16 , 24 , 25
2	8 , 12 , 25
2	4 , 6 , 25
2	2 , 3 , 25
3	1 , 3 , 25
5	1 , 1 , 25
5	1 , 1 , 5
	1 , 1 , 1

L.C.M = 2 x 2 x 2 x 2 x 2 x 3 x 5 x 5
L.C.M = 2400
1 m = 1000cm
12400 ÷ 1000 = 2.4 Ans:

9 Cut the 32m and 56m long rope into equal parts and find the length of longest piece.

Sol:

2	32
2	16
2	8
2	4
2	2
	1

2	56
2	28
2	14
7	7
	1

Factors of 32 = 2 x 2 x 2x 2 x 2
Factors of 56 = 2 x 2 x 2 x 7
common factors = 2 x 2 x 2
common factors = 8
Ans: The length of longest piece of rope is 8m.

10 Find the least number of mangoes if they can be divided into 10, 36 and 54 boys equal.

Sol:

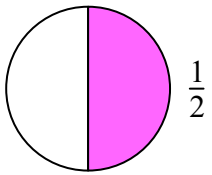
2	10 , 36 , 54
2	5 , 18 , 27
3	5 , 9 , 27
3	5 , 3 , 9
3	5 , 1 , 3
5	5 , 1 , 1
	1 , 1 , 1

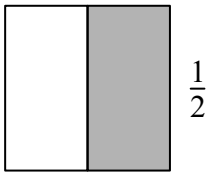
L.C.M = 2 x 2 x 3 x 3 x 3 x 5
L.C.M = 540
Ans: there 540 mangoes.

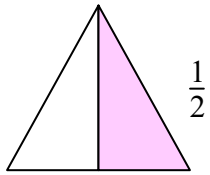
FRACTION:

COMMON FRACTION:

If any thing is divided in equal parts then any part is called common fraction. If a thing is divided into two parts that every part is its fraction and can be shown as ($\frac{1}{2}$) part.







Addition of fraction:

We have learnt the addition of fraction on the base of same and different denominator. Now we shall practice it.

Important Information

When we add different fraction that in the first we find L.C.M of their denominators then we make same fraction.

$\frac{3}{20}$ and $\frac{8}{25}$

$\frac{3}{20} + \frac{8}{25}$

L.CM $= 5 \times 2 \times 2 \times 5 = 100$

$= \frac{(3 \times 5) + (8 \times 4)}{100}$

$= \frac{15 + 32}{100} = \frac{47}{100}$

5	20 , 25
2	4 , 5
2	2 , 5
5	1 , 5
	1 , 1

Example $\frac{5}{18} + \frac{5}{12}$

Solve $\frac{5}{18} + \frac{5}{12}$

L.C.M $= 2 \times 2 \times 3 \times 3 = 36$

$= \frac{5 \times 3}{12 \times 3} + \frac{5 \times 2}{18 \times 2}$

$= \frac{15 + 10}{36}$

$= \frac{25}{36}$

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

EXERCISE 3.1

Q.1: Solve:

1. $\frac{15}{3} + \frac{9}{7}$

R.W

3	3 , 7
7	1 , 7
	1 , 1

Sol: **Method-1:**

$\frac{15}{3} + \frac{9}{7}$

L.C.M = 3 x 7 = 21

$= \frac{(15x7) + (9x3)}{21}$

$= \frac{105 + 27}{21}$

$= \frac{^{44}\cancel{132}}{\cancel{21}_{7}}$

$= \frac{44}{7}$

$= 6\frac{2}{7}$ Ans:

$$7\overline{)\begin{array}{r}6\\44\\-42\\\hline 02\end{array}}$$

Method.2

$\frac{15}{3} + \frac{9}{7}$

Sol: $\frac{15}{3} + \frac{9}{7}$

$= \frac{15 \times 7}{3 \times 7} + \frac{9 \times 3}{7 \times 3}$

$= \frac{105}{21} + \frac{27}{21}$

$= \frac{105 + 27}{21}$

$= \frac{^{44}\cancel{132}}{\cancel{21}_{7}}$

$= \frac{44}{7}$

$= 6\frac{2}{7}$ Ans:

② $\frac{3}{9} + \frac{7}{27}$

R.W

3	9 , 27
3	3 , 9
3	1 , 3
	1 , 1

Sol: **Method-1:**

$\frac{3}{9} + \frac{7}{27}$

L.C.M = 3 x 3 x 3 = 27

$= \frac{(3 \times 3) + (7 \times 1)}{27}$

$= \frac{9 + 7}{27}$

$= \frac{16}{27}$ Ans:

Method.2

$\frac{3}{9} + \frac{7}{27}$

$= \frac{3 \times 27}{9 \times 27} + \frac{7 \times 9}{27 \times 9}$

$= \frac{81}{243} + \frac{63}{244}$

$= \frac{{}^{48}\cancel{144}}{\cancel{243}_{81}}$

$= \frac{{}^{16}48}{81_{27}}$

$= \frac{16}{27}$ Ans:

③ $\frac{1}{6} + \frac{4}{12} + \frac{1}{3}$

R.W

2	6 , 12 , 3
2	3 , 6 , 3
3	3 , 3 , 3
	1 , 1 , 1

Sol: $\frac{1}{6} + \frac{4}{12} + \frac{1}{3}$

L.C.M = 2 x 2 x 3 = 12

$= \frac{(1 \times 2) + (4 \times 1) + (1 \times 4)}{12}$

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

$= \frac{{}^{5}\cancel{10}}{\cancel{12}_{6}}$

$= \frac{5}{6}$ Ans:

④ $\frac{1}{4} + \frac{2}{3} + \frac{6}{8}$

R.W

2	4 , 3 , 8
2	3 , 3 , 4
2	1 , 3 , 2
3	1 , 3 , 1
	1 , 1 , 1

Sol: L.C.M = 2 x 2 x 2 x 3 = 24

$= \frac{(1 \times 6) + (2 \times 8) + (6 \times 3)}{24}$

$= \frac{6 + 16 + 18}{24}$

$= \frac{{}^{20}\cancel{40}}{\cancel{24}_{12}}$

$= \frac{{}^{120}\cancel{20}}{\cancel{12}_{6}}$

$= \frac{{}^{10}\cancel{20}}{\cancel{12}_{6}}$

$= \frac{{}^{5}\cancel{10}}{6_{3}}$

$= \frac{5}{3}$ Ans:

(5) $2\frac{4}{9} + 5\frac{7}{9}$

Sol: $2\frac{4}{9} + 5\frac{7}{9}$

$= \frac{22}{9} + \frac{52}{9}$

$= \frac{74}{9}$

= OR 8.22 Ans:

R.W

$$\begin{array}{r} 8.22 \\ 9\,)\overline{74} \\ -72 \\ \hline 20 \\ -18 \\ \hline 20 \\ 18 \\ \hline 02 \end{array}$$

(6) $\frac{1}{3} + \frac{15}{12}$

Sol: $\frac{1}{3} + \frac{15}{12}$

L.C.M = 2 x 2 x 3 = 12

$= \frac{(1 \times 4) + (15 \times 1)}{12}$

$= \frac{4 + 15}{12}$

$= \frac{19}{12}$

= OR 1.583 Ans:

L.C.M

2	3 , 12
2	3 , 6
3	1 , 3
	1 , 1

$$\begin{array}{r} 1.583 \\ 12\,)\overline{19} \\ -12 \\ \hline 70 \\ -60 \\ \hline 100 \\ -96 \\ \hline 40 \\ -36 \\ \hline 04 \end{array}$$

(7) $\frac{5}{6} + \frac{7}{9}$

Sol: $\frac{5}{6} + \frac{7}{9}$

L.C.M = 2 x 3 x 3 = 18

$= \frac{(5 \times 3) + (7 \times 2)}{18}$

$= \frac{15 + 14}{18}$

$= \frac{29}{18}$

= OR 1.611 Ans:

R.W

2	6 , 9
3	3 , 9
3	1 , 3
	1 , 1

$$\begin{array}{r} 1.611 \\ 18\,)\overline{29} \\ -18 \\ \hline 100 \\ -108 \\ \hline 20 \\ -18 \\ \hline 20 \\ -18 \\ \hline 02 \end{array}$$

(8) $2\frac{3}{4} + 3\frac{4}{5} + 4\frac{7}{8}$

Sol: $2\frac{3}{4} + 3\frac{4}{5} + 4\frac{7}{8}$

$\frac{11}{4} + \frac{19}{5} + \frac{39}{8}$

= L.C.M= $\frac{(11x10) + (19x8) + (39x5)}{40}$

$= \frac{110 + 152 + 195}{40}$

$= \frac{457}{40}$

= OR 11.425 Ans:

R.W

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

$$\begin{array}{r} 11.425 \\ 40\,)\overline{457} \\ -40 \\ \hline 57 \\ -40 \\ \hline 170 \\ -160 \\ \hline 100 \\ -80 \\ \hline 200 \\ -200 \\ \hline 000 \end{array}$$

9 $4\frac{2}{4} + 15\frac{1}{3}$

Sol: $= 4\frac{2}{4} + 15\frac{1}{3}$

$= \frac{18}{4} + \frac{46}{3}$

L.C.M = 2 x 2 x 3 = 12

$= \frac{(18 \times 3) + (46 \times 4)}{12}$

$= \frac{54 + 184}{12}$

$= \frac{238}{12}$ (119, 6)

$= \frac{119}{6}$

= OR 19.833 Ans:

R.W

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

18 x3 54

46 x4 184

19.833
18 | 119
-6
59
-54
50
-48
20
-18
20
-18
02

10 $\frac{9}{13} + \frac{5}{26}$

Sol: $\frac{9}{13} + \frac{5}{26}$

$= \frac{(9 \times 2) + (5 \times 1)}{26}$

$= \frac{18 + 5}{26}$

$= \frac{23}{26}$ Ans:

R.W

2	13 , 26
13	13 , 13
	1 , 1

11 $15\frac{2}{3} + 12\frac{4}{5}$

Sol: $15\frac{2}{3} + 12\frac{4}{5}$

$\frac{47}{3} + \frac{64}{5}$

= L.C.M= 3 x 5 = 15

$= \frac{(47 \times 5) + (64 \times 3)}{15}$

$= \frac{235 + 192}{15}$

$= \frac{427}{15}$

= OR 28.46 Ans:

R.W

3	3 , 53
5	1 , 5
	1 , 1

47 x5 235

64 x3 192

235 x192 427

28.46
15 | 427
-30
127
-120
70
-60
100
-90
10

12 $\frac{7}{8} + \frac{5}{11}$

Sol: $= \frac{7}{8} + \frac{5}{11}$

L.C.M = 2 x 2 x 2 x 11 = 88

$= \frac{(7 \times 11) + (5 \times 8)}{88}$

$= \frac{77 + 40}{88}$

$= \frac{117}{88}$

= OR 1.329 Ans:

R.W

2	8 , 11
2	4 , 11
2	2 , 11
11	1 , 11
	1 , 1

1.329
18 | 117
-88
290
-264
260
-176
840
792
48

Subtraction of Fraction

Example: $4\frac{7}{8} - 3\frac{4}{5}$

Solution $4\frac{7}{8} - 3\frac{4}{5}$

$= \frac{39}{8} - \frac{19}{5}$

$= \frac{39 \times 5}{5 \times 8} - \frac{19 \times 8}{8 \times 5}$

$= \frac{195}{40} - \frac{152}{40}$

$= \frac{195 - 152}{40} = \frac{43}{40} = 1\frac{3}{40}$

Example: $\frac{5}{7} - \frac{2}{3}$

Solution $\frac{5}{7} - \frac{2}{3}$

$= \frac{15 - 14}{21}$

$= \frac{1}{21}$

EXERCISE 3.2

Q.1: Solve:

1 $9\frac{3}{7} - 3\frac{4}{5}$

Sol: $= 9\frac{3}{7} - 3\frac{4}{5}$

$= \frac{66}{7} - \frac{19}{5}$

L.C.M = 5 x 7 = 35

$= \frac{(66 \times 5) - (19 \times 7)}{35}$

$= \frac{330 - 133}{35}$

$= \frac{197}{35}$

$= 5\frac{22}{35}$ Ans:

R.W

5	7 , 5
7	1 , 7
	1 , 1

66
x5
330

19
x7
133

330
x133
197

$35\overline{)197}$ 5
-175
22

2 $\frac{7}{4} - \frac{4}{5}$

Sol: $= \frac{7}{4} - \frac{4}{5}$

L.C.M = 2 x 2 x 5 = 205

$= \frac{(7 \times 5) - (4 \times 4)}{20}$

$= \frac{35 - 16}{20}$

$= \frac{19}{20}$ Ans:

R.W

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

3 $7\frac{7}{8} - 3\frac{5}{8}$

Sol: $= 7\frac{7}{8} - 3\frac{5}{8}$

$= \frac{63}{8} - \frac{29}{8}$

L.C.M = 8

$= \frac{63 - 29}{8}$

$= \frac{\cancel{34}}{\cancel{8}}$

$= \frac{17}{4}$ Ans:

4 $\frac{7}{8} - \frac{5}{8}$

Sol: $= \frac{7}{8} - \frac{5}{8}$

L.C.M = 8

$= \frac{56 - 40}{8}$

$= \frac{\cancel{16}}{\cancel{8}}$

$= 2$ Ans:

5 $\frac{17}{8} - \frac{11}{6}$

Sol: $= \frac{17}{8} - \frac{11}{6}$

L.C.M = 2 x 2 x 2 x 3 = 24

$= \frac{(17 \times 3) - (11 \times 4)}{24}$

$= \frac{51 - 44}{24}$

$= \frac{7}{24}$ Ans:

R.W

2	8 , 6
2	4 , 3
2	2 , 3
3	1 , 3
	1 , 1

6 $5\frac{3}{7} - 2\frac{5}{6}$

Sol: $= 5\frac{3}{7} - 2\frac{5}{6}$

$= \frac{38}{7} - \frac{17}{6}$

L.C.M = 2 x 3 x 7 = 42

$= \frac{(38 \times 6) - (17 \times 7)}{42}$

$= \frac{228 - 119}{42}$

$= \frac{109}{42}$

$= 2\ \frac{25}{42}$ Ans:

R.W

2	7 , 6
3	7 , 3
7	7 , 3
	1 , 1

38
x6
228

17
x7
119

228
- 119
109

$42\overline{)109}\ 2$, -86, 25

7 $\frac{2}{3} - \frac{5}{9}$

Sol: $= \frac{2}{3} - \frac{5}{9}$

L.C.M = 3 x 3 = 9

$= \frac{(2 \times 3) - (5 \times 1)}{9}$

$= \frac{6 - 5}{9}$

$= \frac{1}{9}$ Ans:

3	3 , 9
3	1 , 3
	1 , 1

8 $\frac{30}{7} - \frac{12}{5}$

Sol: $= \frac{30}{7} - \frac{12}{5}$

L.C.M = 5 x 7 = 35

$= \frac{(30 \times 5) - (12 \times 7)}{35}$

$= \frac{150 - 84}{35} = \frac{66}{35}$

$= 1\ \frac{31}{35}$ Ans:

5	7 , 5
7	7 , 1
	1 , 1

$35\overline{)66}\ 1$, -35, 31

9 $\frac{3}{5} - \frac{1}{6}$

Sol: $= \frac{3}{5} - \frac{1}{6}$

L.C.M = 2 x 3 x 5 = 30

$= \frac{(3 \times 6) - (1 \times 5)}{30}$

$= \frac{18 - 5}{30}$

$= \frac{13}{30}$ Ans:

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

10 $7\frac{7}{8} - 2\frac{2}{3}$

Sol: $= 7\frac{7}{8} - 2\frac{2}{3}$

$= \frac{63}{8} - \frac{8}{3}$

L.C.M = 2 x 2 x 2 x 3 = 24

$= \frac{(63 \times 3) - (8 \times 8)}{24}$

$= \frac{189 - 64}{24}$

$= \frac{125}{24}$

$= 5\ \frac{5}{24}$ Ans:

R.W

2	8 , 3
2	4 , 3
2	2 , 3
3	1 , 3
	1 , 1

63
x3
189

$24\overline{)125}$ 5
-120
5

11 $\frac{13}{7} - \frac{4}{3}$

Sol: $= \frac{13}{7} - \frac{4}{3}$

L.C.M = 3 x 7 = 21

$= \frac{(13 \times 3) - (4 \times 7)}{21}$

$= \frac{39 - 28}{21}$

$= \frac{11}{21}$ Ans:

R.W

3	7 , 3
7	7 , 1
	1 , 1

12 $\frac{28}{30} - \frac{5}{6}$

Sol: $= \frac{28}{30} - \frac{5}{6}$

L.C.M = 2 x 3 x 5 = 30

$= \frac{(28 \times 1) - (5 \times 5)}{30}$

$= \frac{28 - 25}{30}$

$= \frac{3}{30}$

$= \frac{1}{10}$ Ans:

R.W

2	30 , 6
3	15 , 3
5	5 , 1
	1 1

Multiplication of fraction:

In the multiplication of fraction, nominator is multiplied with nominator and denominator is multiplied with denominator.

$\frac{21}{40} \times \frac{64}{63}$

$\frac{21}{40} \times \frac{64}{63}$

$= \frac{1\ \cancel{7}\ \cancel{21}}{5\ \cancel{10}\ \cancel{40}} \times \frac{\cancel{64}\ \cancel{16}\ 8}{\cancel{63}\ \cancel{21}\ 3}$

$= \frac{1 \times 8}{5 \times 3} = \frac{8}{15}$

Example $\frac{3}{7} \times \frac{9}{21}$

Solve $\frac{3}{7} \times \frac{9}{21}$

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

$= \frac{9}{7 \times 7} = \frac{9}{49}$

Example $13 \times 2\frac{6}{7}$

Solve $13 \times 2\frac{6}{7}$

$= 13 \times \frac{20}{7}$

$= \frac{13 \times 20}{7} = \frac{360}{7}$

$= 37\frac{1}{7} = \frac{260}{7}$

EXERCISE 3.3

Q.1: Solve:

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

Sol: $= \frac{\cancel{8}^{4}}{\cancel{6}_{3}} \times \frac{\cancel{9}^{3}}{5}$

$= \frac{4}{3} \times \frac{3}{5}$

$= \frac{\cancel{12}^{4}}{5}$

$= \frac{4}{5}$ **Ans:**

2 $\frac{27}{10} \times \frac{30}{18} \times \frac{3}{5}$

Sol: $= \frac{\cancel{27}^{9}}{\cancel{10}_{2}} \times \frac{\cancel{30}^{5}}{\cancel{18}_{3}} \times \frac{3}{5}$

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

$= \frac{3}{2}$

$= 1\frac{1}{2}$ **Ans:**

3 $\frac{4}{7} \times \frac{5}{8}$

Sol: $= \frac{\cancel{4}^{1}}{7} \times \frac{5}{\cancel{8}_{2}}$

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

$= \frac{5}{14}$ **Ans:**

4 $\frac{12}{8} \times \frac{12}{22}$

Sol: $= \frac{\cancel{12}^{3}}{\cancel{8}_{2}} \times \frac{\cancel{12}^{3}}{\cancel{22}_{11}}$

$= \frac{3}{2} \times \frac{3}{11}$

$= \frac{9}{22}$ **Ans:**

5 $\frac{21}{49} \times \frac{66}{56} \times \frac{2}{15}$

Sol: $= \frac{\cancel{21}^{3}}{49} \times \frac{\cancel{66}^{33}}{\cancel{56}_{28}} \times \frac{\cancel{2}^{1}}{\cancel{15}_{5}}$

$= \frac{3}{49} \times \frac{33}{28} \times \frac{1}{5}$

$= \frac{99}{980}$

$= \frac{99}{980}$ **Ans:**

6 $\frac{6}{7} \times \frac{7}{8}$

Sol: $= \frac{\cancel{6}^{3}}{7} \times \frac{7}{\cancel{8}_{4}}$

$= \frac{3}{4}$ **Ans:**

7 $\frac{66}{12} \times \frac{95}{22} \times \frac{48}{56}$

Sol: $= \frac{\cancel{66}^{3}}{12} \times \frac{95}{\cancel{22}_{1}} \times \frac{48}{56}$

$= \frac{3}{\cancel{12}_{1}} \times \frac{95}{1} \times \frac{\cancel{48}^{4}}{56}$

$= \frac{3}{1} \times \frac{95}{1} \times \frac{4}{56}$

$= \frac{\cancel{1140}^{570}}{\cancel{56}_{28}}$

$= \frac{\cancel{570}^{285}}{\cancel{28}_{14}}$

$= \frac{285}{14}$

$= 20\frac{5}{14}$ **Ans:**

9 $\frac{16}{21} \times \frac{3}{4}$

Sol: $= \frac{\cancel{16}^{4}}{\cancel{21}_{7}} \times \frac{\cancel{3}^{1}}{\cancel{4}_{1}}$

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

$= \frac{4}{7}$ **Ans:**

R.W

$$14\overline{)285}\ 20,\ -280,\ 5$$

8 $\frac{5}{9} \times \frac{14}{15} \times \frac{3}{7}$

Sol: $= \frac{\cancel{5}^{1}}{\cancel{9}_{3}} \times \frac{\cancel{14}^{2}}{\cancel{15}_{3}} \times \frac{3}{\cancel{7}_{1}}$

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

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

$= \frac{2}{9}$ **Ans:**

10 $\frac{3}{4} \times \frac{5}{21}$

Sol: $= \frac{\cancel{3}^{1}}{4} \times \frac{5}{\cancel{21}_{7}}$

$= \frac{5}{28}$ **Ans:**

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

Sol:

$$2\frac{2}{9} \times 2\frac{2}{5} \times 2\frac{3}{5}$$

$$= \frac{\overset{4}{\cancel{20}}}{\cancel{9}_{3}} \times \frac{\overset{4}{\cancel{12}}}{\cancel{5}_{1}} \times \frac{13}{5}$$

$$= \frac{4}{3} \times \frac{4}{1} \times \frac{13}{5}$$

$$= \frac{16}{3} \times \frac{13}{5}$$

$$= \frac{208}{15}$$

$$= 13\frac{13}{15}$$ **Ans:**

R.W

$$15\overline{)208}\ 13$$
$$-15$$
$$58$$
$$-45$$
$$13$$

12 $1\frac{2}{3} \times 3\frac{1}{2} \times 2\frac{5}{7}$

Sol:

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

$$= \frac{5}{3} \times \frac{\overset{1}{\cancel{7}}}{2} \times \frac{19}{\cancel{7}_{1}}$$

$$= \frac{5}{3} \times \frac{1}{2} \times \frac{19}{1}$$

$$= \frac{5}{6} \times \frac{19}{1}$$

$$= \frac{95}{6}$$

$$= 15\frac{5}{6}$$ **Ans:**

R.W

$$6\overline{)95}\ 15$$
$$-6$$
$$35$$
$$-30$$
$$5$$

To prove the division Law

There are two laws of division of multiplication.

i Addition over Division of multiplication.

ii Substraction over Division of multiplication

Prove that $\frac{1}{3} \times \left[\frac{2}{4} + \frac{1}{2}\right] = \left[\frac{1}{3} \times \frac{2}{4}\right] + \left[\frac{1}{3} \times \frac{1}{2}\right]$

$$\frac{1}{3} \times \left[\frac{2+2}{4}\right] = \frac{2}{12} + \frac{1}{6}$$

$$\frac{1}{3} \times \frac{4}{4} = \frac{2}{12} + \frac{1}{6}$$

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

$$\frac{\overset{1}{\cancel{4}}}{3\ \cancel{12}} = \frac{\overset{1}{\cancel{4}}}{\cancel{12}\ 3}$$

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

L.H.S = R.H.S

Prove that $\frac{1}{4} \times \left[\frac{3}{4} - \frac{2}{3}\right] = \left[\frac{1}{4} \times \frac{3}{4}\right] - \left[\frac{1}{4} \times \frac{2}{3}\right]$

$$\frac{1}{4} \times \left[\frac{9-8}{12}\right] = \frac{3}{16} - \frac{2}{12}$$

$$\frac{1}{4} \times \frac{1}{12} = \frac{3}{16} - \frac{2}{12}$$

$$\frac{1}{48} = \frac{9-8}{48}$$

$$\frac{1}{48} = \frac{1}{48}$$

L.H.S = R.H.S

EXERCISE 3.4

Q.1: Prove that:

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

Sol: L.H.S = R.H.S

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

$\frac{2}{3} \times \left[\frac{1+3}{5}\right] = \frac{2}{15} + \frac{6}{15}$

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

$\frac{8}{15} = \frac{8}{15}$

Hence proved LHS = RHS

2 $\frac{4}{9} \times \left[\frac{1}{3} - \frac{1}{4}\right] = \left[\frac{4}{9} \times \frac{1}{3}\right] - \left[\frac{4}{9} \times \frac{1}{4}\right]$

Sol: L.H.S = R.H.S

$\frac{4}{9} \times \left[\frac{1}{3} - \frac{1}{4}\right] = \left[\frac{4}{9} \times \frac{1}{3}\right] - \left[\frac{4}{9} \times \frac{1}{4}\right]$

$\frac{4}{9} \times \left[\frac{(1\times4)-(1\times3)}{12}\right] = \frac{4}{27} - \frac{4}{36}$

$\frac{4}{9} \times \frac{4-3}{12} = \frac{(4\times4)-(4\times3)}{108}$

$\frac{4}{9} \times \frac{1}{12} = \frac{16 - 12}{108}$

$\frac{4}{108} = \frac{4}{108}$

$\frac{2}{54} = \frac{2}{54}$

$\frac{1}{27} = \frac{1}{27}$

R.W

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

2 x 2 x 3 x 3 x 3=108

Hence proved LHS = RHS

3 $\frac{16}{3} \times \left[\frac{9}{2} - \frac{8}{9}\right] = \left[\frac{16}{3} \times \frac{9}{2}\right] - \left[\frac{16}{3} \times \frac{8}{9}\right]$

Sol: L.H.S = R.H.S

$\frac{16}{3} \times \left[\frac{9}{2} - \frac{8}{9}\right] = \left[\frac{16}{3} \times \frac{9}{2}\right] - \left[\frac{16}{3} \times \frac{8}{9}\right]$

$\frac{16}{3} \times \left[\frac{(9\times9)-(8\times2)}{18}\right] = \frac{144}{6} - \frac{126}{27}$

$\frac{16}{3} \times \left[\frac{81-16}{18}\right] = \frac{(144\times9)-(126\times2)}{54}$

$\frac{16}{3} \times \frac{65}{18} = \frac{1296 - 252}{54}$

$= \frac{1040}{54} = \frac{1040}{54}$

$= \frac{520}{27} = \frac{520}{27}$

$= 19\frac{7}{27} = 19\frac{7}{27}$

Hence proved LHS = RHS

R.W

2	6 , 27
3	3 , 27
3	1 , 9
3	1 , 3
	1 , 1

2 x 3 x 3 x 3=54

$$\begin{array}{r} 19 \\ 27 \overline{)\,520} \\ -27 \\ \hline 250 \\ -243 \\ \hline 7 \end{array}$$

4 $\frac{2}{3} \times \left[\frac{1}{2} + \frac{2}{7}\right] = \left[\frac{2}{3} \times \frac{1}{2}\right] + \left[\frac{2}{3} \times \frac{2}{7}\right]$

Sol: L.H.S = R.H.S

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

$\frac{2}{3} \times \left[\frac{(1\times7)+(2\times2)}{14}\right] = \frac{2}{6} + \frac{4}{21}$

$\frac{2}{3} \times \left[\frac{7+4}{14}\right] = \frac{(2\times7)+(4\times2)}{42}$

$\frac{2}{3} \times \frac{11}{14} = \frac{14 + 8}{42}$

$= \frac{22}{42} = \frac{22}{42}$

$= \frac{11}{21} = \frac{11}{21}$

R.W

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

2 x 3 x 7=42

Hence proved LHS = RHS

5 $\left[\frac{1}{5}+\frac{2}{6}\right]\times\frac{4}{7} = \left[\frac{1}{5}\times\frac{4}{7}\right]+\left[\frac{2}{6}\times\frac{4}{7}\right]$

Sol: **L.H.S = R.H.S**

$\left[\frac{1}{5}+\frac{2}{6}\right]\times\frac{4}{7} = \left[\frac{1}{5}\times\frac{4}{7}\right]+\left[\frac{2}{6}\times\frac{4}{7}\right]$

$= \left[\frac{(1\times6)+(2\times5)}{30}\right]\times\frac{4}{7} = \frac{4}{35}+\frac{8}{42}$

$= \frac{6+10}{30}\times\frac{4}{7} = \frac{(4\times6)+(18\times5)}{210}$

$= \frac{16}{30}\times\frac{4}{7} = \frac{25+40}{210}$

$= \frac{64}{210} = \frac{64}{210}$

R.W

2	35 , 42
3	35 , 21
5	35 , 7
7	7 , 7
	1 , 1

2 x 3 x 5 x 7=210

Hence proved LHS = RHS

6 $\frac{4}{7}\times\left[\frac{5}{8}+\frac{14}{3}\right] = \left[\frac{4}{7}\times\frac{5}{8}\right]+\left[\frac{4}{7}\times\frac{14}{3}\right]$

Sol: **L.H.S = R.H.S**

$\frac{4}{7}\times\left[\frac{5}{8}+\frac{14}{3}\right] = \left[\frac{4}{7}\times\frac{5}{8}\right]+\left[\frac{4}{7}\times\frac{14}{3}\right]$

$= \frac{4}{7}\times\left[\frac{(5\times3)+(14\times8)}{24}\right] = \frac{20}{56}+\frac{56}{21}$

$= \frac{4}{7}\times\frac{15+112}{24} = \frac{(20\times3)+(56\times8)}{168}$

$= \frac{4}{7}\times\frac{127}{24} = \frac{60+448}{168}$

$= \frac{508}{168} = \frac{508}{168}$

$= \frac{254}{84} = \frac{254}{84}$

$= \frac{127}{12} = \frac{127}{12}$

$= 10\frac{7}{12} = 10\frac{7}{12}$

R.W

2	56 , 21
2	28 , 21
2	14 , 21
3	7 , 21
7	7 , 7
	1 , 1

2 x 2 x 2 x 3 x 7=168

448
x60
508

$$12\overline{)127}\ 10,\ -120,\ 7$$

Hence proved LHS = RHS

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

Sol: **L.H.S = R.H.S**

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

$= \frac{1}{3}\times\left[\frac{(6\times3)+(2\times7)}{21}\right] = \frac{6}{21}+\frac{2}{9}$

$= \frac{1}{3}\times\frac{18+14}{21} = \frac{(6\times3)+(2\times7)}{63}$

$= \frac{1}{3}\times\frac{32}{21} = \frac{18+14}{63}$

$= \frac{32}{63} = \frac{32}{63}$

R.W

3	51 , 9
3	7 , 3
7	7 , 1
	1 , 1

3 x 3 x 7=63

Hence proved LHS = RHS

8 $\frac{4}{5}\times\left[\frac{15}{4}-\frac{1}{3}\right] = \left[\frac{4}{5}\times\frac{15}{4}\right]-\left[\frac{4}{5}\times\frac{1}{3}\right]$

Sol: **L.H.S = R.H.S**

$\frac{4}{5}\times\left[\frac{15}{4}-\frac{1}{3}\right] = \left[\frac{4}{5}\times\frac{15}{4}\right]-\left[\frac{4}{5}\times\frac{1}{3}\right]$

$= \frac{4}{5}\times\left[\frac{(15\times3)-(1\times4)}{21}\right] = \frac{60}{20}-\frac{4}{15}$

$= \frac{4}{5}\times\frac{45-4}{12} = \frac{(60\times3)-(4\times4)}{60}$

$= \frac{4}{5}\times\frac{41}{21} = \frac{180-16}{60}$

$= \frac{\overset{84}{\cancel{164}}}{\cancel{60}_{30}} = \frac{\overset{84}{\cancel{164}}}{\cancel{60}_{30}}$

$= \frac{\overset{42}{\cancel{84}}}{\cancel{30}_{15}} = \frac{\overset{42}{\cancel{84}}}{\cancel{30}_{15}}$

$= \frac{\overset{14}{\cancel{42}}}{\cancel{15}_{5}} = \frac{\overset{14}{\cancel{42}}}{\cancel{15}_{5}}$

$= \frac{14}{5} = \frac{14}{5}$

$= 2\frac{4}{5} = 2\frac{4}{5}$

R.W

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

2 x 2 x 3 x 5=60

Hence proved LHS = RHS

9 $\frac{6}{7} \times \left[\frac{14}{12} - \frac{3}{8}\right] = \left[\frac{6}{7} \times \frac{14}{12}\right] - \left[\frac{6}{7} \times \frac{3}{8}\right]$

Sol: **L.H.S** = **R.H.S**

$\frac{6}{7} \times \left[\frac{14}{12} - \frac{3}{8}\right] = \left[\frac{6}{7} \times \frac{14}{12}\right] - \left[\frac{6}{7} \times \frac{3}{8}\right]$

$= \frac{6}{7} \times \left[\frac{(14\times2) - (3\times3)}{24}\right] = \frac{84}{84} - \frac{18}{56}$

$= \frac{6}{7} \times \frac{28 - 9}{24} = \frac{(84 \times 2) - (18 \times 3)}{168}$

$= \frac{6}{7} \times \frac{19}{24} = \frac{168 + 54}{168}$

$= \frac{114}{168} = \frac{114}{168}$

$= \frac{57}{84} = \frac{57}{84}$

Hence proved LHS = RHS

R.W

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

2 x 2 x 2 x 3=24

2	84 , 56
2	42 , 28
2	21 , 14
3	21 , 7
7	7 , 7
	1 , 1

2 x 2 x 2 x 3 x 7=168

10 $\left[\frac{2}{3} + \frac{1}{6}\right] \times \frac{2}{9} = \left[\frac{2}{3} \times \frac{2}{9}\right] + \left[\frac{1}{6} \times \frac{2}{9}\right]$

Sol: **L.H.S** = **R.H.S**

$\left[\frac{2}{3} + \frac{1}{6}\right] \times \frac{2}{9} = \left[\frac{2}{3} \times \frac{2}{9}\right] + \left[\frac{1}{6} \times \frac{2}{9}\right]$

$= \left[\frac{(2\times2) + (1\times1)}{6}\right] \times \frac{2}{9} = \frac{4}{27} + \frac{2}{54}$

$= \frac{4 + 1}{6} \times \frac{2}{9} = \frac{(4 \times 2) + (2 \times 1)}{54}$

$= \frac{5}{6} \times \frac{2}{9} = \frac{8 + 2}{54}$

$= \frac{10}{54} = \frac{10}{54}$

$= \frac{5}{27} = \frac{5}{274}$

Hence proved LHS = RHS

R.W

2	3 , 6
3	3 , 3
	1 , 1

2 x 3 =6

2	27 , 54
3	27 , 27
3	9 , 9
3	3 , 3
	1 , 1

2 x 3 x 3 x 3=54

The solution of addition, substrction, multiplication and division of daily life problems:

Example: In fourth class $\frac{3}{8}$ part of 40 students play **h**ockey and $\frac{2}{5}$ of 40 play volleyball.How many remaining students play cricket.

Solution = 40

Number of Students = $\frac{\cancel{40}^{5}}{1} \times \frac{3}{\cancel{8}_{1}} = 5 \times 3$

Hockey playing students = 15

Volleyball playing students = $\frac{2}{\cancel{5}_{1}} \times \frac{\cancel{40}^{8}}{1} = 8 \times 2$

= 16

Total of hockey and wallyballs students play = 16 + 15 = 31

Cricket play is students. = 40 – 31

= 9

Example: The multiplication of two fraction is $3\frac{4}{7}$ of one is $2\frac{7}{9}$ the find other fraction.

$2\frac{7}{9}$ $3\frac{4}{7}$

Solution:

$3\frac{4}{7} \div 2\frac{7}{9}$

$= \frac{25}{7} \div \frac{25}{9}$

$= \frac{\cancel{25}}{7} \times \frac{9}{\cancel{25}}$

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

EXERCISE 3.5

Q.1: Abida completed a $\frac{1}{9}$ work on first day, on second day she worked $\frac{4}{9}$ on second day and on third day she worked $\frac{2}{9}$. Find her total completed works.

Sol:

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

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

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

Ans: Total completed work of Abidais $= \frac{7}{9}$

Q.2: A pond is filled of $\frac{2}{9}$ part. How much water is required to fill its $\frac{7}{9}$ part?

Sol:

$$\frac{7}{9} - \frac{2}{9}$$

$$= \frac{7 - 2}{9}$$

$$= \frac{5}{9}$$

Ans: $\frac{5}{9}$ water is required to fill $\frac{7}{9}$ part

Q.3: Hareem reads part of $\frac{4}{15}$ of a book in first day. One second day She reads $\frac{7}{15}$. Find the total fraction of reading book.

Sol:

$$\frac{7}{15} + \frac{4}{15}$$

$$= \frac{7 + 4}{15}$$

$$= \frac{11}{15}$$

Ans: The remaining fraction of read book is $\frac{11}{15}$

Q.4: Amina washes 15 cloths in 75 minutes. Find in how much time she washes a cloth?

Sol:

Amina washes 15 cloths in 75 minutes.
She washes 1 cloth in minutes = ?
Then:

$$15\overline{)\,75}\;5$$

$$-75$$

$$00$$

Ans: She washes one cloth is 5 minutes.

5 Rabia cooks four meals in $1\frac{1}{2}$ minutes, when Sadia cooks four meals in $2\frac{1}{2}$ minutes. Find how much more time does Sadia spend?

Method.1:

Rabia cooks meal in $1\frac{1}{2}$

$$= \frac{3}{\cancel{2}_{1}} \times \overset{30}{\cancel{60}}$$

$$= 90 \text{ minutes.}$$

Sadia cooks meal in $2\frac{1}{2}$

$$= \frac{5}{\cancel{2}_{1}} \times \overset{30}{\cancel{60}}$$

$$= 150 \text{ minutes.}$$

$$= 150 - 90$$

$$= 60 \text{ minutes or 1 hour}$$

Sadia cooks meal 1 hour later than Rabia.

Second method

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

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

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

$$= \frac{2}{2}$$

$$= 1$$

Ans: Sadia cooks meal 1 hour later than Rabia.

Solve the problems of fraction on BODMAS rule:

We know that in BODMAS rule bracket is solved then division multiplication, addition and subtraction are solved. There are three types of Brackets.

Rounder parenthis bracket	=	( )
Curly or braces bracket	=	{ }
Square bracket	=	[ ]
Bar over bracket	=	‾‾

Example: Solve the following with help pf BODMAS rule.

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

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

$$= \frac{8}{3} + \left\{\left(\frac{\cancel{14}^{7}}{2} \times \frac{1}{\cancel{2}_{1}}\right) - \frac{1}{3}\right\}$$

$$= \frac{8}{3} + \left\{\frac{7}{2} - \frac{1}{3}\right\}$$

$$= \frac{8}{3} + \left\{\frac{21-2}{6}\right\}$$

$$= \frac{8}{3} + \frac{19}{6}$$

$$= \frac{16+19}{6}$$

$$= \frac{35}{6} = 5\frac{5}{6}$$

EXERCISE 3.6

Q.1: Simplify:

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

Sol:

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

$$4\frac{1}{2} + \left\{\left(\frac{16}{5} + \frac{7}{4}\right) \times 5\right\}$$

$$4\frac{1}{2} + \left\{\left(\frac{16\times4 + 7\times5}{20}\right) \times 5\right\}$$

$$4\frac{1}{2} + \left\{\left(\frac{64+35}{20}\right) \times 5\right\}$$

$$4\frac{1}{2} + \left\{\frac{\cancel{99}}{\cancel{20}_{4}} \times \frac{\cancel{5}^{1}}{1}\right\}$$

$$4\frac{1}{2} + \left\{\frac{99}{4}\right\}$$

$$4\frac{1}{2} + \frac{99}{4}$$

$$= \frac{9}{2} + \frac{99}{4}$$

$$= \frac{(9\times2) + (99\times1)}{40}$$

$$= \frac{18+99}{4} = \frac{117}{4}$$

$$= 29\frac{1}{4}$$ **Ans:**

R.W

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

2 x 2 x 5=20

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

2 x 2 x 5=20

R.W

$$4\overline{)117}\ 29$$

-8

37

36

01

2 $24 + \left[3 \times \left\{ 10\frac{1}{2} - \left(\frac{5}{6} \div \frac{1}{3} \right) \right\} \right]$

Sol: $24 + \left[3 \times \left\{ 10\frac{1}{2} - \left(\frac{5}{6} \div \frac{1}{3} \right) \right\} \right]$

$24 + \left[3 \times \left\{ 10\frac{1}{2} - \left(\frac{5}{\cancel{6}_{2}} \times \frac{\cancel{3}^{1}}{1} \right) \right\} \right]$

$24 + \left[3 \times \left\{ \frac{21}{2} - \frac{5}{2} \right\} \right]$

$24 + \left[3 \times \left\{ \frac{21 - 5}{2} \right\} \right]$

$\frac{24}{1} + \left[\frac{3}{1} \times \frac{16}{2} \right]$

$= \frac{24}{1} + \frac{48}{2}$

$= \frac{(24 \times 2) + (48 \times 1)}{2}$

$= \frac{48 + 48}{20}$

$= \frac{^{48}\cancel{96}}{\cancel{2}_{1}}$

$= 48$ **Ans:**

3 $\frac{3}{8} + \left\{ 4\frac{1}{2} + \left(\frac{7}{10} - \frac{1}{5} \right) \right\}$

Sol: $\frac{3}{8} + \left\{ 4\frac{1}{2} + \left(\frac{7}{10} - \frac{1}{5} \right) \right\}$

$= \frac{3}{8} + \left\{ \frac{9}{4} + \left(\frac{(7 \times 1) - (1 \times 2)}{10} \right) \right\}$

$= \frac{3}{8} + \left\{ \frac{9}{2} + \left(\frac{7 - 2}{10} \right) \right\}$

$= \frac{3}{8} + \left\{ \frac{9}{2} + \frac{5}{10} \right\}$

$= \frac{3}{8} + \left\{ \frac{(9 \times 5) + (5 \times 1)}{10} \right\}$

$= \frac{3}{8} + \left\{ \frac{45 + 5}{10} \right\}$

$= \frac{3}{8} + \frac{50}{10}$

$= \frac{(3 \times 5) + (50 \times 4)}{40}$

$= \frac{15 + 200}{40}$

$= \frac{^{43}\cancel{215}}{\cancel{40}_{8}}$

$= \frac{43}{8}$

$= 5\frac{3}{8}$ **Ans:**

R.W

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

2 x 2 x 2 x 5=40

$$8 \overline{)\,43\,} \quad 5, \quad -40, \quad 03$$

4 $\left[\left\{4\frac{1}{2}+\left(5\frac{1}{3}\times 3\right)-2\frac{2}{3}\right\}\right]+\frac{2}{3}$

Sol: $\left[\left\{4\frac{1}{2}+\left(5\frac{1}{3}\times 3\right)-2\frac{2}{3}\right\}\right]+\frac{2}{3}$

$\left[\left\{4\frac{1}{2}+\left(\frac{16}{3}\times\frac{3}{1}\right)-\frac{8}{3}\right\}\right]+\frac{2}{3}$

$\left[\left\{\frac{7}{2}+\frac{48}{3}-\frac{8}{3}\right\}\right]+\frac{2}{3}$

$\left[\left\{\frac{7\times 3+48\times 2-8\times 2}{6}\right\}\right]+\frac{2}{3}$

$\left[\left\{\frac{21+96-16}{6}\right\}\right]+\frac{2}{3}$

$\left[\left\{\frac{117-16}{6}\right\}\right]+\frac{2}{3}$

$\left[\frac{101}{6}\right]+\frac{2}{3}$

$= \frac{101}{6}+\frac{2}{3}$

$= \frac{(101\times 1)+(2\times 2)}{6}$

$= \frac{101+4}{6}$

$= \frac{105}{6}$

$= 17\frac{3}{6}$ **Ans:**

R.W

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

2 x 3=6

2	3 , 6
3	3 , 3
	1 , 1

2 x 3=6

```
      17
  6 | 105
      -6
      45
      42
      03
```


5 $\frac{5}{2}\times\left[\frac{7}{6}+\left\{\frac{245}{2}-\left(\frac{4}{3}\times 121\div\frac{11}{8}\right)\right\}\right]$

Sol: $\frac{5}{2}\times\left[\frac{7}{6}+\left\{\frac{245}{2}-\left(\frac{4}{3}\times\frac{\overset{11}{\cancel{121}}}{1}\times\frac{8}{\underset{1}{\cancel{11}}}\right)\right\}\right]$

$\frac{5}{2}\times\left[\frac{7}{6}+\left\{\frac{245}{2}-\left(\frac{4}{3}\times\frac{11}{1}\times\frac{8}{1}\right)\right\}\right]$

$\frac{5}{2}\times\left[\frac{7}{6}+\left\{\frac{245}{2}-\frac{352}{3}\right\}\right]$

$\frac{5}{2}\times\left[\frac{7}{6}+\left\{\frac{(245\times 3)-(352\times 2)}{6}\right\}\right]$

$\frac{5}{2}\times\left[\frac{7}{6}+\left\{\frac{735-704}{6}\right\}\right]$

$\frac{5}{2}\times\left[\frac{7}{6}+\frac{31}{6}\right]$

$\frac{5}{2}\times\left[\frac{7+31}{6}\right]$

$= \frac{5}{\underset{1}{\cancel{2}}}+\frac{\overset{19}{\cancel{38}}}{6}$

$= \frac{5}{1}\times\frac{19}{6}$

$= \frac{95}{6}$

$= 15\frac{5}{6}$ **Ans:**

```
      15
  6 | 95
      -6
      35
      30
       5
```

6 $$\left[2\frac{1}{3} \div \left\{1\frac{1}{3} + \left(1\frac{1}{3}\times 3\frac{1}{5} - 3\frac{1}{5}\right)\right\} \times 1\frac{4}{5}\right]$$

Sol: $$\left[2\frac{1}{3} \div \left\{1\frac{1}{3} + \left(1\frac{1}{3}\times 3\frac{1}{5} - 3\frac{1}{5}\right)\right\} \times 1\frac{4}{5}\right]$$

$$\left[\frac{7}{3} \div \left\{\frac{4}{2} + \left(\frac{4}{3}\times \frac{16}{5} - \frac{16}{5}\right)\right\} \times \frac{9}{5}\right]$$

$$\left[\frac{7}{3} \div \left\{\frac{4}{2} + \left(\frac{64}{15} - \frac{16}{5}\right)\right\} \times \frac{9}{5}\right]$$

$$\left[\frac{7}{3} \div \left\{\frac{4}{2} + \left(\frac{64\times1 - 16\times3}{15}\right)\right\} \times \frac{9}{5}\right]$$

$$\left[\frac{7}{3} \div \left\{\frac{4}{2} + \left(\frac{64 - 48}{15}\right)\right\} \times \frac{9}{5}\right]$$

$$\left[\frac{7}{3} \div \left\{\frac{4}{2} + \frac{16}{15}\right\} \times \frac{9}{5}\right]$$

$$\frac{7}{3} \div \left\{\frac{4\times5 + 16\times1}{15}\right\} \times \frac{9}{5}$$

$$\frac{7}{3} \div \left\{\frac{20 + 16}{15}\right\} \times \frac{9}{5}$$

$$\frac{7}{3} \div \frac{36}{15} \times \frac{9}{5}$$

$$\frac{7}{3} \times \frac{\cancel{15}^{3}}{\cancel{36}_{4}} \times \frac{\cancel{9}^{1}}{\cancel{5}_{1}}$$

$$\frac{21}{12} = \frac{7}{4}$$ **Ans:**

R.W

3	15 , 5
5	5 , 5
	1 , 1

3	3 , 15
5	1 , 5
	1 , 1

3 x 5 = 15

$$\begin{array}{r|l} & \ \ 5 \\ \hline 5 & \ 28 \\ & -25 \\ \hline & \ \ \ 3 \end{array}$$

7 $$\left\{1\frac{1}{4} + 1\frac{1}{10} \times \left(6\frac{1}{2} \times 1\frac{5}{39}\right)\right\}$$

Sol: $$\left\{1\frac{1}{4} + 1\frac{1}{10} \times \left(\frac{\cancel{13}^{1}}{\cancel{2}_{1}} \times 1\frac{\cancel{44}^{22}}{\cancel{39}_{3}}\right)\right\}$$

$$\left\{\frac{5}{4} + \frac{11}{10} \times \frac{22}{3}\right\}$$

$$\left\{\frac{5}{4} + \frac{242}{30}\right\}$$

$$\left\{\frac{5\times15 + 242\times2}{60}\right\}$$

$$\left\{\frac{75 + 484}{60}\right\}$$

$$= \frac{559}{60}$$

$$= 9\frac{19}{60}$$ **Ans:**

R.W

2	4 , 15
2	2 , 15
3	1 , 15
5	1 , 5
	1 , 1

2 x 2 x 3 x 5=60

8 $$2\frac{1}{3} \times 1\frac{5}{7} \times 1\frac{2}{5}$$

Sol: $$2\frac{1}{3} \times 1\frac{5}{7} \times 1\frac{2}{5}$$

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

$$= \frac{28}{5}$$

$$= 5\frac{3}{5}$$ **Ans:**

9 $\frac{1}{2} + \left\{ 2\frac{1}{4} - \left(\frac{1}{3} + \frac{1}{6} \right) \right\}$

Sol:

$$\frac{1}{2} + \left\{ 2\frac{1}{4} - \left(\frac{1}{3} + \frac{1}{6} \right) \right\}$$

$$\frac{1}{2} + \left\{ \frac{9}{4} - \left(\frac{1\times2 + 1\times1}{6} \right) \right\}$$

$$\frac{1}{2} + \left\{ \frac{9}{4} - \left(\frac{2+1}{6} \right) \right\}$$

$$\frac{1}{2} + \left\{ \frac{9}{4} - \frac{3}{6} \right\}$$

$$\frac{1}{2} + \left\{ \frac{9\times3 - 3\times2}{12} \right\}$$

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

$$\frac{1\times6 + 12\times1}{12} = \frac{6+12}{12}$$

$$\frac{6}{4} = 1\frac{2}{4}$$ **Ans:**

R.W

2	3 , 6
3	3 , 3
	1 , 1

2 x 3=6

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

2 x 2 x 3=12

2	2 , 12
2	1 , 6
3	1 , 3
	1 , 1

2 x 2 x 3=12

10 $\frac{2}{5} + \left\{ 2\frac{5}{6} - \left(\frac{1}{2} + \frac{1}{3} \right) \right\}$

Sol:

$$\frac{2}{5} + \left\{ 2\frac{5}{6} - \left(\frac{1}{2} + \frac{1}{3} \right) \right\}$$

$$\frac{2}{5} + \left\{ \frac{17}{6} - \left(\frac{1}{2} + \frac{1}{3} \right) \right\}$$

$$\frac{2}{5} + \left\{ \frac{17}{6} - \left(\frac{1\times3 + 1\times2}{6} \right) \right\}$$

$$\frac{2}{5} + \left\{ \frac{17}{6} - \left(\frac{3+2}{6} \right) \right\}$$

$$\frac{2}{5} + \left\{ \frac{17}{6} - \frac{5}{6} \right\}$$

R.W

2	2 , 3
3	1 , 3
	1 , 1

2 x 3=6

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

2 x 3 x 5=30

$$\frac{2}{5} + \left\{ \frac{17-5}{6} \right\}$$

$$\frac{2}{5} + \frac{12}{6}$$

$$\frac{2\times6 + 12\times5}{30}$$

$$= \frac{12+60}{30} = \frac{\cancel{72}}{\cancel{30}} = \frac{\overset{12}{\cancel{36}}}{\underset{5}{\cancel{15}}}$$

$$= \frac{12}{5} = 2\frac{2}{5}$$ **Ans:**

$$\begin{array}{r|l} & \;4 \\ 3 & \;12 \\ & -12 \\ \hline & \;00 \end{array}$$

DECIMAL FRACTION:

Addition of decimal fraction:

The addition of decimal fraction is started on the base of decimal and is slowed in common rule of addition.

Example Add: 15.004 + 0.06

```
  15.004
+  0.06
  15.064
```

Example add: 4.75 + 254

```
  2.52
+ 4.75
  7.27
```

EXERCISE 4.1

Q.1: Perform the addition.

1 **2.003 + 5.004**

Sol:

```
  2.003
+ 5.004
  7.007
```

Ans:

2 **7.36 + 0.062**

Sol:

```
  7.36
+ 0.062
  7.422
```

Ans:

3 **13.25 + 5.9**

Sol:
$$\begin{array}{r} 13.25 \\ +\ 5.9 \\ \hline 19.15 \end{array}$$ **Ans:**

4 **2.503 + 1.792**

Sol:
$$\begin{array}{r} 2.503 \\ +\ 1.792 \\ \hline 4.295 \end{array}$$ **Ans:**

5 **3.2034 + 6.806**

Sol:
$$\begin{array}{r} 3.2034 \\ +\ 6.806 \\ \hline 10.0094 \end{array}$$ **Ans:**

6 **18.42 + 3.0643**

Sol:
$$\begin{array}{r} 18.42 \\ +\ 3.0643 \\ \hline 21.4843 \end{array}$$ **Ans:**

7 **63.71 + 35.67**

Sol:
$$\begin{array}{r} 63.71 \\ +\ 35.67 \\ \hline 99.38 \end{array}$$ **Ans:**

8 **6.421 + 3.375**

Sol:
$$\begin{array}{r} 6.421 \\ +\ 3.375 \\ \hline 9.796 \end{array}$$ **Ans:**

9 **23.34 + 39.175**

Sol:
$$\begin{array}{r} 23.34 \\ +\ 39.175 \\ \hline 62.515 \end{array}$$ **Ans:**

10 **2.7364 + 3.5833**

Sol:
$$\begin{array}{r} 2.7364 \\ +\ 3.5833 \\ \hline 6.3197 \end{array}$$ **Ans:**

11 **2.1456 + 3.08**

Sol:
$$\begin{array}{r} 2.1456 \\ +\ 3.08 \\ \hline 5.2256 \end{array}$$ **Ans:**

12 **4.35 + 1.672**

Sol:
$$\begin{array}{r} 4.35 \\ +\ 1.672 \\ \hline 6.022 \end{array}$$ **Ans:**

13 **6.5623 + 2.1345**

Sol:
$$\begin{array}{r} 6.5623 \\ +\ 2.1345 \\ \hline 8.6968 \end{array}$$ **Ans:**

14 **7.0407 + 8.2859**

Sol:
$$\begin{array}{r} 7.0407 \\ +\ 8.2859 \\ \hline 15.3266 \end{array}$$ **Ans:**

15 **38.2025 + 21.1526**

Sol:
$$\begin{array}{r} 38.2025 \\ +\ 21.1526 \\ \hline 59.3551 \end{array}$$ **Ans:**

16 **15.234 + 21.460**

Sol:
$$\begin{array}{r} 15.234 \\ +\ 21.460 \\ \hline 36.694 \end{array}$$ **Ans:**

17 **8.045 + 8.438**

Sol:
$$\begin{array}{r} 8.045 \\ +\ 8.438 \\ \hline 16.483 \end{array}$$ **Ans:**

18 **4.37 + 5.90**

Sol:
$$\begin{array}{r} 4.37 \\ +\ 5.90 \\ \hline 10.27 \end{array}$$ **Ans:**

Subtraction of decimal fractions:

In subtraction of decimal fraction, the decimal is placed under the decimal and is solved as common rule of subtraction.

Example Substract 5 to 2.952

$$\begin{array}{r} 5.000 \\ -\ 2.952 \\ \hline 2.048 \end{array}$$

Example Substract 16.73 to 12.67

$$\begin{array}{r} 16.73 \\ -\ 12.67 \\ \hline 4.06 \end{array}$$

EXERCISE 4.2

Q.2: Find the difference.

1 **127.20 – 86.35**

Sol:
$$\begin{array}{r} 127.20 \\ -\ 86.35 \\ \hline 40.85 \end{array}$$ **Ans:**

2 **27.47 – 9.08**

Sol:
$$\begin{array}{r} 27.47 \\ -\ 9.08 \\ \hline 18.39 \end{array}$$ **Ans:**

3 **35.78 – 13.53**

Sol:
$$\begin{array}{r} 35.78 \\ -\ 13.53 \\ \hline 22.25 \end{array}$$ **Ans:**

4 **174.25 – 92.23**

Sol:
$$\begin{array}{r} 174.25 \\ -\ 92.23 \\ \hline 82.02 \end{array}$$ **Ans:**

5 **15.27 – 10.08**

Sol:
$$\begin{array}{r} 15.27 \\ -\ 10.08 \\ \hline 5.19 \end{array}$$ **Ans:**

6 **28.3696 – 19.6778**

Sol:
$$\begin{array}{r} 28.3696 \\ -\ 19.6778 \\ \hline 8.6918 \end{array}$$ **Ans:**

7 **8.3687 – 3.25**

Sol:
$$\begin{array}{r} 8.3687 \\ -\ 3.25 \\ \hline 5.1187 \end{array}$$ **Ans:**

8 **7.04 – 2.1345**

Sol:
$$\begin{array}{r} 7.0400 \\ -\ 2.1345 \\ \hline 4.9055 \end{array}$$ **Ans:**

9 **8.608 – 4.342**

Sol:
$$\begin{array}{r} 8.608 \\ -\ 4.342 \\ \hline 4.266 \end{array}$$ **Ans:**

10 **1.5678 – 0.2457**

Sol:
$$\begin{array}{r} 1.5678 \\ -\ 0.2457 \\ \hline 1.3221 \end{array}$$ **Ans:**

11 **6.5839 – 3.4521**

Sol:
$$\begin{array}{r} 6.5839 \\ -\ 3.4521 \\ \hline 3.1318 \end{array}$$ **Ans:**

12 **24.2856 – 14.1966**

Sol:
$$\begin{array}{r} 24.2856 \\ -\ 14.1966 \\ \hline 10.0890 \end{array}$$ **Ans:**

13 **3.469 – 1.2357**

Sol:
$$\begin{array}{r} 3.4690 \\ -\ 1.2357 \\ \hline 2.2333 \end{array}$$ **Ans:**

14 **5.38 – 3.5906**

Sol:
$$\begin{array}{r} 5.3800 \\ -\ 3.5906 \\ \hline 1.7894 \end{array}$$ **Ans:**

15 **2.1345 – 1.04**

Sol:
$$\begin{array}{r} 2.1345 \\ -\ 1.04 \\ \hline 1.0945 \end{array}$$ **Ans:**

Multiplication of decimal fraction

The multiplication of decimal fraction is also solved as the multiplication of natural number and numbers in right sided of decimal are connected the decimal is placed in result on the left of same number of decimal in values.

Multiplication of factors by 10, 100 and 1000:

Example: Multiply 234.52x100

Solution:
$$\begin{array}{r} 234.52 \\ \times\ 100 \\ \hline 00000 \\ 00000\times \\ 23452\times\times \\ \hline 23452.00 \end{array}$$

Example: Multiply 2.5105x10

Solution:
$$\begin{array}{r} 2.5105 \\ \times\ 10 \\ \hline 00000 \\ 25105\times \\ \hline 25.1050 \end{array}$$

EXERCISE 4.3

Q.1: Solve.

1 **0.345 × 515**

Solution:
$$\begin{array}{r} 0.345 \\ \times\ 515 \\ \hline 1725 \\ 0345\times \\ 1725\times\times \\ \hline 177.675 \end{array}$$

2 **53.49 × 7**

Solution:
$$\begin{array}{r} 53.49 \\ \times\ 7 \\ \hline 374.43 \end{array}$$

3 **73.82 × 14**

Solution:
$$\begin{array}{r} 73.82 \\ \times\ 14 \\ \hline 29528 \\ 7382\times \\ \hline 1033.48 \end{array}$$

4 **83.673 × 18**

Solution:
$$\begin{array}{r} 83.673 \\ \times\ 18 \\ \hline 669384 \\ 83673\times \\ \hline 1506.114 \end{array}$$

5 **7.675 × 1000**

Solution:

7.675
× 1000
0000
0000×
0000××
7675×××
7675.000

6 **22.354 × 15**

Solution:

22.354
× 15
111770
22354×
335.310

7 **3.72 × 100**

Solution:

3.72
× 100
00000
00000×
372××
372.00

8 **5.385 × 10**

Solution:

5.385
× 10
0000
5385×
53.850

9 **4.932 × 21**

Solution:

4.932
× 21
4932
9864×
103.572

10 **0.995 × 19**

Solution:

0.995
× 19
8950
0995×
18.905

11 **136.75 × 100**

Solution:

136.75
× 100
00000
00000×
13675××
13675.00

12 **931.752 × 1000**

Solution:

931.752
× 1000
0000
0000×
0000××
931752×××
931752.000

13 **7.06 × 25**

Solution:

7.06
× 25
3530
1412×
176.50

14 **542.13 × 317**

Solution:

542.13
× 317
379491
54213×
162639××
171855.21

15 **0.027 × 19**

Solution:

0.027
× 19
00243
0027×
00.513

16 **542.17 × 495**

Solution:

542.17
× 595
271085
487953×
271085××
322591.15

17 **354.26 × 100**

Solution:

354.26
× 100
00000
00000×
35426××
35426.00

18 **5.445 × 23**

Solution:

5.445
× 23
16335
10890×
125.235

19 **273.92 × 81**

Solution:

273.92
× 81
27392
219136×
22187.52

20 **0.037 × 1000**

Solution:

0.027
× 1000
0000
0000×
0000××
0037×××
0037.000

21 **5.275 × 415**

Solution:

```
    5.275
  ×   415
  -------
    26375
    5275×
  21100××
  -------
 2189.125
```

22 **245.84 × 117**

Solution:

```
   245.84
  ×   117
  -------
   172088
   24584×
  24584××
  -------
 28763.28
```

23 **135.07 × 59**

Solution:

```
  135.07
  ×   59
  ------
  121563
  67535×
  ------
 7969.13
```

24 **0.0235 × 15**

Solution:

```
  0.0235
  ×   15
  ------
   01175
  00235×
  ------
  0.3525
```


Division of decimal fraction:

Division of decimal fraction is soled on the natural numbers division.

Important Information

In decimal division decimal is placed in answer before the number place down.
If two numbers are placed down then zero is placed after decimal in answer.

Example Solve: 352.976÷ 8

Solution:

```
     44.122
  8 | 352.976
   − 32
   ---------
      32
   −  32
   ---------
       .9
   −   .8
   ---------
        17
   −    16
   ---------
         16
   −     16
   ---------
          0
```

352.976 ÷ 8 = 44.122

Example Solve: 45.9826 ÷2

Solution:

```
     22.9913
  2 | 45.9826
   − 4
   ---------
      5
   −  4
   ---------
      .19
   −  .18
   ---------
        18
   −    18
   ---------
          2
   −      2
   ---------
           6
   −       6
   ---------
           0
```

45.9826 ÷ 2 = 22.9913

EXERCISE 4.4

Perform the division.

1 **931.278 ÷ 6**

Sol:

155.213
6 | 931.278
90
31
30
12
12
78
78
00

Ans: 155.213

3 **215.38 ÷ 11**

Sol:

19.58
11 | 215.38
11
105
-99
63
-55
88
-88
00

Ans: 19.58

2 **147.12 ÷ 7**

Sol:

21.0171428571
7 | 147.12
-147
12
-7
50
-49
10
-7
30
-28
20
-14
60
-56
40
-35
50
-49
10
-7
3

Ans: 21.0171428571

3 **215.38 ÷ 11**

Sol:

19.58
11 | 215.38
-11
105
-99
63
-55
88
-88
00

Ans: 19.58

5 **7.675 ÷ 2.5**

Sol:

3.07
2.5 | 7.675
-75
175
-175
000

Ans: 3.07

7 **85.785 ÷ 5**

Sol:

11.7157
5 | 85.785
-5
35
-35
7
-5
28
-25
35
-35
00

Ans: 17.157

4 **127.57 ÷ 13.6**

Sol:

9.38
13.6 | 127.57
-122.4
517
-408
1090
-1088
02

Ans: 9.38

6 **56.55 ÷ .15**

Sol:

3.77
15 | 56.55
-45
115
-105
105
-105
000

Ans: 3.77

8 **90.45 ÷ 25**

Sol:

3.618
25 | 90.45
-75
154
-150
45
-25
200
-200
000

Ans: 3.618

9 **139.4 ÷ 136**

Sol:

```
        1.025
136 | 139.4
     -136
     ----
      340
     -272
     ----
      680
     -680
     ----
      000
```

Ans: 1.025

10 **127.57 ÷ 66**

Sol:

```
        1.9328
66 | 127.57
     -66
     ---
      615
     -594
     ----
      217
     -198
     ----
      190
     -132
     ----
      580
     -528
     ----
       52
```

Ans: 1.9328

11 **37.368 ÷ 32**

Solution:

```
        1.16775
32 | 37.368
     -32
     ---
      53
     -32
     ---
      216
     -192
     ----
       248
      -224
      ----
        240
       -224
       ----
         160
        -160
        ----
          000
```

Ans: 1.16775

12 **216.05 ÷ 35**

Sol:

```
        6.1728571428
35 | 216.05
     -210
     ----
       60
      -35
      ---
       255
      -245
      ----
        100
       -70
       ---
        300
       -280
       ----
         200
        -175
        ----
          250
         -245
         ----
            50
           -35
           ---
           150
          -140
          ----
           100
           -70
           ---
           300
          -280
          ----
           200
```

Ans: 6.1728571428

13 **0.0063 ÷ 7**

Sol:

```
        0.0009
7 | 0.0063
    -0.0063
    -------
      00000
```

Ans: 0.0009

14 **257.88 ÷ 15**

Sol:

```
        17.192
15 | 257.88
     -15
     ---
      107
     -105
     ----
       28
      -15
      ---
       138
      -135
      ----
         30
        -30
        ---
          00
```

Ans: 17.192

15 **0.0063 ÷ 9**

Sol:

```
        0.0007
9 | 0.0063
    -0.0063
    -------
      00000
```

Ans: 0.0007

Simplification of decimal fraction based on BODMAS rule:

Example: Simplify: $[5.17 + \{3.2 \times (4.4 \div 3.3 - 1.1)\}]$

Solutin:

$= [5.17 + \{3.2 \times (4.4 \div 2.2)\}]$

$= [5.17 + \{3.2 \times 2\}]$

$= [5.17 + 6.4]$

$= 11.57$

EXERCISE 4.5

Q.1: Simplify:

1 **7.3 – {1.4 + (0.82 + 1.64)}**

Sol: 7.3 – {1.4 + (0.82 + 1.64)}

= 7.3 – {1.4 + 2.46}

= 7.3 – 3.86

= 3.44 Ans:

R.W

0.82
+1.64
2.46

R.W

1.40
+2.46
3.86

R.W

7.30
+3.86
3.44

2 **{4 × (1.69 + 2.02)} + 100.23**

Sol: {4 × (1.69 + 2.02)} + 100.23

= {4 × 3.71} + 100.23

= 14.84 + 100.23

= 115.07 Ans:

R.W

169
+2.02
3.71

R.W

3.71
× 4
14.84

R.W

14.84
+100.23
115.07

3 **100 × [12 – {5.2 + (2.4 + 2.5)}]**

Sol: 100 × [12 – {5.2 + (2.4 + 2.5)}]

= 100 × [12 – {5.2 + 4 .9}]

= 100 × [12 – 10.1]

= 100 × 1.9

= 190.0 Ans:

R.W

2.4
+2.5
4.9

R.W

5.2
+4.9
10.1

R.W

12.0
–10.1
1.9

R.W

100
× 1.9
900
100+
1900

4 **1.6 × [13.55 – {6.2 + (4.3 + 5.2)}]**

Sol: 1.6 × [13.55 – {6.2 + 9.5}]

= 1.6 × [13.55 – 15.7]

= 1.6 × [– 2.15]

= – 3.44 Ans:

5 **2.25 × [1.005 + {0.5 × (2.75 ÷ 2.2 × 4.12)}]**

Sol: 2.25 × [1.005 + {0.5 × (2.75 ÷ 2.2 × 4.12)}]

= 2.25 × [1.005 + {0.5 × (1.25 × 4.12)}]

= 2.25 × [1.005 + {0.5 ×5.15}]

= 2.25 × [1.005 + 2.575]

= 2.25 ×3.58

= 8.055

6 **5.6 + 6.07 + (24.75 – 13.95 + 8.44)**

Sol: 5.6 + 6.07 + (24.75 – 13.95 + 8.44)

= 5.6 + 6.07 + 33.19 – 13.95)

= 5.6 + 6.07 + 19.24

= 30.91 Ans:

7 **15.9 – 2.9 + (3.84 + 4.35)**

Sol: 15.9 – 2.9 + (3.84 + 4.35)

= 15.9 – 2.9 +8.19

= 13 + 8.19

= 21.19 Ans:

8 **(3.4 × 3.5) – (1.12 + 0.1) – 0.02**

Sol: (3.4 × 3.5) – (1.12 + 0.1) – 0.02

= 11.9 – 1.22 – 0.02

= 11.9 – 1.24

= 10.66 Ans:

9 **1.5 – 0.2 + (4.84 + 5.01)**

Sol: 1.5 – 0.2 + (4.84 + 5.01)

= 1.5 – 0.2 + 9.85

= 11.35 – 0.2

= 11.15 Ans:

10 **5.6 + 7.06 + (24.76 – 13.44)**

Sol: 5.6 + 7.06 + (24.76 – 13.44)

= 5.6 + 7.06 + 11.32

= 23 . 98 Ans:

11 **33.01 × 2.1 + {7.2 + (3.2 – 2.1)}**

Sol: 33.01 × 2.1 + {7.2 + (3.2 – 2.1)}

= 33.01 × 2.1 + {7.2 + 1.1}

= 33.01 × 2.1 + 8.3

= 69.321 + 8.3

= 77.621 Ans:

12 **(4.5 × 2.3) – (1.02 + 0.1)**

Sol: (4.5 × 2.3) – (1.02 + 0.1)

= 10.35 – 1.12

= 9.23 Ans:

13 **{4 × (2.69 + 1.02)} + 35.23**

Sol: {4 × (2.69 + 1.02)} + 35.23

= {4 × 3.71} + 35.23

= 14 . 84 + 35.23

= 50.07 Ans:

The correct way of writing of decimal fraction:

In decimal fraction the right sided number of decimal is main number, if it is less than five that does not change if it is five or greater than five it is converted in to next number.

Example: i 4.56 ii 0.38 iii 9.371 iv 4.325

Solution: In 4.56 the digit 6 in after decimal which is more than five, it will convert into 6. Then number becomes 4.6

Solution: 0.38 in thin fraction last digit in right side is 8 it is also greater than 5 it is added with left sided digit as one. Then fraction becomes 0.4.

Solution: 9.371 in the fraction the last digit on the fraction on right side is one. It is less than five it is converted into zero. Then in next round digit is 7 which is added with 3 as the fraction is 9.4

Solution: In this fraction, after decimal 3 and 2 are less than five and there are two digits so that these can not be converted, but these will be written in same position.

EXERCISE 4.6

Q.1: **Simplify the following fraction upto one digit. By using rounding off rule.**

1. **4.253** 4.25 Ans:
2. **10.721** 10.72 Ans:
3. **56.187** 56.19 Ans:
4. **0.345** 0.35 Ans:
5. **55.67** 55.7 Ans:
6. **7.846** 7.85 Ans:
7. **9.372** 9.37 Ans:
8. **2.734** 2.73 Ans:
9. **3.46** 3.5 Ans:
10. **3.253** 3.25 Ans:
11. **74.321** 74.32 Ans:
12. **35.859** 35.86 Ans:

Q.2: Simplify the following fraction upto two digit. By use rounding off rule.

1. **4.0084** 4.01 Ans:
2. **0.00721** 0.01 Ans:
3. **0.8516** 0.86 Ans:
4. **10.728** 10.8 Ans:
5. **5.172** 5.2 Ans:
6. **56.77** 57.0 Ans:
7. **5.162** 5.2 Ans:
8. **9.267** 9.3 Ans:
9. **0.842** 0.8 Ans:
10. **56.87** 57.0 Ans:
11. **78.765** 78.8 Ans:
12. **18.697** 18.70 Ans:

Conversion of common fraction into decimal fractions

Example: i $\frac{4}{6}$ ii $\frac{13}{7}$ iii $\frac{5}{9}$ iv $\frac{10}{8}$

Solution: i $\frac{4}{6}$

$$\begin{array}{r|l} & 0.666 \\ 6 & 40 \\ & 36 \\ \hline & 40 \\ & 36 \\ \hline & 40 \\ & 36 \\ \hline & 4\ldots. \end{array}$$

Answer: 0.666..... = $\frac{4}{6}$

Solution: ii $\frac{13}{7}$

$$\begin{array}{r|l} & 1.857\ldots. \\ 7 & 13 \\ & 7 \\ \hline & 60 \\ & 56 \\ \hline & 40 \\ & 35 \\ \hline & 50 \\ & 49 \\ \hline & 1 \end{array}$$

Answer: 1.857..... = $\frac{13}{7}$

Solution: iii $\frac{5}{9}$

$$\begin{array}{r|l} & 0.555 \\ 9 & 50 \\ & 45 \\ \hline & 50 \\ & 45 \\ \hline & 50 \\ & 45 \\ \hline & 5 \end{array}$$

Answer: 0.555..... = $\frac{5}{9}$

Solution: iv $\frac{10}{8}$

$$\begin{array}{r|l} & 1.25 \\ 8 & 10 \\ & 8 \\ \hline & 20 \\ & 16 \\ \hline & 40 \\ & 40 \\ \hline & 0 \end{array}$$

Answer: 1.25 = $\frac{10}{8}$

EXERCISE 4.7

Convert the common fraction are decimal fraction.

1. $\frac{1}{2}$

Sol: $\frac{1}{2}$

= 0.5 Ans:

R.W

$$\begin{array}{r|l} & 0.5 \\ 2 & 10 \\ & 10 \\ \hline & 00 \end{array}$$

2. $\frac{3}{25}$

Sol: $\frac{3}{25}$

= 0.12 Ans:

R.W

$$\begin{array}{r|l} & 0.12 \\ 25 & 30 \\ & -25 \\ \hline & 50 \\ & 50 \\ \hline & 00 \end{array}$$

3 $\frac{3}{4}$

Sol: $\frac{3}{4}$

= 0.75 Ans:

R.W

$$\begin{array}{r|l} & 0.75 \\ \hline 4 & 30 \\ & -28 \\ \hline & 20 \\ & -20 \\ \hline & 00 \end{array}$$

4 $\frac{17}{5}$

Sol: $\frac{17}{5}$

= 3.4 Ans:

R.W

$$\begin{array}{r|l} & 3.4 \\ \hline 5 & 17 \\ & -15 \\ \hline & 20 \\ & 20 \\ \hline & 00 \end{array}$$

5 $\frac{3}{8}$

Sol: $\frac{3}{8}$

= 0.375 Ans:

R.W

$$\begin{array}{r|l} & 0.375 \\ \hline 4 & 30 \\ & -24 \\ \hline & 60 \\ & -56 \\ \hline & 40 \\ & -40 \\ \hline & 00 \end{array}$$

6 $\frac{5}{16}$

Sol: $\frac{5}{16}$

= 0.3125 Ans:

R.W

$$\begin{array}{r|l} & 0.3125 \\ \hline 4 & 50 \\ & -48 \\ \hline & 20 \\ & -16 \\ \hline & 40 \\ & 32 \\ \hline & 80 \\ & -80 \\ \hline & 00 \end{array}$$

7 $\frac{5}{3}$

Sol: $\frac{5}{3}$

= 1.66 Ans:

R.W

$$\begin{array}{r|l} & 0.166 \\ \hline 3 & 5 \\ & -3 \\ \hline & 20 \\ & -18 \\ \hline & 20 \\ & -18 \\ \hline & 02 \end{array}$$

8 $\frac{15}{7}$

Sol: $\frac{15}{7}$

= 2.142 Ans:

R.W

$$\begin{array}{r|l} & 2.142 \\ \hline 7 & 15 \\ & -14 \\ \hline & 10 \\ & -7 \\ \hline & 30 \\ & -28 \\ \hline & 20 \\ & 14 \\ \hline & 06 \end{array}$$

9 $\frac{45}{13}$

Sol: $\frac{45}{13}$

= 3.461 Ans:

R.W

$$\begin{array}{r|l} & 3.461 \\ \hline 13 & 45 \\ & -39 \\ \hline & 60 \\ & -52 \\ \hline & 80 \\ & -78 \\ \hline & 20 \\ & -13 \\ \hline & 07 \end{array}$$

10 $\frac{125}{8}$

Sol: $\frac{125}{8}$

= 15.625 Ans:

R.W

$$\begin{array}{r|l} & 15.625 \\ \hline 8 & 125 \\ & -8 \\ \hline & 45 \\ & -40 \\ \hline & 50 \\ & -48 \\ \hline & 20 \\ & -16 \\ \hline & 40 \\ & -40 \\ \hline & 00 \end{array}$$

11 $\frac{5}{8}$

Sol: $\frac{5}{8}$

= 0.625 Ans:

R.W

$$\begin{array}{r|l} & 0.625 \\ \hline 8 & 50 \\ & -48 \\ \hline & 20 \\ & -16 \\ \hline & 40 \\ & -40 \\ \hline & 00 \end{array}$$

12 $\frac{17}{20}$

Sol: $\frac{17}{20}$

= 0.85 Ans:

R.W

$$\begin{array}{r|l} & 0.85 \\ \hline 20 & 170 \\ & -160 \\ \hline & 100 \\ & -100 \\ \hline & 000 \end{array}$$

13 $\frac{23}{25}$

Sol: $\frac{23}{25}$

= 0.92 Ans:

R.W

$$\begin{array}{r|l} & 0.92 \\ \hline 25 & 230 \\ & -225 \\ \hline & 50 \\ & -50 \\ \hline & 00 \end{array}$$

14 $\frac{11}{16}$

Sol: $\frac{11}{16}$

= 0.6875 Ans:

R.W

$$\begin{array}{r|l} & 0.6875 \\ \hline 16 & 110 \\ & -96 \\ \hline & 140 \\ & -128 \\ \hline & 120 \\ & -112 \\ \hline & 80 \\ & -80 \\ \hline & 00 \end{array}$$

15 $\frac{5}{12}$

R.W

Sol: $\frac{5}{12}$

$= 0.4166$ Ans:

$$
\begin{array}{r|l}
 & 0.4166 \\
12 & 50 \\
 & -48 \\
\hline
 & 20 \\
 & -12 \\
\hline
 & 80 \\
 & 72 \\
\hline
 & 80 \\
 & 72 \\
\hline
 & 08
\end{array}
$$

16 $\frac{24}{18}$

R.W

Sol: $\frac{24}{18}$

$= 1.33$ Ans:

$$
\begin{array}{r|l}
 & 1.33 \\
18 & 24 \\
 & -18 \\
\hline
 & 60 \\
 & -54 \\
\hline
 & 60 \\
 & -54 \\
\hline
 & 04
\end{array}
$$

17 $\frac{21}{11}$

R.W

Sol: $\frac{21}{11}$

$= 1.90$ Ans:

$$
\begin{array}{r|l}
 & 1.90 \\
18 & 21 \\
 & -11 \\
\hline
 & 100 \\
 & -99 \\
\hline
 & 01
\end{array}
$$

18 $\frac{5}{17}$

R.W

Sol: $\frac{5}{17}$

$= 0.2941$ Ans:

$$
\begin{array}{r|l}
 & 0.2941 \\
17 & 50 \\
 & -34 \\
\hline
 & 160 \\
 & -153 \\
\hline
 & 70 \\
 & 68 \\
\hline
 & 20 \\
 & 17 \\
\hline
 & 03
\end{array}
$$

Convert the decimal fraction into common fraction:

Example: i 0.468 ii 0.82 iii 0.525 iv 0.027

Solution: i 0.468

$= \frac{\cancel{468}}{\cancel{1000}} \quad \begin{matrix} 117 & \cancel{234} \\ 250 & \cancel{500} \end{matrix}$

$= \frac{117}{250}$

Solution: ii 0.82

$= \frac{\cancel{82}}{\cancel{100}} \quad \begin{matrix} 41 \\ 50 \end{matrix}$

$= \frac{41}{50}$

Solution: iii 0.525

$= \frac{\cancel{525}}{\cancel{1000}} \quad \begin{matrix} 21 & \cancel{105} \\ 40 & \cancel{200} \end{matrix}$

$= \frac{21}{40}$

Solution: iv 0.027

$= \frac{27}{1000}$

EXERCISE 4.8

Q.1: Convert the decimal factors into common fractions.

1 **0.7**

Sol: $\frac{7}{10}$ Ans:

2 **0.0036**

Sol: $\frac{\cancel{36}^{18}}{\cancel{10000}_{5000}}$

$= \frac{\cancel{18}^{9}}{\cancel{5000}_{2500}}$

$= \frac{9}{2500}$ Ans:

3 **0.00063**

Sol: $\frac{63}{100000}$ Ans:

4 **0.05**

Sol: $\frac{\cancel{5}^{1}}{\cancel{100}_{20}}$

$= \frac{1}{20}$ Ans:

5 **0.456**

Sol: $\frac{456}{1000}$

$= \frac{\cancel{228}}{\cancel{500}}$ Ans:

6 **4.828**

R.W

Sol: $\frac{\cancel{4828}^{2414}}{\cancel{1000}_{500}}$

$= \frac{2414}{500}$

$= \frac{1207}{550}$ Ans:

$$
\begin{array}{r|l}
 & 1207 \\
2 & 2414 \\
 & -290 \\
\hline
 & 14 \\
 & -14 \\
\hline
 & 00
\end{array}
$$

7 **0.029**

Sol: $\frac{29}{1000}$ Ans:

8 **0.24**

Sol: $\frac{\cancel{24}^{12}}{\cancel{100}_{50}}$

$= \frac{\cancel{12}^{6}}{\cancel{50}_{25}}$

$= \frac{6}{25}$ Ans:

9 **2.46**

Sol: $\frac{246^{123}}{100_{50}}$

$= \frac{123}{50}$ Ans:

10 **75.55**

Sol: $\frac{7555^{1511}}{100_{20}}$

$= \frac{1511}{20}$ Ans:

11 **0.075**

Sol: $\frac{75^{15}}{100_{20}}$

$= \frac{15^{3}}{20_{4}}$

$= \frac{3}{4}$ Ans:

12 **1.124**

Sol: $\frac{1124^{562}}{1000_{500}}$

$= \frac{562^{281}}{500_{250}}$

$= \frac{281}{250}$ Ans:

13 **8.48**

Sol: $\frac{848^{424}}{100_{50}}$

$= \frac{424^{212}}{50_{25}}$

$= \frac{212}{25}$ Ans:

14 **9.546**

Sol: $\frac{9546^{4773}}{1000_{500}}$

$= \frac{4773}{500}$ Ans:

15 **0.15**

Sol: $\frac{15^{3}}{100_{20}}$

$= \frac{3}{20}$ Ans:

16 **2.145**

Sol: $\frac{2145^{429}}{1000_{200}}$

$= \frac{429}{200}$ Ans:

Solution of daily life problems on the base of decimal fraction:

Example: Alia bought 7.75 meter cloth she used 3.65m from it, How much cloth is remainder.

Solution:

Total cloth	=	7.75	Meters
Used cloth	=	– 3.65	Meters
Remaining	=	4.10	Meters

EXERCISE 4.9

1 **A car covers a distance of 18.5 km per liter. Tell that 7.3 liter of petrol of 7.3 liters of petrol is filled in that car. How much distance it will cover.**

Sol:

A car covers a distance of 18.5 km per liter.
7.3 liters of petrol is filled in that car
Distance covers by a car in 7.3 liters.

$$\begin{array}{r} 18.5 \\ \times\ 7.3 \\ \hline 555 \\ 1295x \\ \hline 135.05 \end{array}$$ Ans:

2 **The cast of 1 kg potato is 18.75 then find the cost of 9 kilo Potatoes.**

Sol:

The cost of 1 kg potato is 18.75.
The cost of 9 kg potatoes =?

$$\begin{array}{r} 18.75 \\ \times\ 9 \\ \hline 168.75 \end{array}$$

Ans: The cost of 9 kg of potatoes is 168.75

3 Bano bought 2.450 kg potatoes and 7.750 kg of onions, find her total weight.

Sol:

Bano bought 2.450 kg potatoes
She also bought 7.750 kg of onion.
Total weight = ?

$$\begin{array}{r} 2.450 \\ +7.750 \\ \hline 10.200 \end{array}$$

Ans: The total weight of both vegetables is 10.200kg.

4 The monthly in come of Jamal is 35700, He spends 2950.75 rupees in daily life usage find his removed amounts.

Sol:

Monthly income of Jamal = 35700 rupees.
He spends 2950.75 rupees in daily life usage.
Remaining amount = ?

$$\begin{array}{r} 35700.00 \\ -2950.75 \\ \hline 32749.25 \end{array}$$

Ans: The remaining amount is 32749.25

5 The sum of two numbers is 100, If one is 78.01 then find other number.

Sol:

The sum of two numbers = 100
One number is 78.01
Second number = ?

$$\begin{array}{r} 100.00 \\ -78.01 \\ \hline 21.99 \end{array}$$

Ans: The second number is 21.99

6 If a bundle of nine is 287.49 in then find the total meter of wire in 7 bundles.

Sol:

A bundle of wire = 287.49.
Wires in 7 bundles ?

$$\begin{array}{r} 287.49 \\ \times\ 7 \\ \hline 2012.43 \end{array}$$

Ans: The wire in 7 bundles is 2012.43 metres.

7 The cost of a meter wire is 756.85, then find the cost of 12 meter wire.

Sol:

The cost of one meter wire is 756.85.
The cost of 12 meter wire =?

$$\begin{array}{r} 756.85 \\ \times\ 12 \\ \hline 151370 \\ 75685x \\ \hline 9082.20 \end{array}$$

Ans: The cost of 12 meter wire is 9082.20.

8 One Dozen of eggs is 96.50 rupees Find the cost of 3 Dozen eggs.

Sol:

The cost of 1 dozen egg = 96.50 rupees.
The eost of 3 dozen eggs = ?

$$\begin{array}{r} 96.50 \\ \times\ 3 \\ \hline 289.50 \end{array}$$

Ans: The cost of 3 dozen eggs is 289.50.

PERCENTAGE:

Percentage the fraction with denominator 100 is called percentage for example $\frac{35}{100} = 35\%$ It is drived from Latin language which means from hundred" "Hundred in arabic "Fei" means in "from" and sud means 100 that "Fei & Sud" or Percentage is used for hundred parts it is denoted by "%"

Conversion of percentage into common fraction:

i 25%

ii 0.82

$= \frac{83}{100}$

ii 83%

83%

i 25%

$= \frac{{}^{1}\cancel{25}}{{}_{4}\cancel{100}}$

$= \frac{1}{4}$

i 50%

i 50%

$= \frac{{}^{1}\cancel{50}}{{}_{2}\cancel{100}}$

$= \frac{1}{2}$

$= .05$

ii 25%

iii 62%

iii 62%

$= \frac{{}^{31}\cancel{62}}{{}_{50}\cancel{100}}$

$= \frac{31}{50}$

$= 6.2$

ii 25%

$= \frac{{}^{1}\cancel{25}}{{}_{4}\cancel{100}}$

$= \frac{1}{4}$

$= 0.25$

$$\begin{array}{r|l} & 6.2 \\ 50 & 31 \\ & 30 \\ \hline & 100 \\ & 100 \\ \hline & 0 \end{array}$$

Convertion of common fraction into percentage:

Example: convert $\frac{4}{5}$ into percentage.

Solution: $\frac{4}{5}$

$= \frac{4}{{}_{1}\cancel{5}} \times {}^{20}\cancel{100}$

$= 80\%$

EXERCISE 5.1

Q.1. **Convert into common fraction.**

1 **35%**

Sol: 35%

$= \frac{{}^{7}\cancel{35}}{{}_{20}\cancel{100}}$

$= \frac{7}{20}$

2 **60%**

Sol: 60%

$= \frac{{}^{30}\cancel{60}}{{}_{50}\cancel{100}}$

$= \frac{{}^{15}\cancel{30}}{{}_{25}\cancel{50}}$

$= \frac{{}^{3}\cancel{15}}{{}_{5}\cancel{25}}$

$= \frac{3}{5}$

3 **$45\frac{1}{2}\%$**

Sol: $\frac{91}{2}$

$= \frac{100}{1}$

$= \frac{91}{2} \times \frac{1}{100}$

$= \frac{91}{200}$

4 **86%**

Sol: 86%

$= \frac{{}^{43}\cancel{86}}{{}_{50}\cancel{100}}$

$= \frac{43}{50}$

5 **80%**

Sol: 80%

$= \frac{\not{80}^{40}}{\not{100}_{50}}$

$= \frac{\not{40}^{8}}{\not{50}_{10}}$

$= \frac{\not{8}^{4}}{\not{10}_{5}}$

$= \frac{4}{5}$

7 **75%**

Sol: 75%

$= \frac{\not{75}^{15}}{\not{100}_{20}}$

$= \frac{\not{15}^{3}}{\not{20}_{4}}$

$= \frac{3}{4}$

9 **56%**

Sol: 56%

$= \frac{\not{56}^{28}}{\not{100}_{20}}$

$= \frac{\not{28}^{14}}{\not{50}_{25}}$

$= \frac{14}{25}$

6 $\mathbf{32\frac{1}{2}\%}$

Sol: $\frac{\frac{65}{2}}{\frac{100}{1}}$

$= \frac{65}{2} \times \frac{1}{100}$

$= \frac{65}{200} = \frac{13}{40}$

8 **9.5%**

Sol: 9.5%

$= \frac{9.5}{100}$

$= \frac{\frac{95}{10}}{100}$

$= \frac{95}{10} \times \frac{1}{100}$

$= \frac{\not{95}^{19}}{\not{1000}_{200}}$

$= \frac{19}{200}$

10 **62%**

Sol: 62%

$= \frac{\not{62}^{31}}{\not{100}_{50}}$

$= \frac{31}{50}$

Q.1: **Convert the given percentage into decimal fraction.**

1 **64%**

Sol: 64%

$= \frac{64}{100}$

$= 0.64$

R.W

0.64
100) 640
-600
400

2 **105%**

Sol: 105%

$= \frac{105}{100}$

$= 1.05$

R.W

1.05
100) 105
-100
500
-500
000

3 **125%**

Sol: 125%

$= \frac{125}{100}$

$= 1.25$

R.W

1.25
100) 125
-100
250
-200
500
-500
000

4 **23%**

Sol: 23%

$= \frac{23}{100}$

$= 0.23$

R.W

0.23
100) 230
-200
300
-300
000

5 $\mathbf{37\frac{1}{2}\%}$

Sol: $\frac{\frac{75}{2}}{\frac{100}{1}}$

$= \frac{75}{2} \times \frac{1}{100}$

$= \frac{\not{75}^{3}}{\not{200}_{4}} = \frac{3}{4}$

$= 0.75$

6 **65%**

Sol: 65%

$= \frac{65}{100}$

$= 0.65$

R.W

0.65
100) 650
-600
500
-500
000

7 **68%**

Sol: 68%

$= \frac{68}{100}$

$= 0.68$

R.W

0.68
100) 680
-600
800
-800
000

8 **115%**

Sol: 115%

$= \frac{115}{100}$

$= 1.15$

R.W

1.15
100) 115
-100
150
-100
500
500
000

9 **205%** R.W

Sol: 205%

$= \frac{205}{100}$

$= 2.5$ Ans:

```
2.5
100 | 205
     -200
      500
     -500
      000
```

10 $40\frac{1}{2}\%$

Sol: $\frac{\frac{81}{2}}{\frac{100}{1}}$

$= \frac{81}{2} \times \frac{1}{100}$

$= \frac{81}{200}$ 0.4505 Ans:

Q.3: Convert the given fraction into percentage.

1 $\frac{3}{4}$ R.W

Sol: $\frac{3}{\cancel{4}_1} \times \cancel{100}^{25}$

$= 75\ \%$

```
  25
4 | 100
    -8
    20
   -20
    00
```

```
 25
×3
 75
```

2 $\frac{8}{3}$ R.W

Sol: $\frac{8}{3} \times 100$

$= \frac{800}{3}$

$= 266.66\%$

```
   266.66
3 | 800
    -6
    20
   -18
    20
   -18
    20
   -18
    02
```

3 $\frac{7}{8}$ R.W

Sol: $\frac{7}{\cancel{8}_2} \times \cancel{100}^{25}$

$= \frac{7 \times 25}{2}$

$= \frac{175}{2}$

$= 87.5\%$

```
  87.5
2 | 175
   -16
    15
   -14
    10
   -10
    00
```

4 $\frac{3}{8}$ R.W

Sol: $\frac{3}{8} \times 100$

$= \frac{300}{8}$

$= \frac{150}{4}$

$= \frac{75}{2}$

$= 37.5\%$

```
  37.5
2 | 75
   -6
    15
   -14
    10
   -10
    00
```


5 $\frac{4}{25}$ R.W

Sol: $\frac{4}{\cancel{25}_1} \times \cancel{100}^{4}$

$= 4 \times 4$

$= 16\ \%$

```
  4
25 | 100
    -100
     000
```

```
 4
×4
16
```

6 $\frac{19}{50}$ R.W

Sol: $\frac{19}{\cancel{50}_1} \times \cancel{100}^{2}$

$= \frac{19}{2}$

$= 38\ \%$

```
  18
50 | 100
    -50
     400
    -400
     000
```

7 $1\frac{2}{5}$

Sol: $\frac{7}{\cancel{5}_1} \times \cancel{100}^{20}$

$= 140\ \%$

8 $\frac{5}{12}$ R.W

Sol: $\frac{5}{12} \times 100$

$= \frac{\cancel{500}^{250}}{\cancel{12}_6}$

$= \frac{\cancel{250}^{125}}{\cancel{6}_3}$

$= \frac{125}{3}$

$= 41.66\ \%$

```
   41.66
3 | 125
    -12
     5
    -3
     20
    -18
     20
    -18
     02
```

9 $\frac{21}{40}$ R.W

Sol: $\frac{21}{\cancel{40}_2} \times \cancel{100}^{5}$

$= \frac{105}{2}$

$= 52.5\ \%$

```
 21
×5
105
```

```
  52.5
2 | 105
   -104
     10
    -10
     00
```

10 $\frac{8}{9}$ R.W

Sol: $\frac{8}{9} \times 100$

$= \frac{800}{9}$

$= 88.88\ \%$

```
   88.88
9 | 800
    -72
     80
    -72
     80
    -72
     80
    -72
     08
```

11 $\frac{13}{20}$ R.W

Sol: $\frac{13}{\cancel{12}_5} \times \cancel{100}^{5}$

$= 13 \times 5$

$= 65\ \%$

```
  5
20 | 100
    -100
     000
```

12 $\frac{1}{5}$

Sol: $\frac{1}{\cancel{5}_1} \times \cancel{100}^{20}$

= 20 %

R.W

20
5 | 100
-100
000

14 $\frac{7}{9}$

Sol: $\frac{7}{9} \times 100$

= $\frac{700}{9}$

= 77.7 %

R.W

77.7
90 | 700
-63
70
-63
70
-63
00

13 $\frac{15}{4}$

Sol: $\frac{15}{\cancel{4}_1} \times \cancel{100}^{25}$

= 15 × 25

= 375 %

R.W

25
4 | 100
-8
20
-20
00

25
×15
125
25×
375

15 $\frac{16}{21}$

Sol: $\frac{16}{21} \times 100$

= $\frac{1600}{21}$

= 76.19 %

R.W

76.19
21 | 1600
-147
130
-126
40
-21
190
-189
1

DISTANCE, TIME AND TEMPERATURE:

Distance:

We have learnt about length. The bigger unit of length is kilometer the table of least units of length is under.

1	Centimeter	=	10	Millimeter
1	Meter	=	100	Centimeter
1	Kilometer	=	1000	Meters

Important Information

- Meter is divided by 1000 to convert into kilometer.
- Centimeter is divided by100 to convert into meter.
- Millimeter is divided by 10 to convert into centimeter.

Remember These

- When we convert the bigger unit into lower unit then bigger unit is multiplied with lower unit.
- When we convert lower unit into bigger unit then lower unit is divided by bigger unit.

Measurement and addition of Distance

Example: Add 15.35 cm with 45.19 m

Solution:

Centimeter	Millimeter
15	35
+ 45	19
60	54

Then 15.35 cm + 45.19 cm = 60.54 cm

Example: Add 52.60 km with 13.26 km.

Kilometer	Meters
52	60
+ 13	26
65	86

Then 52.60 km + 13.26 km = 65.86 km.

EXERCISE 6.1

Q.1: Add the following:

1 **16km, 360m + 27km, 350m**

Sol:
16 km , 360 m
+27 km , 350 m
43 km , 710 m

2 **52km, 236m + 18km, 443m**

Sol:
52 km , 236 m
+18 km , 443 m
70 km , 679 m

3 **35km, 78m + 13km,53m**

Sol:
35 km , 78 m
+13 km , 53 m
48 km , 131 m

4 **39km, 37m + 14km, 64m**

Sol:
39 km , 37 m
+14 km , 64 m
53 km , 101 m

5 **27km, 63m + 41km, 23m**

Sol:
27 km , 63 m
+41 km , 23 m
68 km , 86 m

6 **96km, 64m + 93km, 57m**

Sol:
96 km , 64 m
+93 km , 57 m
189 km , 121 m

7 **74km, 23m + 25km, 44m**

Sol:
74 km , 23 m
+25 km , 44 m
99 km , 67 m

8 **37km, 92m + 78km, 24m**

Sol:
37 km , 92 m
+78 km , 24 m
115 km , 116 m

Subtraction of measurement of distance:

Example: Subtract 16.143 km from 52.236 km

Solution:

Kilometer		Millimeter
52	———	236
– 16	———	143
36	———	093

Then 52.236 km - 16.1431 km = 36.093 km.

Example: Subtract 36.596 to 10.107 km.

Solution:

Kilometer		Millimeter
36	———	596
– 10	———	107
26	———	489

Then 36.596 km - 10.107 m = 26.489 km.

EXERCISE 6.2

Q.1: Subtract:

1 **215km, 48m from 324km, 75m**

Sol:
324 km , 75 m
-215 km , 48 m
109 km , 27 m

2 **631.74km - 480.39 km**

Sol:
631.74 km
-480.39 km
151.35 km

3 **480km, 39m from 631km, 74m**

Sol:
631 km , 74 m
-480 km , 39 m
151 km , 35 m

4 **6m, 8dm, 5cm from 9m, 5dm, 10 cm**

Sol:
$^{8}\not{9}$ m , $^{10}\not{5}$ dm , 10 cm
- 6 m , 8 dm , 5 cm
2 m , 7 dm , 5 cm

5 **18km, 26m from 20km, 18m**

Sol:

	1000	
	~~20~~ km	, 18 m
-18 km		, 26 m
1 km		, 992 m

6 **18km, 25m from 43km, 9m**

Sol:

		1000
	42 ~~43~~ km	, 9 m
-18 km		, 25 m
24 km		, 984 m

7 **28m, 8m from 35km,80m**

Sol:

	34	1000
	~~35~~ km	, 80 m
-28 km		, 83 m
6 km		, 997 m

8 **62km, 35m from 71km, 65m**

Sol:

71 km		, 65 m
-62 km		, 35 m
9 km		, 30 m

The subtraction and addition of distance in daily life usage:

Example: A rope is 8.80 long from it 3.35 long piece is cut. Find the length of remaining rope.

Meter		Centimeter
8	———	80
– 3	———	35
5	———	45

Then 8.80m - 3.35m = 5.45

EXERCISE 6.3

Q.1: Nida bought 6m, 35 cm cloth and her sister saba bought 5m, 75 cm cloth. Find the total purchased cloth.

Sol:

6 km		, 35 m
+5 km		, 75 m
12 km		, 10 m

Ans: The total length of purchased clothes is 12 m and 10 cm.

Q.2 A car covered a distance of 310km, 67m on Sunday and 275 kilometer covered on Monday. Tell that how much distance is covered on both days?

Sol:

310 km		, 67 m
+ 275 km		, 00 m
585 km		, 67 m

Ans: The total distance covered on Sunday and Monday is 585 km and 67 m.

Q.3: The house of Hasan is far away from school about 6 km, 300 m. While Adil's house is far away from school about 8km. Find whose house is faraway from school and How much?

Sol:

		1000
	7 ~~8~~ km	, 00 m
-6 km		, 300 m
1 km		, 700 m

Ans: Adil's house is far away school and it is about 1 km and 700 m.

4 Aisha bought 2 m, 37 cm 75cm of cloth took her sister. How much cloth is remaining at Aisha?

Sol:

		100
	1 ~~2~~ m	, 37 cm
-0 m		, 75 cm
1 m		, 62 cm

Ans: Aisha has remaining clothes about 1m and 62 cm.

5 Adil bought a bamboo of 6m, 10 cm long. He joined another piece of bamboo about 5 m 38 m long to make the ladder. Find the total length of the bamboo.

Sol:

6 m		, 10 cm
+ 5 m		, 38 cm
11 m		, 48 cm

Ans: The total length of bamboo is 11m and 48 cm.

TIME:

We have learnt about unit of time in previous classes. The unit of time is second. The table of units is under.

60	Minutes	=	1	Hours	60	Second	=	1	Minute
1	Week	=	7	Days	1	Day	=	24	Hours
1	Year	=	12	Month	1	Month	=	4	Weeks
					1	Year	=	365	Days

Conversion of units of time:
Conversion of hours into minute:

Example: Convert the 2 hours and 35 minutes into minutes.

1 Hour = 60 Minutes

2 Hours = $60 \times 2 = 120$ Minutes

2 Hours 35 Minutes = $(35 + 120)$ Minutes

= 155 Minutes

To convert the minutes into hours:

Example: 6 convert 612 minutes into hours

Solution:

60 Minutes = 1 Hour

612 Minutes = $\frac{612}{60}$ Hours

= 10 Hours and 12 minutes

$$\begin{array}{r|l} & 10 \\ \hline 60 & 612 \\ & 60 \\ \hline & 12 \end{array}$$

To convert the minutes into seconds:

Example: 7 minutes and 35 seconds into second.

60 seconds = 1 minute

7 Minutes = $60 \times 7 = 420$ Second

7 Minutes 35 Second = $(35 + 420)$ Second

= 455 Second

Example: Convert 660 seconds into minutes

Solution:

60 Second = 1 Minute

660 Second = $\frac{660}{60}$ Minutes

= 11 Minutes

$$\begin{array}{r|l} & 11 \\ \hline 60 & 660 \\ & 60 \\ \hline & 60 \\ & 60 \\ \hline & 0 \end{array}$$

To convert the months into years:

Example: Convert 48 months into years

Solution:

12 Months = 1 Year

48 Months = $\frac{48}{12}$ Years

= 4 Years

To make days from one month:

Example: To make the days of 18 months and 25 days.

Solution:

1 Months = 30 Days

18 Months = $30 \times 18 = 540$ Days

18 Months 25 Days = $(25 + 540)$ Days

= 565 Days

Months from days:

Example: Make months of 150 days

30 Days = 1 Month

150 Days = $\frac{\cancel{150}^{5}}{\cancel{30}_{1}}$ Months

= 5 Months

Days from weeks:

Example: Make days of 14 weeks and 5 days.

Solution:

1 Month = 7 Days

14 Months = (7 × 14) Days

= 98 Days

14 5 Days = (5 + 98) Days

30 = 103 Days

To make weak from days:

Example: Make weeks from 125.

Solution:

7 Days = 1 Day

125 Days = $\frac{125}{7}$

= 17 Months 6 Days

$$7\overline{)125}\ 17,\ 7,\ 55,\ 49,\ 6$$

EXERCISE 7.1

Q.1. Convert into minutes.

1 **4 Hours**

Sol: **R.W**

We know that 1 hour = 60 minutes

60
×4
240

Then:

multiply 4 by 60

4 x 60

= 240 minutes Ans:

2 **7 Hours 30 Minutes**

Sol: 7 Hours 30 Minutes

= 7 x 60

= 420 minutes

Now add 420 minutes in 30 minutes

420 minutes
+30 minutes
450 minutes

3 **3 Hours 10 Minutes**

Sol: 3 Hours 10 Minutes

= 3 x 60

= 180 minutes

Now add 180 minutes in 10 minutes

180 minutes
+10 minutes
190 minutes

4 **8 Hours**

Sol:

We know that 1 hour = 60 minutes

Then:

multiply **8** by 60

8 x 60

= 480 minutes Ans:

R.W

60
×8
480

Q.2: **Convert into seconds:**

1 **10 Minutes**

10 x 60

600 Seconds Ans:

2 **5 Minutes**

5 x 60

300 Seconds Ans:

3 **35 Minutes 10 Seconds**

Sol: 35 Minutes 10 Seconds

= 35 x 60

= 2100 minutes

Now add 2100 minutes in 10 seconds

R.W

60
×35
300
180×
2100

2100 seconds
+10 seconds
2110 seconds

4 **25 Minutes 15 seconds**

Sol: 25 Minutes 15 seconds

= 25 x 60

= 1,500 seconds

Now add 1,500 seconds in 15 seconds

R.W

1500
+15
1515 Seconds

Q.3: **Convert into hours.**

1 **675 minutes**

= 675 ÷ 60

= 11.25 hours

```
      11.25
60 | 675
    -60
     75
    -60
     150
    -120
      300
     -300
      000
```

2 **3600 minutes**

Sol: 3600 minutes

= 3600 ÷ 60

= 60 hours

```
      60
60 | 3600
    -3600
     0000
```

3 **512 minutes**

Sol: 512 minutes

= 512 ÷ 60

= 8.53 hours

```
      8.53
60 | 512
    -480
     320
    -300
      200
     -180
       20
```

4 **342 minutes**

Sol: 342 minutes

= 342 ÷ 60

= 5.7

```
      5.7
60 | 342
    -300
     420
    -420
     000
```

5 **125 Minutes**

= 125 ÷ 60

= 2.083 hours

```
      2.083
60 | 125
     -120
      500
     -480
       200
      -180
        20
```

6 **270 Minutes**

= 270 ÷ 60

= 4.5 hours

```
      4.5
60 | 270
     -240
      300
     -300
       000
```

7 **720 Minutes**

= **72**0 ÷ 60

= 12 hours

```
      12
60 | 720
     -720
       000
```

8 **420 Minutes**

= **420** ÷ 60

= 7 hours

```
       7
60 | 420
     -420
       000
```


Q.4. **Convert the months into years.**

1 **87 months**

= 87 ÷ 12

= 7.25 years

```
      7.25
12 | 87
     -84
      30
     -24
       60
      -60
       00
```

2 **54 months**

= 54 ÷ 12

= 4.5 years

= 4 years and

= 6 months

```
      4.5
12 | 54
     -48
      60
     -60
       00
```

3 **13 months**

= 13 ÷ 12

= 1.0833 years

```
      1.0833
12 | 13
     -12
      100
      -96
       40
      -36
       40
      -36
        4
```

4 **120 months**

= 120 ÷ 12

= 10 years

```
      10
12 | 120
     -120
       000
```

5 **75 months**

= 75 ÷ 12

= 6.25 years

= 6 years

= 3 months

```
      6.25
12 | 75
     -72
      30
     -24
       60
      -60
       00
```

6 **21 months**

= 21 ÷ 12

= 1.75 years

= 1 year

= 9 months

```
      1.75
12 | 21
     -12
      90
     -84
       60
      -60
       00
```

7 **128 months**

= 128 ÷ 12

= 10.66 years

```
      10.66
12 ) 128
    -120
      80
     -72
      80
     -72
      08
```

8 **460 months**

= 460 ÷ 12

= 38.33 years

```
      38.33
12 ) 460
    -36
     100
     -96
      40
     -36
      40
     -36
      04
```

Q.5: **Make the days of.**

1 **6 weeks**

Sol: 6 weeks

We know that 1 week = 7 days

= 6 x 7

= 42 Days Ans:

3 **86 weeks**

Sol: 86 weeks

We know that 1 week = 7 days

= 86 x 7

= 602 days Ans:

2 **12 weeks and 4 days**

Sol: 12 weeks and 4 days

= 12 x 7

= 84

Now add 84 and 4

```
  84
 +4
 ----
  88 days
```

12 weeks and 4 days = 88 days.

4 **8 weeks and 3 days**

Sol: 8 weeks and 3 days

= 8 x 7

= 56

Now add 56 and 3

```
  56
 +3
 ----
  59 days
```

8 weeks and 3 days = 59 days.

5 **10 weeks and 2 days**

Sol: 10 weeks and 2 days

= 10 x 7

= 70

Now add 70 and 2

```
  70
 +2
 ----
  72 days
```

10 weeks and 2 days = 72 days.

6 **45 weeks**

Sol: 45 weeks

We know that 1 week = 7 days

= 45 x 7

= 315 Days Ans:

7 **2 weeks and 4 days**

Sol: 2 weeks and 4 days

= 2 x 7

= 14

Now add 14 and 4 days

```
  14
 +4
 ----
  18 days
```

2 weeks and 4 days = 18 days.

8 **21 weeks**

Sol: 21 weeks

We know that 1 week = 7 days

= 21 x 7

= 147 days

R.W

```
  21
 ×7
 ----
 147 days
```

Ans: 21 weeks = 147 days

Addition and Subtraction of units of time:

Example: Add 2:40 hours with 4:30 hours.

Hours		Minutes
2	—	40
+ 4	—	30
7	—	10

Here 60 minutes = 1 hour

So that 70 minutes = 1 hour and 10 minutes

Example: Subtract 43:26 minutes from 60:10 minutes

Hours		Minutes
60	—	10
– 43	—	26
16	—	44

Here 60 seconds = 1 minute

So that 70 seconds = 1 minute + 10 second

EXERCISE 7.2

Q.1: Add the following:

1 45 minutes 38 seconds and 30 minutes, 51 seconds.

45 minutes 38 seconds
\+ 30 minutes, 51 seconds
76 minutes, 29 seconds

2 18 minutes 25 seconds and 29 minutes 39 seconds.

18 minutes 25 seconds
\+ 29 minutes, 39 seconds
48 minutes, 4 seconds

3 30 hours 55 minutes and 30 hours 37 minutes.

30 hours 55 minutes
\+ 30 hours, 37 minutes
61 hours, 32 minutes

4 36 hours 48 minutes and 25 hours 35 minutes.

36 hours 48 minutes
\+ 25 hours, 35 minutes
62 hours, 23 minutes

5 2 hours 52 minutes 15 seconds and 3 hours, 45 minutes 10 seconds

2 hours 52 minutes 15 seconds
\+ 3 hours, 45 minutes 10 seconds
6 hours, 37 minutes 25 seconds

Q.2: Subtract the following.

1 43 minutes 39 seconds, from 62 minutes

43 minutes 39 seconds
– 62 minutes,
19 minutes, 39 seconds

2 34 minutes 25 seconds from 40 minutes 20 seconds

40 minutes 20 seconds
– 34 minutes, 25 seconds
05 minutes, 55 seconds

3 12 hours 42 minutes from 20 hours 58

20 hours, 58 min
– 12 hours, 42 min
8 hours, 16 minutes

4 28 hours, 32 minutes from 40 hours, 38 minutes

40 hours, 38 minutes
– 28 hours, 32 minutes
12 hours, 6 minutes

5 2 hours 45 minutes from to 3 hours 40 minutes

3 hours, 40 minutes
– 2 hours, 45 minutes
0 hours, 55 minutes

Addition and subtraction of time in daily life problems:

Example: Amina completes a work of Uurdu in 2 hours and 15 minutes and work of Maths in 1 hour and 35 minutes, Find the total time of both works.

Solution:

	Hours		Minutes		
	2	———	15	=	Urdu work
+	1	———	35	=	Math work
Total time of work	3	———	50	=	3 hours and fifty minutes

EXERCISE 7.3

Q.1: Adil is 13 years and 6 months. Tell that how much old while his brother is 6 years and 9 months old. Tell how much Umar is smaller than Adil?

Sol:

$^{12}\cancel{13}$ years, $^{12}\cancel{6}$ months
– 6 years, 9 months
6 years, 9 months

Ans: Umar is 6 year, 9 months smaller than dil.

Q.2: Fatime reaches the school in one hour and 15 minutes while Noor reaches the school in 55 minutes. Find that who reaches late and how much she takes?

Sol:

$$\begin{array}{rr} \cancel{1}\text{ hours}, & \overset{60}{\cancel{15}}\text{ months} \\ -\ 0\text{ hours}, & 55\text{ months} \\ \hline 0\text{ hours}, & 20\text{ months} \end{array}$$

Ans: Fatima reaches late. She reaches 20 minutes late.

Q.3: An aeroplane reaches the Islamabad in 120 minutes while an other aeroplane reaches Islamabad in 1 hour and 45 minutes. What is difference in their flight?

Sol:

First convert 120 minutes into hours.

Then: $120 \div 60 = 2$

New,

$$\begin{array}{rr} \overset{1}{\cancel{2}}\text{ hours}, & \overset{60}{\cancel{00}}\text{ months} \\ -\ 1\text{ hours}, & 45\text{ months} \\ \hline 0\text{ hours}, & 15\text{ months} \end{array}$$

Ans: The difference in the flight is 15 minutes.

Q.4: School will be closed from first June to 14 August due to Summer vacations. In this year school will closed from 23 May to 14 August. How much difference between both holidays.

Sol:

First add the days from 1st June to 14 August.

Then:

$$= 30 + 31 + 14 = 75$$
$$= 9 + 30 + 31 + 14 = 84$$

Now add the days from 23 may to 14th August

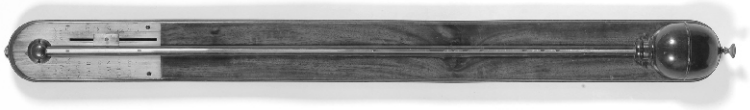
$$\begin{array}{r} 84 \\ -75 \\ \hline 09 \end{array}$$

Ans: The difference between both holidays is 9 days.

TEMPERATURE:

Important Information

- Melting point of water is 0 °C and Boiling point of water 100 °C.
- Scale of temperature is divided into 100 equal parts.
- This scale is named in the honour of Swedish Astronmer Celsius.



Important Information

- Melting point of water is 32°F and Boiling point is 212°F.
- Scale of temperature is divided into 180 equal parts.
- This scale is named in the honour ofGerman scientist Fahrenheit.

Conversion of temperature from Fahrenheit to Celsius :

We subtract 32 gram Fahrenheit scale and the multiply by $\frac{5}{9}$ to make Celsius scale

Example: Convert the 68°F into °C

Solution:

First step = $68 - 32 = 36$ (Subtract 32° from °F)

Second step = $\frac{5}{\cancel{9}_1} \times \cancel{36}^{4} = 20°\text{ C}$

Example: Convert 35°C into °F.

Solution:

First step = $104 - 32 = 72$

Second step = $\frac{5}{\cancel{9}_1} \times \cancel{72}^{8} = 40°\text{ C}$

Conversion of temperature from Celsius into Fahrenheit:

In first step Celsius is multiplied by $\frac{9}{5}$ then 32 is added with it.

Example convert 15^{o}C into ^{o}F

Solution:

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{15}^{3} = 27$

Second step $= 27 + 32$

$= 59°$ F

Example: Convert 35^{o}C into ^{o}F

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{35}^{7} = 63$

Second step $= 63 + 32$

$= 95°$ F

EXERCISE 8.1

Q.1: Convert into Fahrenheit.

1 **60°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{60}^{12}$

$= 9 \times 12$

$= 108$

Second step $= 108 + 32$

$= 140°$F Ans:

2 **140°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{140}^{28}$

$= 9 \times 28$

$= 252$

Second step $= 252 + 32$

$= 284°$F Ans:

3 **50°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{50}^{10}$

$= 9 \times 10$

$= 90$

Second step $= 90 \times 32$

$= 122°$F Ans:

4 **115°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{115}^{23}$

$= 9 \times 23$

$= 207$

Second step $= 207 + 32$

$= 239°$F Ans:

5 **45°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{45}^{9}$

$= 9 \times 9$

$= 81$

Second step $= 81 + 32$

$= 113°$F Ans:

6 **35°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{35}^{7}$

$= 9 \times 7$

$= 63$

Second step $= 63 + 32$

$= 95°$F Ans:

7 **80°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{80}^{16}$

$= 9 \times 16$

$= 144$

Second step $= 144 \times 32$

$= 176°$F Ans:

8 **70°C**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{70}^{17}$

$= 9 \times 14$

$= 126$

Second step $= 126 \times 32$

$= 158°$F Ans:

9 **25°C**

First step $= \frac{9}{\cancel{5}_1} \times \cancel{25}^{5}$

$= 9 \times 5$

$= 45$

Second step $= 45 + 32$

$= 77°F$ Ans:

10 **65°C**

First step $= \frac{9}{\cancel{5}_1} \times \cancel{65}^{13}$

$= 9 \times 13$

$= 117$

Second step $= 117 + 32$

$= 149°F$ Ans:

11 **120°C**

First step $= \frac{9}{\cancel{5}_1} \times \cancel{120}^{24}$

$= 9 \times 24$

$= 216$

Second step $= 216 + 32$

$= 248°F$ Ans:

12 **95°C**

First step $= \frac{9}{\cancel{5}_1} \times \cancel{95}^{19}$

$= 9 \times 19$

$= 171$

Second step $= 171 + 32$

$= 203°F$ Ans:

13 **210°C**

First step $= \frac{9}{\cancel{5}_1} \times \cancel{210}^{42}$

$= 9 \times 42$

$= 378$

Second step $= 378 + 32$

$= 410°F$ Ans:

14 **145°C**

First step $= \frac{9}{\cancel{5}_1} \times \cancel{145}^{29}$

$= 9 \times 29$

$= 261$

Second step $= 261 + 32$

$= 293°F$ Ans:

15 **100°C**

First step $= \frac{9}{\cancel{5}_1} \times \cancel{100}^{20}$

$= 9 \times 20$

$= 180$

Second step $= 180 + 32$

$= 212°F$ Ans:

ii Convert into Celsius.

1 **140°F**

Sol: First step $= 140 - 32$

$= 108$

Second step $= \frac{5}{\cancel{9}_1} \times \cancel{108}^{12}$

$= 5 \times 12$

$= 60°c$ Ans:

$$\begin{array}{r|l} & 12 \\ \hline 9 & 108 \\ & -9 \\ \hline & 18 \\ & -18 \\ \hline & 00 \end{array}$$

2 **194°F**

Sol: First step $= 194 - 32$

$= 162$

Second step $= \frac{5}{\cancel{9}_1} \times \cancel{162}^{18}$

$= 5 \times 18$

$= 90°c$ Ans:

3 **59°F**

Sol: First step = 59 − 32

= 27

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{27}^{3}$

= 5 × 3

= 15°c Ans:

4 **50°F**

Sol: First step = 50 − 32

= 18

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{18}^{2}$

= 5 × 2

= 10°c Ans:

5 **230°F**

Sol: First step = 230 − 32

= 198

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{198}^{22}$

= 5 × 22

= 110°c Ans:

6 **167°F**

Sol: First step = 167 − 32

= 135

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{135}^{15}$

= 5 × 15

= 75°c Ans:

7 **176°F**

Sol: First step = 176 − 32

= 144

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{144}^{16}$

= 5 × 16

= 80°c Ans:

8 **104°F**

Sol: First step = 104 − 32

= 72

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{72}^{8}$

= 5 × 8

= 40°c Ans:

9 **86°F**

Sol: First step = 86 − 32

= 54

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{54}^{6}$

= 5 × 6

= 30°c Ans:

10 **95°F**

Sol: First step = 95 − 32

= 63

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{63}^{7}$

= 5 × 7

= 35°c Ans:

11 **77°F**

Sol: First step = 77 − 32

= 45

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{45}^{5}$

= 5 × 5

= 25°c Ans:

12 **185°F**

Sol: First step = 185 − 32

= 153

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{153}^{17}$

= 5 × 17

= 85°c Ans:

13 **410°F**

Sol: First step = 410 − 32

= 378

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{378}^{42}$

= 5 × 42

= 210°c Ans:

14 **158°F**

Sol: First step = 158 − 32

= 126

Second step = $\frac{5}{\cancel{9}_{1}} \times \cancel{126}^{14}$

= 5 × 14

= 70°c Ans:

15 **320°F**

Sol: First step = 320 − 32

= 288

Second step = $\frac{9}{\cancel{5}_{1}} \times \cancel{288}^{32}$

= 5 × 32

= 160°c Ans:

16 **122°F**

Sol:First step = 122 − 32

= 90

Second step = $\frac{9}{\cancel{5}_{1}} \times \cancel{90}^{10}$

= 5 ×10

= 50°c Ans:

17 **68°F**

Sol: First step = 68 − 32

= 36

Second step = $\frac{9}{\cancel{5}_{1}} \times \cancel{36}^{4}$

= 5 × 4

= 20°c Ans:

18 **437°F**

Sol:First step = 437 − 32

= 405

Second step = $\frac{9}{\cancel{5}_{1}} \times \cancel{405}^{45}$

= 5 × 45

= 225°c Ans:

19 **239°F**

Sol: First step = 239 − 32

= 207

Second step = $\frac{9}{\cancel{5}_{1}} \times \cancel{207}^{23}$

= 5 × 23

= 115°c Ans:

20 **194°F**

Sol:First step = 194 − 32

= 162

Second step = $\frac{9}{\cancel{5}_{1}} \times \cancel{162}^{18}$

= 5 × 18

= 90°c Ans:

Changing of units of temperature and to solve daily life problems bases on addition and subtraction:

Example: One day temperature of Jacobabad was 45°C. Tell that how much it was in Fahrenheit.

= 45° F

First step = $\frac{9}{\cancel{5}} \times \cancel{45}^{9}$

Second step = 81 + 32

= 113° F

= 113° F = 45°C

EXERCISE 8.2

Q.1: The temperature of Larkana is 194°F. Tell that how much is in °C.

Sol: **194°F**

First step = 194 − 32

= 162

Second step = $\frac{9}{\cancel{5}_{1}} \times \cancel{162}^{18}$

= 5 × 183

= 90°c Ans:

Q.2: The hotest temperature of Badin is 145°F and lowest temperature is 35°C. How much difference between two temperature in Fahrenheit?

Sol: **35°F**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{35}^{7}$

$= 9 \times 7$

$= 63$

Second step $= 63 + 32$

$= 85\ °F$

New subtract 85°F from 145°F

$$\begin{array}{r} 145°F \\ -85°F \\ \hline 60°F \end{array}$$

Ans: The difference between two temperature in Fahrenheit is 60°F

Q.3: If temperature is 25°C. How much it will on°F.

Sol: **25°F**

First step $= \frac{9}{\cancel{5}_{1}} \times \cancel{25}^{5}$

$= 9 \times 5$

$= 54$

Second step $= 54 + 32$

$= 77°F$ Ans:

Q.4: Nazia has fever at 176°F, How much will be in°C.

Sol: **176°F**

First step $= 176 - 32$

$= 144$

Second step $= \frac{5}{\cancel{9}_{1}} \times \cancel{144}^{16}$

$= 5 \times 16$

$= 80°c$ Ans:

Q.5: The hottest temperature of Rohri was 176°F while temperature of Sukkur was 113°F. Who setemperature was greater? Explain by Celsius.

Sol: **176°F**

First step $= 176 - 32$

$= 144$

Second step $= \frac{9}{\cancel{5}_{1}} \times \cancel{144}^{16}$

$= 5 \times 16$

$= 80°c$ Ans:

Sol: **113°F**

First step $= 113 - 32$

$= 81$

Second step $= \frac{9}{\cancel{5}_{1}} \times \cancel{81}^{9}$

$= 5 \times 9$

$= 45°c$ Ans:

Ans: The temperature of Rohri is hottest than temperature of Rohri.

RULES OF UNITS:

We use any rule to find the value of anything in out daily life. This rules is called laws of units. Such rule in which value of many things is obtained in same rate that rules is called "rules of units".

To find the value of many things. If value of one thing is given:

Example: If pen is of Rs 26. Find cost of such 6 pens.

Solution

A pen = 26 Rupees

6 pen = 26 × 6

= 156 Rupees

Example: The cost of a watch is 196 then find the cost of such 8 watches.

1 watch = 196 Rupees

8 watch = 196 × 8

= 1,568 Rupees

To find out the cost of a thing if the cost of many things is given:

Example (1): A dozen of eggs is Rs 120: Find the cost of an egg:

One Dozen of egg = 120 Rupees

An egg = $\frac{\cancel{120}^{10}}{\cancel{12}}$ = 10 Rupees

Example: The cost of 6 books in 480 rupees. Find the price of a book.

Cast of 6 books = 480 Rupees

A book = $\frac{\cancel{480}^{80}}{\cancel{6}}$ = 80 Rupees

EXERCISE 9.1

Q.1: The cost of a kilo of potatoes is Rs: 56. Find the cost of 7kg potatoes.

Sol: The cost of a kilo potatoes = 56
The cost of 7 kilo potatoes = ?

R.W

$$\begin{array}{r} 56 \\ \times 7 \\ \hline 392 \end{array}$$

= 56 x 7
= 392

Ans: The cost of 7 kilo of potatoes is Rs: 392

Q.2: The cost of a pencil is 25 rupees. Find the cost of 6 pencils.

Sol: The cost of a pencil is 25 rupees.
The cost of 6 pencils = ?

R.W

$$\begin{array}{r} 25 \\ \times 6 \\ \hline 150 \end{array}$$

= 25 x 6
= 150

Ans: The cost of 6 pencils is Rs: 150

Q.3: Find the cost of 18 eggs if cost of a dozen of eggs is 84 rupees.

Sol: The cost of 18 egg = ?
The cost of 1 dozen of eggs = 84 rupees.
We know that 1 dozen = 12.
Then:
Divide 84 by 12

R.W

$$\begin{array}{r|l} & 7 \\ \hline 12 & 84 \\ & -84 \\ \hline & 00 \end{array}$$

= 84 ÷ 12
= 7

The cost of an egg is Rs: 7 rupees.
Now multiply 18 by 7

$$\begin{array}{r} 18 \\ \times 7 \\ \hline 126 \end{array}$$

= 18 x 7
= 126

Ans: The cost of 18 egg is Rs: 126 rupees.

Q.4: What is the cost of a shoe pair, if the cost of 15 shoe pair is 900 rupees.

Sol: The cost of a shoe pair = ?
The cost of 15 shoe pairs is 900 rupees.
Divide 900 by 15

R.W

```
      60
15 | 900
    -900
     000
```

= 900 ÷ 152
= 60

Ans: The cost of 15 shoe pair is Rs: 60 rupees.

Q.5: Find the price of 10 kg of mangoes. When cost of 6 kg mangoes is 360.

Sol: The cost of 10kg of mangoes ?
The price of 6 kg of mangoes is 360.
Then:
Divide the 360 by 6

R.W

```
      60
6 | 360
    -360
     000
```

= 360 ÷ 6
= 60

The price of 1 kg of mangoes = Rs:60
Now multiply 60 by 10

= 60 x 10
= 600

Ans: The price of 10 kg of mangoes is Rs: 600.

Q.6: The price of 10 books is 350 rupees. Find the cost of 15 such books.

Sol: The price of 10 books is 350 rupees.
The price of 15 books = ?
Then:
Divide 350 by 10

R.W

```
      35
10 | 350
    -30
     50
    -50
     00
```

= 350 ÷ 10
= 35

The price of 1 book is Rs: 35 rupees.
Now multiply 35 by 15

```
  2
  35
 ×15
 175
+35×
 525
```

= 35 x 15
= 525

Ans: The price of 15 books is Rs: 525 rupees

Q.7: A man makes plaster on wall of 540 meter in 6 days. How much did he plaster in 4 days.

Sol: A man plastered on wall of 540 meters in 6 days.
A man plastered on wall in 4 day = ?
Then:
Divide 540 by 6

R.W

```
      90
6 | 540
    -540
     000
```

= 540 ÷ 6
= 90

A man plastered on a wall of 90 meters is one day.
Now multiply 90 by 4

```
  90
 ×4
360
```

= 90 x 4
= 360

Ans: A man plastered on a wall of 360 meters in 4 days.

Q.8: The weight of 15 bags of wheat is 225.50 kg. What will be the weight of such 20 bags?

Sol: The weight of 15 bags of wheat is 225.50kg.
The weight of 20 bags = ?
Then:
Divide 225.50 by 15

R.W

```
      15.03
15 | 225.50
    -15
     75
    -75
     50
    -45
      5
```

= 225.50 ÷ 6
= 15.03

The weight of one bag is 15.03kg
Now multiply the 15.03 by 20

R.W

```
 15.03
 ×20
0000
3006×
300.600
```

= 15.03 x 20
= 300.6

Ans: The weight of 20 bags is 300.6 kilogram.

Ratio of two numbers:

Ratio: The relation between like quantity or numbers is called ratio. The ratio of two numbers is denoted by 4:5

Important Information

The symbol of Ratio is "**:**"

For example: The ratio of ages of Maria and Fatima is 4:1 it means Maria is 4 time older than Fatima.

Proportion: The comparision of two different values or ratios is called proportion. It is denoted by "::"

As: a:b and c:d are two ratios, the proportion of both ratios in a:b::c:d then.

A ratio B properties C ratio d.

Kinds of Proportion:

There are two kinds of proportion.

i Direct proportion ii Inverse proportion

Direct Proportion:

If the relation of two ratios is such that one ratio is increased then other is also increased or if the value of a thing is decreased then the value of other thing is also decreased the ratio is called direct proportion.

Example: If the cost of 20 cups is Rs 2000 the find the cost of 40 such cups.

Solution:

	Cost	Cups
Direct propertion	2000	20
	x	40

$$40 : 20 :: x : 2000$$

$$x \times 20 = 2000 \times 40$$

$$x = \frac{2000 \times 40}{20}$$

$$x = 40000$$

Inverse proportion:

If the relation of two ratios is such that one ratio is increased then after is decreased or the ratio is decreased then other ratio is increased the relation is called inverse proportion.

Example: If 6 men complete a work in 12 days. If 2 men join more then in how many days work will go?

Solution: First men = days :: Total men : day

Total men = 6

Two men = 2

Total men = 6 + 2 = 8

	Men	
Inverse proportion	12	6
	x	8

$$6 : 8 :: x : 12$$

$$x \times 8 = 12 \times 6$$

$$x = \frac{{}^{3}\cancel{6} \times \cancel{12}^{3}}{\cancel{8}_{2}}$$

$$x = 9 \text{ Days}$$

EXERCISE 9.2

Q.1: **Find the value of x when 30:60::9:x**

Sol:

$$30 \times x = 60 \times 9$$

$$30x = 540$$

$$x = \frac{540}{30}$$

$$x = 18 \quad \text{Ans:}$$

Q.2: 6 men complete a work in 4 days. In how many days it will be completed by 12 man?

Sol: 6 men complete a work in 4 days.
No of day of work by 12 men ?
Let the x is working days if the work is done by 12 men.

Working day	men
4	6
x	12

$$6: 12 :: x : 4$$
$$12 \times x = 6 \times 4$$
$$12x = 24$$
$$x = \frac{\cancel{24}^{2}}{\cancel{12}_{1}}$$
$$x = 2 \quad \text{Ans:}$$

Q.3: 15 machines make 6750 sweaters. How many machines are required to make 405?

Sol: 15 machines make 6750 sweaters.
Machines are required to make 4050 sweaters = ?
Let the x machines are required to make 4050 sweaters.

Machines	Sweaters
15	6750
x	4050

$$6750: 4050 :: x : 15$$
$$6750 \times x = 4050 \times 15$$
$$6750x = 60750$$
$$x = \frac{60750}{6750}$$
$$x = 9 \quad \text{Ans:}$$

R.W
6750
×15
33750
6750×
101250

Q.4: The cost of 5 boxes of chalks is Rs 90, Find the cost of 8 boxes of chalks.

Sol: The cost of 5 boxes of chalk is Rs: 90
The cost of 8 boxes of chalk = ?
Let the y is the cost of 8 boxes

cost	prices
90	5
y	8

$$5: 8 :: y : 90$$
$$5 \times y = 5 \times 90$$
$$5y = 720$$
$$y = \frac{720}{5} = 144$$
$$y = 144 \quad \text{Ans:}$$

R.W

$$8 \overline{)450} \; 56.25$$
$$-40$$
$$50$$
$$-48$$
$$20$$
$$-16$$
$$40$$
$$-40$$
$$00$$

Q.5: A motor cycle covers a distance of 90 km in 2 liters of petrol. How many liters of petrol will require to cover the distance of 225 km.

Sol: A motor cycle a distance of 90 km in 2 litres of petrol.
Petrol will require to cover the distance of 225 km = ?
Let y is the required petrol to cover the distance of 225 km

petrol	distance
2	90km
y	225km

$$2 \times 225 = 90 \times y$$
$$90y = 450$$
$$y = \frac{450}{90}$$
$$y = 5 \quad \text{Ans:}$$

Q.6: A man covers a distance of 54km in 18 hours. How many kilometer he will cover in 4 hours.

Sol: A man covers a distance of 54km in 18 hours.
Distance cover in 4 hour = ?
Let y is the distance which will be covered in 4 hours.

Time in hours	Distance in km
18	54
4	y

$$18 \times y = 54 \times 4$$
$$18y = 216$$
$$y = \frac{216}{18}$$
$$y = 12 \quad \text{Ans:}$$

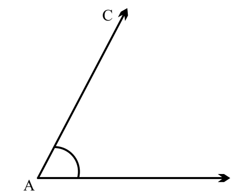
R.W

$$\begin{array}{r|l} & 12 \\ \hline 18 & 216 \\ & -18 \\ \hline & 36 \\ & -36 \\ \hline & 00 \end{array}$$

GEOMETRY:

Angle is a diagram that consists of two heads of lines. Here is an angle that is formed by two different lines rays. <u>AB</u> and <u>AC</u>. A is the ross of angle and it is denoted by "∠" i.e ∠BAC or ∠CAB.

∠ BAC ∠ CAB



Important Information

The sign of ross is written in the middle of other two signs.

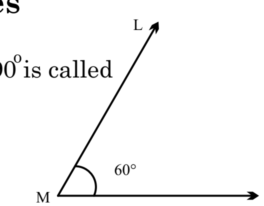
Kinds of Angles

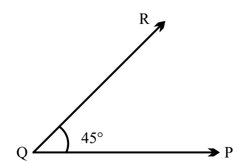
Acute angle:

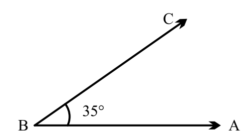
Such angle whose measurment is of less than 90° is called acute angle.

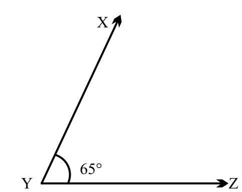
$$m\angle LMN = 60°$$

and other acute angles are under.





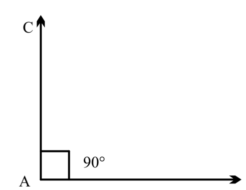




Right angle:

Such angle whose measurement is of 90 is called right angle.

$$m\angle ABC = 90°$$

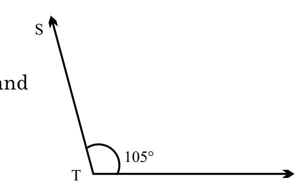


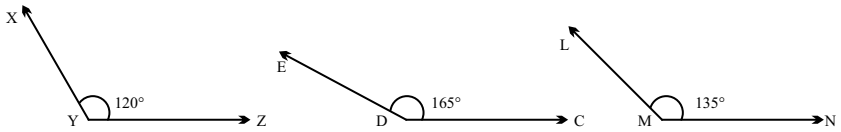
Obtuse angle:

Such angle whose measurement is greater than 90° and less than 180° is called obtuse angle.

$$m\angle ABC = 90°$$

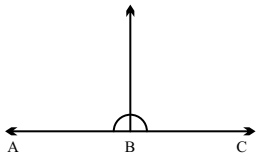
Some obtuse angles are under.





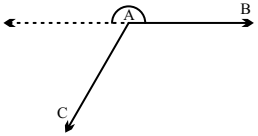
Verticle angle:

Such angle that is formed by perpendicular on base. A perpendicular makes two right angles on base. Each verticle angle is 90^o and sum of both is 188^o.



Inversely angle:

Such angle that is formed on opposite of verticle angle or the angle that is measurement of greater than 180^o and less than 360^o is called inversely angle.

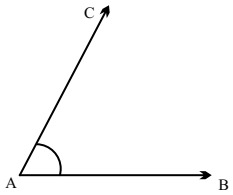


GEOMETRY:

Definitions:

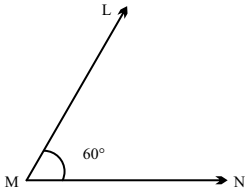
(1) ANGLE:

An angle is a diagram that consists of two heads of lines. Here is an angle that is formed by two different line rays. $\overline{AB}$ and $\overline{AC}$. A is the ray of angle and it is denoted by $\angle$.i.e $\angle BAC$ or $\angle CAB$.

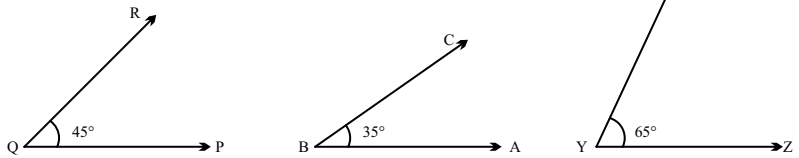


(2) ACUTE ANGLE:

Such angle whose measurement is of less than 90^o is known as an acute angle. E.g $m\angle LMN = 60^o$.

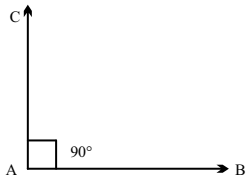


The other acute angles are as under.



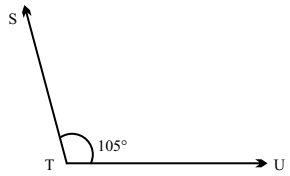
(3) RIGHT ANGLE:

Such angle whose measurement is to 90^o is known as right angle. I.e. $m\ \angle ABC = 90^o$

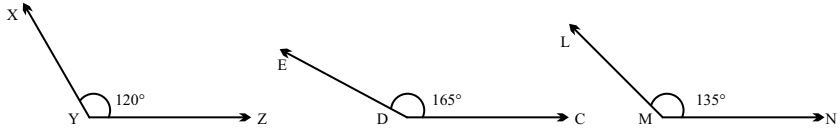


(4) OBTUSE ANGLE:

Such angle whose measurement is greater than 90^o and less 180^o is known as obtuse angle. I.e. $m\angle ABC = 105^o$

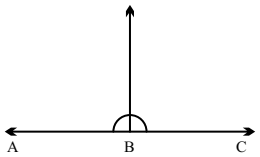


Some obtuse angles are as uder.



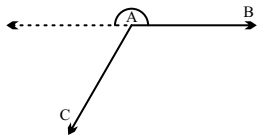
(5) VERTICLE ANGLE:

Such angle that is formed by perpendicular on base. Is known as verticle angle. A perpendicular makes two right angles on base, Each angle is 90^o and the sum of both angle is 180^o.



(6) OBTUSE ANGLE:

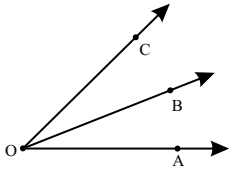
Such angle that is formed on apposite of verticle angle, or the angle that is measurement of greater than 180^{o} and less than 360^{o} is known as inversely angle.



(7) COMPLEMENTARY ANGLE:

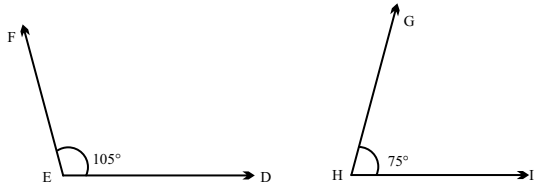
The sum of two or more than two angle is 90^{o} is known as complementary angles.

Here is in ∠AOB and ∠BOC rays in O so that m ∠ABC and m LMN are complementary angle.



(8) SUPPLEMENTARY ANGLE:

If the sum of two angle is 180^{o} are called supplementary angle i.e.



Then,

m DEF + m ∠GHI
= 105^{o} + 75^{o}
= 180^{o}

Hence m ∠GHI and m ∠DEF are supplementary angles.

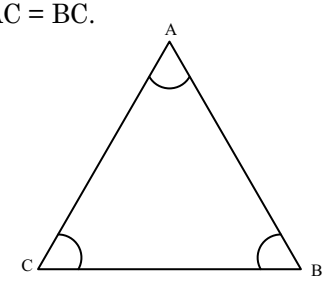
(9) TRIANGLE:

When three different lines are joined each other from head to head, the formed diagram is known as triangle.

OR

The diagram that consists of three sides and three angles is known as triangle.

AB = AC = BC.



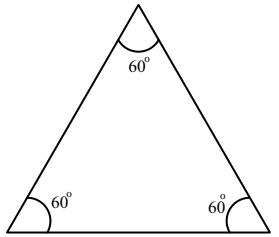
m∠ABC, m ∠ACB , m ∠CBA. It is denoted by △ .

(10) EQUILATERAL TRIANGLE:

Such triangles whose all sides and angles are congruent is known as equilateral triangle.

OR

Such triangle whose all sides and angles are equal is known as equilateral triangle.



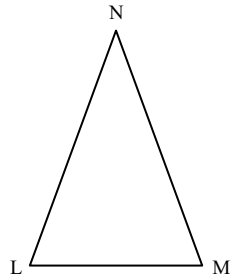
△ ABC.

m AB = mBC = mAC.

(11) ISOSCELES TRIANGLE:

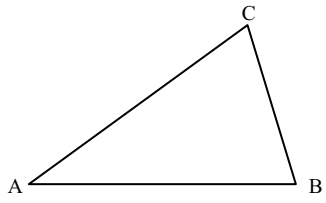
Such triangles whose a pair of sides are different in measurement is known as Isosceles triangle.

i.e m $\overline{ML}$ = m $\overline{LN}$



(12) SCALENE TRIANGLE:

Such triangle whose all sides are different in measurement is known as scalene triangle. Here △ABC is a scalene triangle.



(13) ACUTE ANGLE TRIANGLE:

Such triangle whose all angles are acute is known as acute angled triangle. △ABC is acute angled triangle in which m∠A, m∠B or m∠C, ∠90^{o}.

(14) RIGHT ANGLE TRIANGLE:

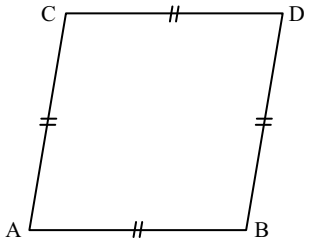
If an angle of any triangle is right angle the triangle is known as right angled triangle.

(15) OBTUSE ANGLE TRIANGLE:

If an angle of triangle is obtuse the triangle is known as obtuse angled triangle.

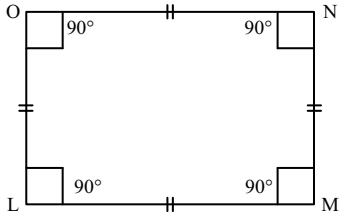
(16) RHOMBUS:

In rhombus all sides are congruent. (Equal). Tow angles are acute and two angles are obtuse.



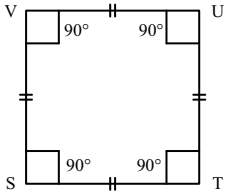
(17) RECTANGLE:

In rectangle the pair sides are congruent (equal). It has four sides. Each angle is right angle. All four sides of 90^{o}



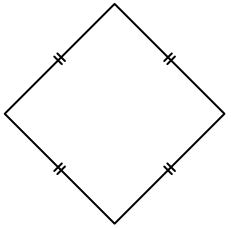
(18) SQUARE:

In Square all sides are congruent (equal). It has four sides. All four sides are of 90^{o}. Each two sides are equal.



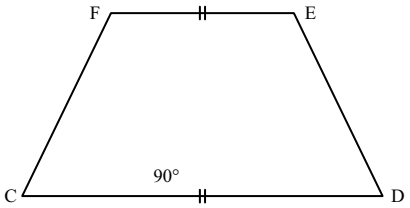
(19) KITE:

In kite pairs of adjacent sides are congruent side are equal in pairs. A pair of opposite angle is congruent (same).



(20) TRAPEZOID:

In trapezoid a pair of apposite sides is parallel other pair of sides is different.



(21) OPEN DIAGRAM:

In open diagram, the boundary is not fixed because of its any one side is open.

(22) CLOSE DIAGRAM:

In close diagram, the boundary of diagram is fixed from all sides.

(23) PERIMETER:

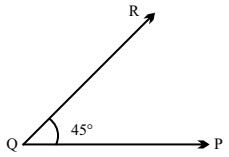
The total length of boundary of closed shape is known as perimeter.

(24) AREA:

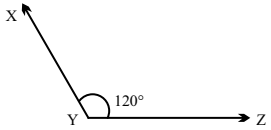
The total inner boundary of diagram is called area.

EXERCISE 10.1

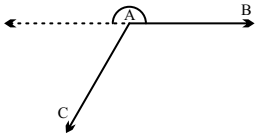
Q.1: Give the names on given angles.



Ans: Acute angle

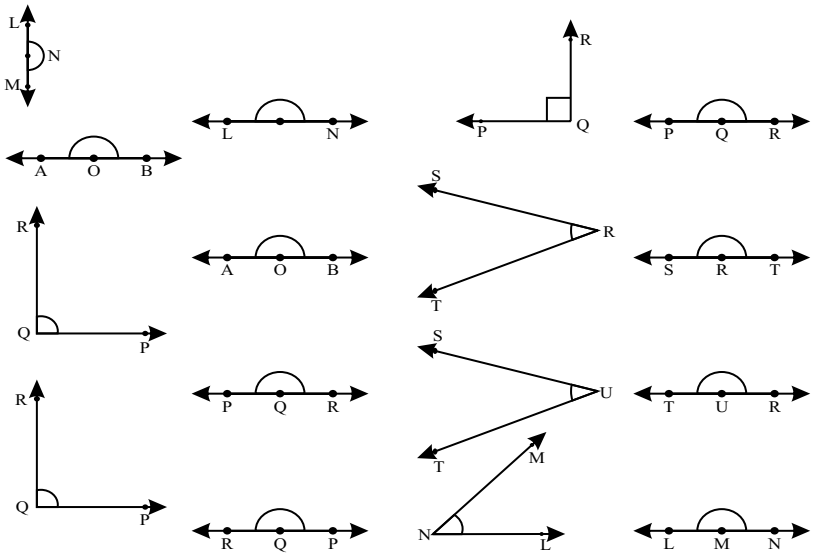


Ans: obtuse angle



Ans: Inversely angle

Q.2: Give the names on angles with respect to diagram.

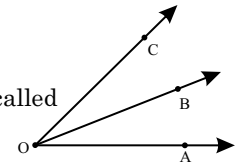


Construction of angles:

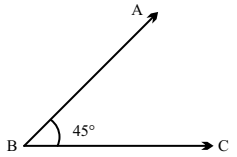
Complementary and supplementary angles.

Complementary angles:

The sum of two or more than two angles is of 90^{o} is called complementary angles.

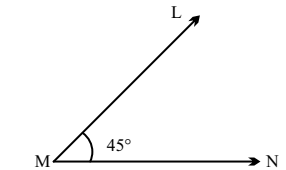


Here is in ∠AOB and ∠BOC ross in "O" so that m∠ABC and m∠ LMN are complementary.



Supplementary angle:

If the sum of two angles is of 180^{o} are called supplementary angle.



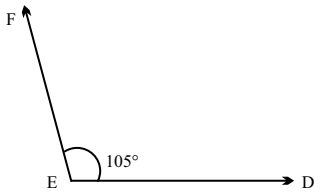
$m\angle ABC = 45°$ and $m\angle LMN = 45°$

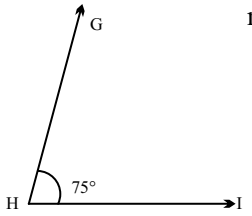
$m\angle ABC = 45° + m\angle LMN = 45°$

$90° = 45° + 45°$

$m\angle LMN$ and $m\angle ABC$

180^o





$m\angle GHI = 75°$ and $m\angle DEF = 105°$

$m\angle DEF + m\angle GHI$

$180° = 105° + 75°$

$m\angle GHI$ and $m\angle DEF$

EXERCISE 10.2

i Separate the complementary of angles from the given pairs of angles.

1 75°, 15°	2 60°, 30°	3 10°, 170°	4 145°, 75°
5 45°, 45°	6 145°, 35°	7 20°, 70°	8 110°, 15°
9 50°, 40°	10 35°, 60°	11 90°, 45°	12 135°, 120°

Ans: complimentary of angles from the pairs of angles are

ii Find the complementary angles with addition of two angles.

1 10°

Sol: 10°
= 90° – 10°
= 80° Ans:

2 30°

Sol: 30°
= 90° – 30°
= 60° Ans:

3 45°

Sol: 45°
= 90° – 45°
= 45° Ans:

4 60°

Sol: 60°
= 90° – 60°
= 30° Ans:

5 55°

Sol: 55°
= 90° – 55°
= 35° Ans:

6 47°

Sol: 47°
= 90° – 47°
= 43° Ans:

7 20°

Sol: 20°
= 90° – 20°
= 70° Ans:

8 80°

Sol: 80°
= 90° – 80°
= 10° Ans:

iii **Find the supplementary angles with addition of two angles.**

1 85°

Sol: 85°
= 180° – 85°
= 95° Ans:

2 110°

Sol: 110°
= 180° – 110°
= 70° Ans:

3 125°

Sol: 125°
= 180° – 125°
= 55° Ans:

4 90°

Sol: 90°
= 180° – 90°
= 90° Ans:

5 50°

Sol: 50°
= 180° – 50°
= 130° Ans:

6 145°

Sol: 145°
= 180° – 145°
= 35° Ans:

7 **135°**

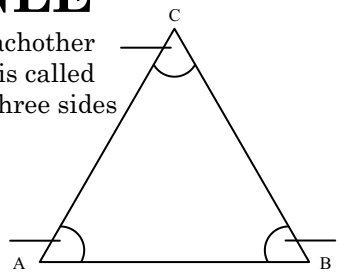
Sol: 135°
= 180° – 135°
= 45° Ans:

8 **85°**

Sol: 85°
= 180° – 85°
= 95° Ans:

TRIANGLE

When three different lines are joined eachother from head to head the formed diagram is called triangle. The diagram that consists of three sides and three angles is called triangle .



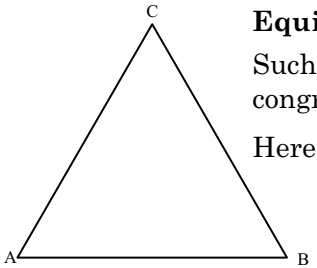
AB = AC = AC

m∠ABC , m∠ACB

m∠CBA

It is devoted by "△"

Types of triangle with respect to sides



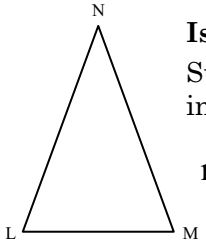
Equilateral triangles:

Such triangle whose all sides and angles are congruent is called equilateral triangle.

Here AB = BC OR m∠A = m∠C

△ABC

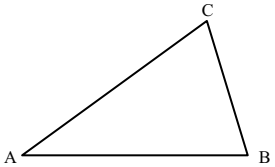
mAB = mBC = mAC



Isosceles triangles:

Such triangle whose a pair of sides are different in measurement is called scelene triangle.

$m\overline{ML} = m\overline{LN}$ △LMN



Scalene triangle:

Such triangle whose all sides are different in measurement is called scalene triangle

ΔABC is scelene triangle.

$m\overline{AC}$ $m\overline{BC}$, $m\overline{AB}$

Example: construct a triangle whose all sides are congruent.

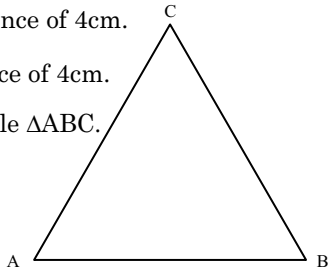
Function of Geometry:

i Draw a line segment $\overline{BC}$ = 4cm.

ii Draw a arc on B with centre at distance of 4cm.

iii Draw a are mc with centre at distance of 4cm.

iv Join points A,B and C. Here is triangle ΔABC.



Function of Geometry

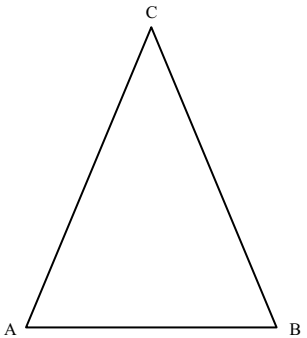
i Draw a line segment of 6cm long.

ii Draw a radius 4.5 cm with the centre of B.

iii Draw an arc of 4.5 cm with $\overline{BC}$ that cuts the first point.

iv Join Points A, B and C.

Here ΔABC is Isosceles.



Scalene triangle:

Construct a scalene triangle:

Example: Construct a triangle of measurment of.

mAB = 4 cm , mBC = 3 cm , $m\overline{AC}$ = 3.5 cm

Construction:

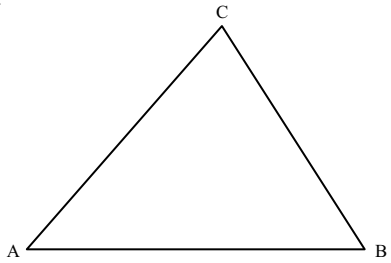
i Draw a line segment $m\overline{AB}$ = 4cm.

ii Draw an arc A = 3.5 cm on $\overline{AC}$

iii Draw an one B = 3cm on $\overline{BC}$

iv Join points A, B and C.

Here is scalene triangle.



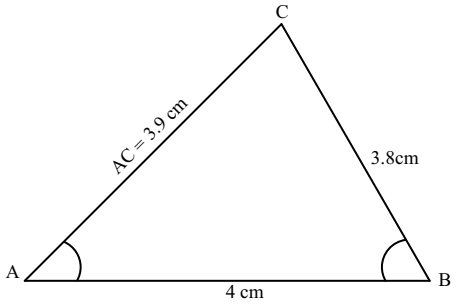
EXERCISE 10.3

Q.1: Construct or triangles if possible.

1 **mAB = 4 cm , mBC = 3.8 cm , mAC = 3.9 cm**

Sol: **Construction:**

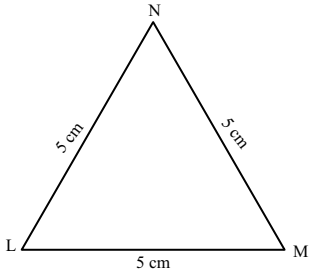
* Draw a line segment m$\overline{AB}$ =4cm
* Draw an arc A = 3.9 cm on $\overline{AC}$
* Draw on arc B = 3.8 cm on $\overline{BC}$
* Join points, A, B, C.
* Here △ ABC is a required triangle.



2 **mLM = mMN = mNL = 5 cm**

Sol: **Construction:**

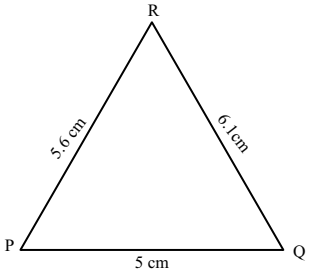
* Draw a line segment m$\overline{LM}$ =5cm
* Draw an arc M = 5 cm on $\overline{MN}$
* Draw on arc N = 5 cm on $\overline{NL}$
* Join points, L, M, N.
* Here △ LMN is a required triangle.



3 **mPQ = 5 cm , mQR = 6.1 cm , mPR = 5.6 cm**

Sol: **Construction:**

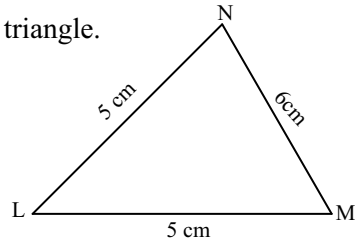
* Draw a line segment m$\overline{PQ}$ =5cm
* Draw an arc Q = 6.1 cm on $\overline{QR}$
* Draw on arc R = 5.6 cm on $\overline{PR}$
* Join points, P, Q, R.
* Here △ PQR is a required triangle.



4 **mLM = 5 cm , mMN = 5 cm , mLN = 6 cm**

Sol: **Construction:**

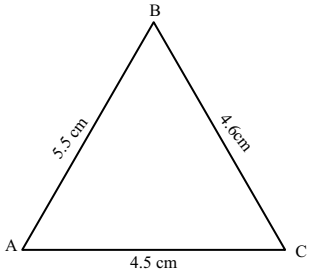
* Draw a line segment m$\overline{LM}$ =5cm
* Draw an arc M = 5 cm on $\overline{MN}$
* Draw on arc N = 6 cm on $\overline{LN}$
* Join points, L, M, N.
* Here △ LMN is a required triangle.



5 **mAB = 4.5 cm , mBC = 5.5 cm , mAC = 4.6 cm**

Sol: **Construction:**

* Draw a line segment m$\overline{AB}$ =4.5cm
* Draw an arc B = 5.5 cm on $\overline{BC}$
* Draw on arc C = 4.6 cm on $\overline{AC}$
* Join points, A, B, C.
* Here △ABC is a required triangle.



Kinds of triangle with respect to angles

There are three kinds of triangle with respect to angles.

i Acute angled triangle ii Right angled triangle

iii Obtuse angled triangle

Acute angled triangle:

Such triangle whose all angles are acute is called acute angled triangle.

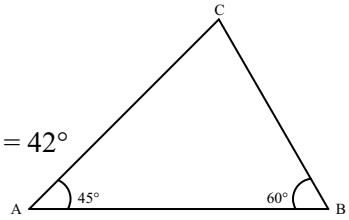
ΔABC is acute angled triangle in which

$m\angle A, m\angle B$ or $m\angle C \angle 90$

Example: Construct ABC is which:

mBC = 5.5 cm , mAB = 4 cm , $m\angle B = 42°$

Construction:

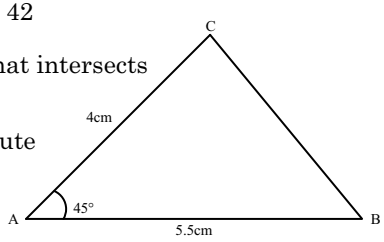


i Draw a line segment mBC = 5.5 cm

ii Draw an angle on Point B M B = 42

iii Draw an arc BC at the center B that intersects BD on A paint

iv Match point A with C ABC is acute angled triangle.



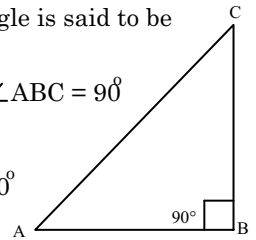
Right angled triangle:

If an angle of any triangle is right angle the triangle is said to be right angled triangle

Here ΔABC is right angled triangle in which in $\angle ABC = 90^0$

Example: Construct a triangle whose sides are

m$\overline{AB}$ = 3 cm m$\overline{BC}$ = 3 cm and $m\angle B = 90^0$



Construction:

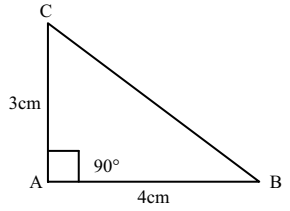
i Draw a line mBC = 4 cm.

ii Draw an angle B= 90 with the help of protector on point B.

iii Draw an are BC = 3 cm on B point that intersects BD.

iv Join point C and A.

Here ΔABC is right angled triangle.

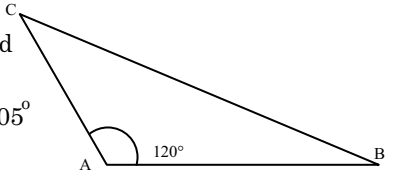


Obtuse angled triangle:

If an angle of triangle is obtuse the triangle is said to be obtuse angled triangle.

Example: Construct an obtuse angled triangle in which.

AB = 3.5 cm, AC = 2m and $m\angle A = 105^0$



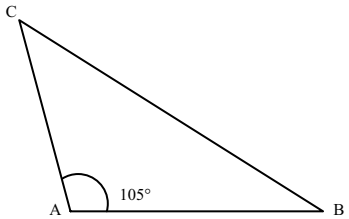
Construction:

i Draw a line segment BC = 3.5 cm.

ii Draw an angle of m $\overline{LB}$ = 105 on B point.

iii Draw an arc on C point of 3.5 an.

iv Join Points A and BC.



Here ΔABC is obtuse angled triangle.

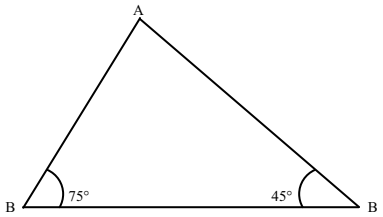
EXERCISE 10.4

Q.1: Construct the triangles in which:

1 △ABC when mBC = 7 cm , m∠ABC = 75°, m∠ BCA = 45°

Sol: **Construction:**

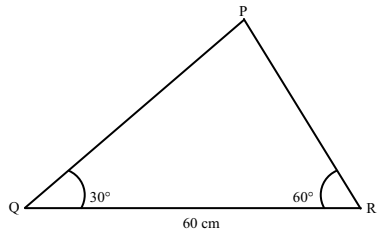
* Draw a line segment $\overline{BC}$ =7cm
* Draw an angle on $\overline{AB}$ = 75° on B point
* Draw an angle on $\overline{BC}$ = 45°
* Join points, A and BC.
* Here △ABC is a required triangle.



2 △PQR when mQR = 6 cm , m∠ PQR = 60°, m∠ PQR = 30°

Sol: **Construction:**

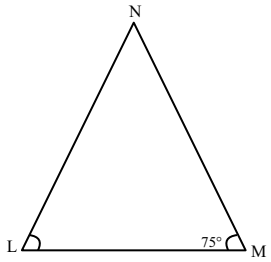
* Draw a line segment $\overline{QR}$ =6cm
* Draw an angle on m∠$\overline{PQR}$ = 60° on Q point
* Draw an angle on m ∠ $\overline{PQR}$ = 30° on R point.
* Join points, P and QR points.
* Here △ PQR is a required triangle.



3 △LMN when mLM = 4.5 cm , m∠MN = 6 cm, m∠LMN = 75°

Sol: **Construction:**

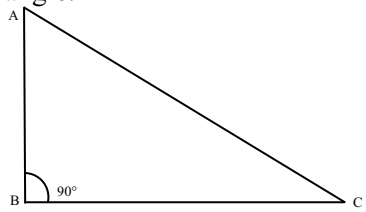
* Draw a line segment $\overline{LM}$ = 4.5cm
* Draw an angle on m $\overline{LM}$ = 75°
* Draw an arc on M point of 6 cm.
* Join points, L,M and N.
* Here △ LMN is a required triangle.



4 △ABC when mBC = 5 cm , m∠AB = 5.5 cm, m∠ABC = 90°

Sol: **Construction:**

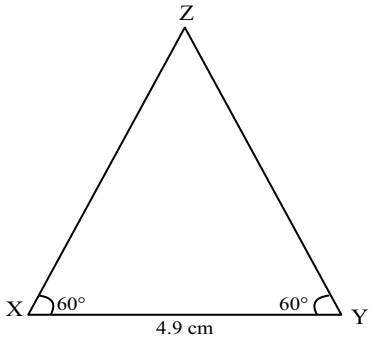
* Draw a line segment m$\overline{BC}$ = 5cm.
* Draw an angle of m $\overline{BC}$ = 90° on point.
* Draw an arc on B point of 5.5 cm.
* Join points, A and BC.
* Here △ ABC is a required triangle.



5 △XYZ when mXY = 4.9 cm , m∠XYZ = 60°, m∠XYZ = 60°

Sol: **Construction:**

* Draw a line segment $\overline{XY}$ = 4.9cm.
* Draw an angle of $\overline{XY}$ = 60° on point.
* Draw an angle YZ = 60 on Y
* Join points, X,Y and Z.
* Here △XYZ is a required triangle.



Construct a right angled triangle with the help of scale and protector.

When m∠C = 90 and $\overline{AB}$ = 5 cm.

Example: Construct ΔABC when m$\overline{BC}$ = 4cm, m∠ACB = 45^o and m∠ABC 60^o

Construction:

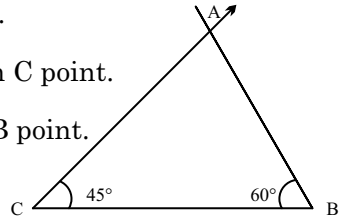
i Draw a line segment $\overline{BC}$ = 4cm.

ii Draw an angle m∠ABC = 45^o on C point.

iii Draw an angle m∠ABC 60^o on B point.

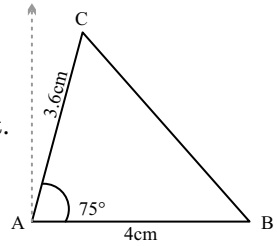
iv Joint both angles on point A.

Here ΔABC is construct.



Construct acute angled triangle, right angled triangle and obtuse angled triangle.

Example: Construct ΔABC when $\overline{AB}$ = 4 cm $\overline{BC}$ = 3.6.



i Draw a line segment $\overline{BC}$ = 4cm.

ii Draw an angle m∠ABC = 75 on B point.

iii Draw line segment 3.6 m.

iv Joint points A and C

Here it is an acute angled triangle.

Example: Construct right angle triangle, in which $\overline{AB}$ = 5 cm, $\overline{BC}$= 4 cm and m∠ABC = 90

Construction:

i Draw a line segment $\overline{AB}$ = 5 cm with point B.

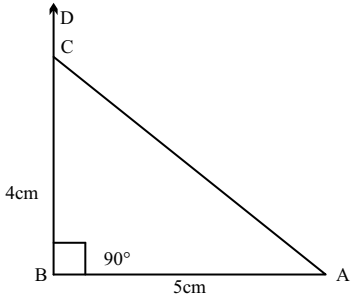
ii Draw an angle in ∠ABC = 90^o m point B.

iii Draw a line segment $\overline{BC}$ = 4 cm an point C.

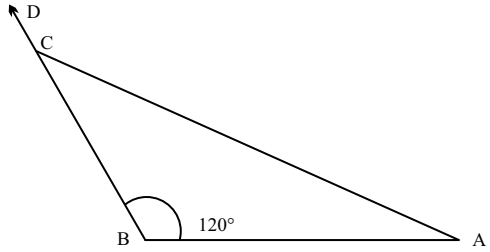
iv Join point A and C.

Here ΔABC is right angle triangle.

mAB = 6 cm. MBC = 4cm, m∠ABC = 120^o



Example: Construct on obtuse angled triangle ΔABC in which m$\overline{AB}$ = 6cm, m$\overline{BC}$ = 4cm, m∠ABC = 120^o



Construction:

i Draw a line segment $\overline{AB}$ = 6cm on point B.

ii Draw an angle of 120^{o} on point B.

iii Draw a line segment BC = 4cm on part C.

iv Joint points A and C.

Here ΔABC is obtuse angled triangle.

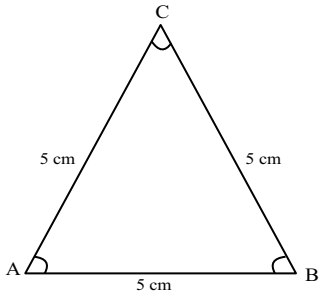
EXERCISE 10.5

Q.3: Make the triangle with the help of scale and protector.

1 △ABC when m$\overline{AB}$ = m$\overline{BC}$ = m$\overline{AC}$ = 5 cm

Sol: **Construction:**

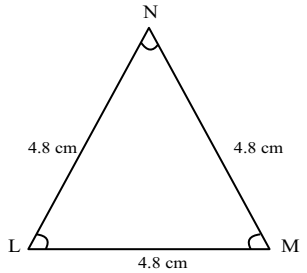
(i) Make a line segment $\overline{AB}$ =5cm
(ii) Draw an arc A = 5 on $\overline{AC}$
(iii) Draw an arc B = 5 on $\overline{BC}$
(iv) Join points, A, B and C.
(v) Here △ABC is the required triangle.



2 △LMN when m$\overline{LM}$ = m$\overline{MN}$ = m$\overline{LN}$ = 4.8 cm

Sol: **Construction:**

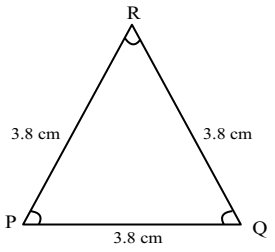
(i) Make a line segment $\overline{LM}$ = 4.8 cm
(ii) Draw an arc M = 4.8cm on m$\overline{MN}$
(iii) Draw an arc N = 4.8cm on $\overline{LN}$
(iv) Join points, L, M and N.
(v) Here △ LMN is the required triangle.



3 △PQR when m$\overline{PQ}$ = m$\overline{QR}$ = m$\overline{RP}$ = 3.8 cm

Sol: **Construction:**

(i) Make a line segment $\overline{PQ}$ = 3.8 cm
(ii) Draw an arc Q = 3.8cm on m$\overline{QR}$
(iii) Draw an arc R = 3.8cm on $\overline{RP}$
(iv) Join points, P, Q and R.
(v) Here △ PQR is the required triangle.



4 △XYZ when m$\overline{XY}$ = m$\overline{YZ}$ = m$\overline{XZ}$ = 6.2 cm

Sol: **Construction:**

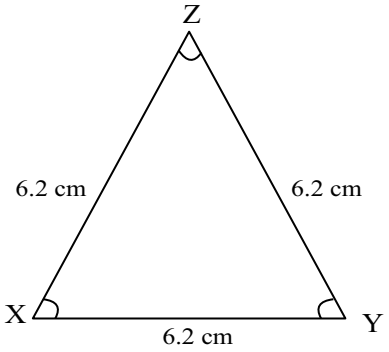
(i) Make a line segment $\overline{XY}$ = 6.2 cm

(ii) Draw an arc Y = 6.2 cm on m$\overline{YZ}$

(iii) Draw an arc Z = 6.2 cm on $\overline{XZ}$

(iv) Join points, X, Y and Z.

(v) Here△ XYZ is the required triangle.



Q.2: Construct the triangle with the help of scale and protector.

1 △CDE when m$\overline{CD}$ = 6 cm, m$\overline{DE}$ = m$\overline{CE}$ = 4cm

Sol: **Construction:**

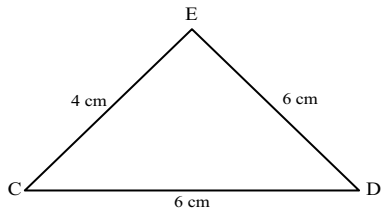
(i) Draw a line segment $\overline{CD}$ = 6 cm

(ii) Draw an arc D = 4 cm on m$\overline{DE}$

(iii) Draw an arc C = 4 cm on $\overline{CE}$

(iv) Join points, C,D and E.

(v) Here△ CDE is the required triangle.



2 △GHI when m$\overline{GH}$ = 3.5 cm, m$\overline{HI}$ = m$\overline{GI}$ = 4cm

Sol: **Construction:**

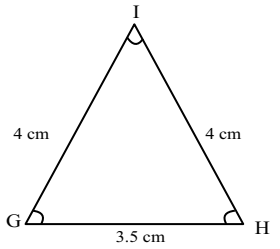
(i) Draw a line segment $\overline{GH}$ = 3.5 cm

(ii) Draw an arc H = 4 cm on m$\overline{GI}$

(iii) Draw an arc G = 4 cm on $\overline{GI}$

(iv) Join points, G,H and I.

(v) Here△ GHI is the required triangle.



3 △PQR when m$\overline{PQ}$ = 4 cm, m$\overline{QR}$ = m$\overline{PR}$ = 3.6cm

Sol: **Construction:**

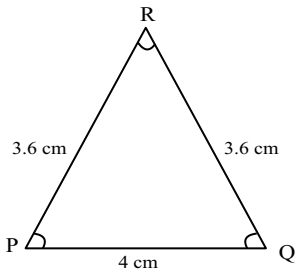
(i) Make a line segment $\overline{PQ}$ = 4 cm

(ii) Draw an arc Q = 3.64 on m$\overline{QR}$

(iii) Draw an arc P =3.64 on $\overline{PR}$

(iv) Join points, P,Q and R.

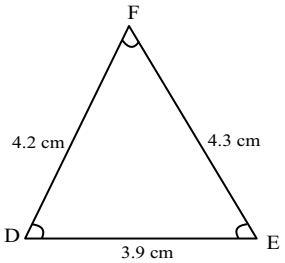
(v) Here△ PQR is the required triangle.



4 △DEF when m$\overline{DE}$ = 3.9 cm, m$\overline{EF}$ = 4.3 cm, m$\overline{DF}$ = 4.2 cm

Sol: **Construction:**

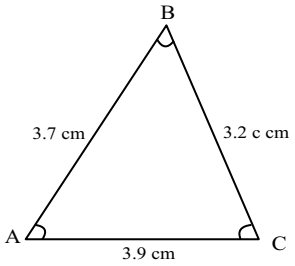
(i) Make a line segment $\overline{DE}$ = 3.9 cm
(ii) Draw an arc E = 4.3 on m$\overline{EF}$
(iii) Draw an arc F =4.2 on $\overline{DF}$
(iv) Join points, D,E and F.
(v) Here△ DEF is the required triangle.



5 △ABC when m$\overline{AC}$ = 3.9 cm, m$\overline{BC}$ = 7.2 cm, m$\overline{AB}$ = 3.7 cm

Sol: **Construction:**

(i) Make a line segment $\overline{AC}$ = 3.9 cm
(ii) Draw an arc C = 3.2 cm on m$\overline{BC}$
(iii) Draw an arc B =3.7 cm on $\overline{PR}$
(iv) Join points, A,B and C.
(v) Here△ ABC is the required triangle.

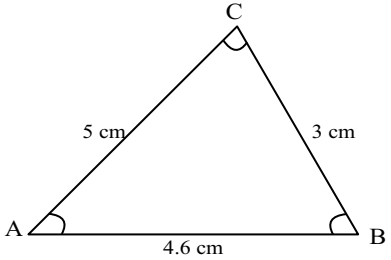


Q.3: Construct the triangle with the help of scale and protector.

1 △ABC when m$\overline{AB}$ = 4.6 cm, m$\overline{BC}$ = 3 cm, m$\overline{AC}$ = 5 cm

Sol: **Construction:**

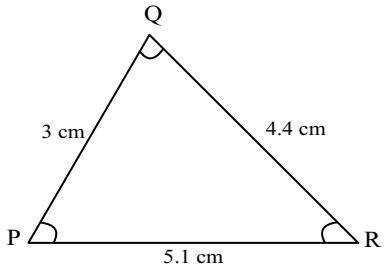
(i) Make a line segment $\overline{AB}$ =4.6cm
(ii) Draw an arc B = 3 cm on m $\overline{BC}$
(iii) Draw an arc C = 5 cm on m$\overline{AC}$
(iv) Join points, A, B and C.
(v) Here△ ABC is the required triangle.



2 △PQR when m$\overline{PQ}$ = 5.1 cm, m$\overline{QR}$ = 4.4 cm, m$\overline{RP}$ = 3 cm

Sol: **Construction:**

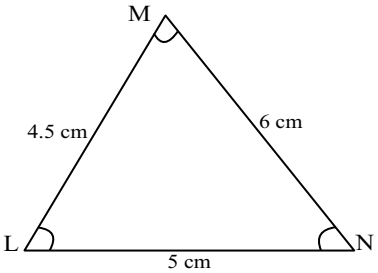
(i) Make a line segment $\overline{PQ}$ =5.1cm
(ii) Draw an arc Q = 4.4 cm on m $\overline{QR}$
(iii) Draw an arc R = 3 cm on m$\overline{RP}$
(iv) Join points, P,Q and R.
(v) Here△ PQR is the required triangle.



3 △LMN when m$\overline{LM}$ = 5 cm, m$\overline{MN}$ = 6 cm, m$\overline{LN}$ = 4.5 cm

Sol: **Construction:**

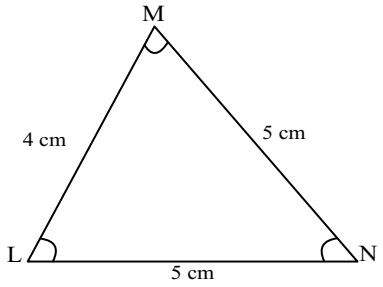
(i) Make a line segment $\overline{LM}$ = 5 cm
(ii) Draw an arc N = 6cm on m$\overline{MN}$
(iii) Draw an arc L = 4.5 cm on $\overline{LN}$
(iv) Join points, L, M and N.
(v) Here△LMN is the required triangle.



4 △ABC when m$\overline{AB}$ = 6 cm, m$\overline{BC}$ = 5 cm, m$\overline{AC}$ = 4 cm

Sol: **Construction:**

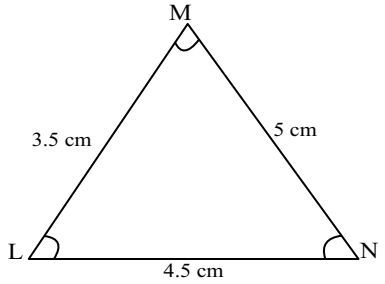
(i) Make a line segment $\overline{AB}$ = 6 cm
(ii) Draw an arc B = 5 cm on m $\overline{BC}$= 5cm
(iii) Draw an arc C = 4 cm on m$\overline{AC}$
(iv) Join points, A, B and C.
(v) Here△ABC is the required triangle.



5 △LMN when m LM = 4.5 cm, m MN = 5 cm, m LN = 3.5 cm

Sol: **Construction:**

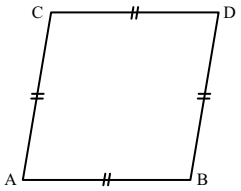
(i) Make a line segment $\overline{LM}$ = 4.5 cm
(ii) Draw an arc N = 5cm on m$\overline{MN}$
(iii) Draw an arc L = 3.5 cm on $\overline{LN}$
(iv) Join points, L, M and N.
(v) Here△LMN is the required triangle.



Quadrilateral:

Kinds of Quadrilateral:

i Rhombus
ii Rectangle
iii Square
iv Kite
v Trapezium
vi Parallelogram

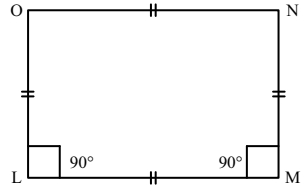


Rhombus:

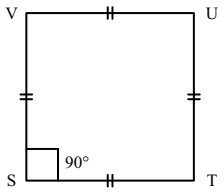
i All sides are congruent.
ii Two angles are acute and two are obtuse.

Rectangle:

i Pair of opposite sides are congruent.
ii All angles are right angle.



Square:



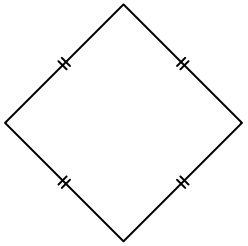
i All sides are congruent.

ii All angles are right angle.

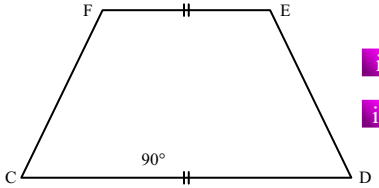
Kite

i Pairs of adjacent sides are congruent.

ii A pair of opposite angles is congruent.



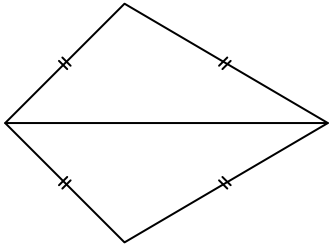
Trapezoid



i A pair of opposite sides is parallel.

ii Other pair of sides is different.

Kite



i A pair of opposite sides is parallel.

ii Other pair of sides is different.

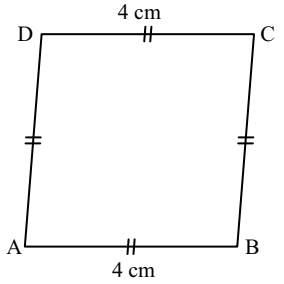
iii No one angle is right angle.

EXERCISE 10.6

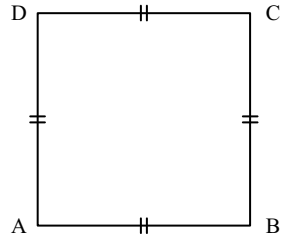
Q.1. Draw a quadrilateral of given measurement of sides with the help of scale and protector.

1 4 cm

*** Rhombus:**

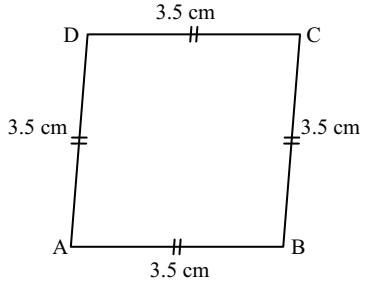


*** Square:**

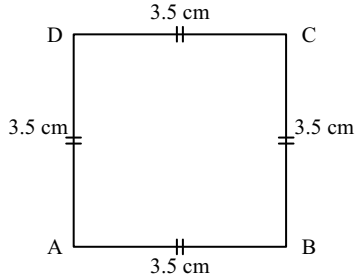


2 3.5 cm

*** Rhombus:**

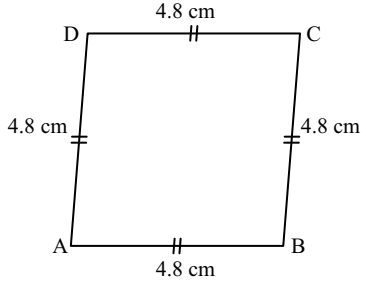


*** Square:**

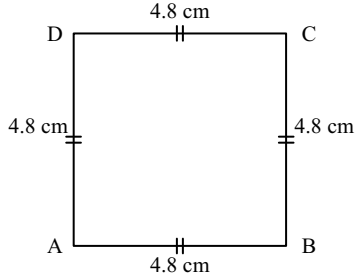


3 4.8 cm

*** Rhombus:**

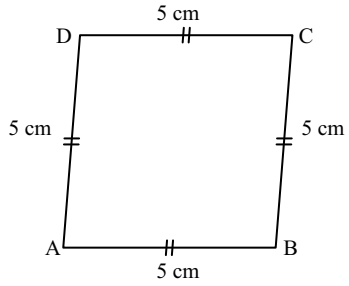


*** Square:**

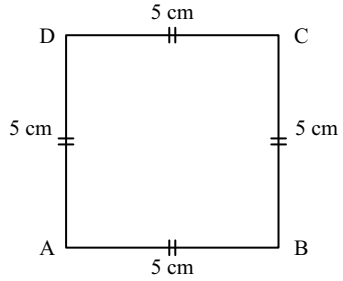


4 **5 cm**

*** Rhombus:**



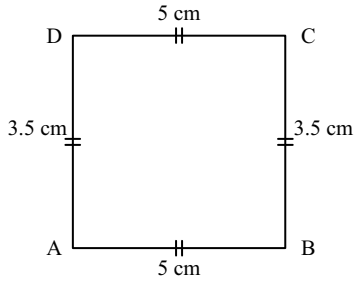
*** Square:**



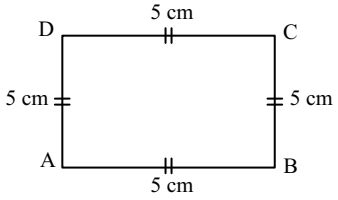
Q.2: Make a rectangle whose length and width are given.

1 **Length = 5cm width = 3.5 cm**

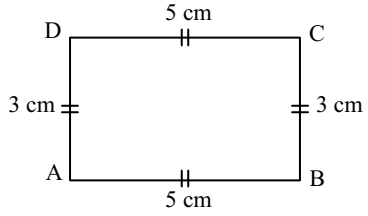
Sol:



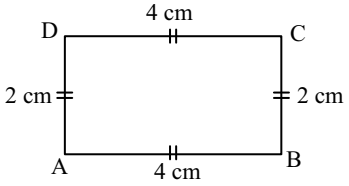
2 **Length 5.5m width = 2.5 m**



3 **Length = 6cm, width = 3cm**



4 **Length = 4cm, width = 2cm**



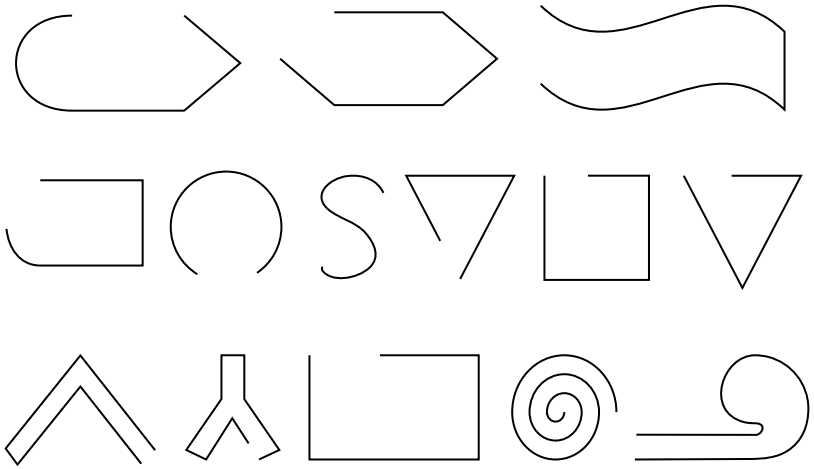
PERIMETER AND AREA:

These are two types of diagram in geometry.

i Open diagram ii Close diagram

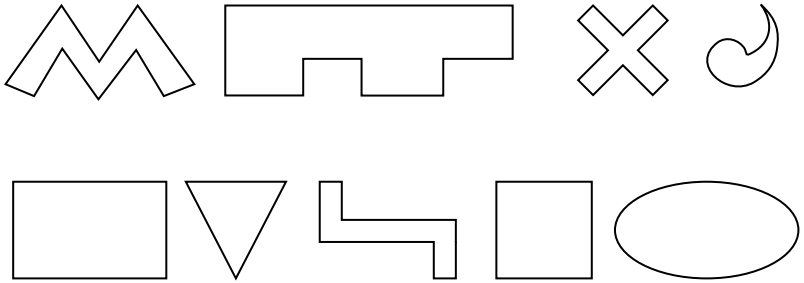
Open Diagram:

In open diagram the boundary of diagram is not fixed because of its any one side is open.



Close Diagram

In close diagram the Boundary of diagram is fixed from all sides.



Subtrction of perimeter and area

Perimeter:

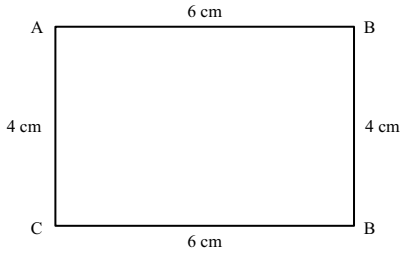
The totallength of boundary of closed shape is called perimeter.

Area:

The total inner boundary of diagram is called area.

Example: Find the area and perimeter of rectangular diagram in which length is 6cm and width is 4cm.

Solution:



Length (l) = 6 cm

Width (b) = 4 cm

Area = $2(l + b)$

= $2(6 + 4)$

= 2×10

= 20 cm

Perimeter = $l + b$

= 6×4

= 24 cm

Important Information

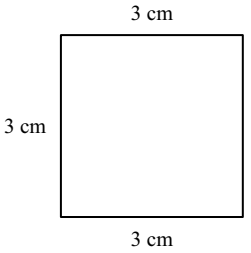
- The unit of perimeter is same as the length.
- We use mm, cm, km as the unit of perimeter.

Important Information

The units of area are meter square, kilometer square and millimeter square.

Example: Find the perimeter and area of square whose length and width = 3cm.

Solution: Perimeter mAB + mDC + mAD + mBA =



3cm + 3cm + 3cm + 3cm =

12cm =

$4 \times$ =

4×3 =

12cm =

$(l) \times (l)$ =

3×3 =

$9cm^2$ =

EXERCISE 11.1

Q.1: Find the perimeter and area square when one side is given.

1 **5 cm**

Sol:

Perimeter = L + L + L + L

Perimeter = 5 + 5 + 5 + 5

Perimeter = 20 cm

Area = LxL

Area = 5x5

Area = $25cm^2$

2 **6 cm**

Sol:

Perimeter = L + L + L + L

Perimeter = 6 + 6 + 6 + 6

Perimeter = 24 cm

Area = LxL

Area = 6x6

Area = $36cm^2$

3 **4.5 cm**

Sol:

Perimeter = L + L + L + L
Perimeter = 4.5 + 4.5 + 4.5 + 4.5
Perimeter = 18 cm

Area = LxL
Area = 4.5x4.5
Area = 20.25cm²

4 **12 cm**

Sol:

Perimeter = L + L + L + L
Perimeter = 12 + 12 + 12 + 12
Perimeter = 48 cm

Area = LxL
Area = 12x12
Area = 144cm²

5 **6 cm**

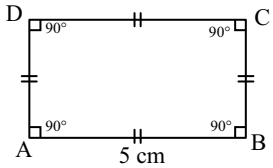
Sol:

Perimeter = L + L + L + L
Perimeter = 6 + 6 + 6 + 6
Perimeter = 24 cm

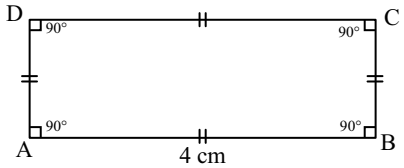
Area = LxL
Area = 6x6
Area = 36cm²

Q.2: Construct rectangles with the help of scale, compass as and protector whose length and width are given.

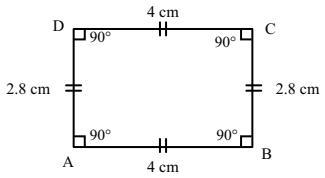
1 ***l*** = 5 cm , ***b*** = 2.5 cm



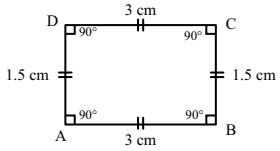
2 ***l*** = 1 cm , ***b*** = 4 cm



3 ***l*** = 4 cm , ***b*** = 2.8 cm



4 ***l*** = 3 cm , ***b*** = 1.5 cm



Q.3: Find the perimeter of a quadrilateral whose length is 12m.

Sol:

L= 12cm

Perimeter = L + L + L + L
Perimeter = 12 + 12 + 12 + 12
Perimeter = 48 cm

Q.4: Find the area of floor of a room, whose length is 8m and width in 6m.

Sol:

L= 8 cm , W = 6 m

Area = LxW
Area = 8 x 6
Area = 48 m²

Q.5: Find the perimeter and area of class room whose length=5m and width=4m.

Sol:

L= 5 m , W = 4 m

Area = LxW
Area = 5 x 4
Area = 20 m²

Perimeter of rectangle = 2 (L+W)
Perimeter of rectangle = 2 (5+4)
Perimeter of rectangle = 2 (9)
Perimeter of rectangle = 18

Q.6: Find the perimeter and area of rectangle field whose length = 8m and width = 6m.

Sol:

L= 8 m , W = 6m

Perimeter of rectangle = 2 (L+W)
Perimeter of rectangle = 2 (8+6)
Perimeter of rectangle = 2 (14)
Perimeter of rectangle = 28

Area = LxW
Area = 8 x 6
Area = 48 m²

GENERAL INFORMATION:

Average

Average (Arthmatic mean)

Average is a amount that shows the all values in equal rate.

$$\text{Average} = \frac{\text{Total sum of values}}{\text{Number of values}}$$

Example: Find the average of given numbers 35, 30, 20, 155

$$\text{Sum of all numbers} = 35 + 30 + 20 + 15 + 5$$

$$= 95$$

$$\text{Average} = \frac{\text{Total of values}}{\text{Number of values}}$$

$$= \frac{\cancel{95}^{19}}{\cancel{5}}$$

$$= 19$$

Example: Find the average of first six even numbers.

$$\text{Sum of six even number} = 12 + 10 + 8 + 6 + 4 + 2$$

$$= 42$$

$$\text{Average} = \frac{\text{Total of values}}{\text{Number of values}}$$

$$= \frac{\cancel{42}^{7}}{\cancel{6}}$$

$$= 7$$

Example: A car covers a distance of 45km, 60km, 40km and 35km in first second third and fourth hours respectively. Find the average distance per hour.

Solution:

$$\text{In first hour} = 45 \text{ k.m}$$

$$\text{In second hour} = 60 \text{ k.m}$$

$$\text{In third hour} = 40 \text{ k.m}$$

$$\text{In fourth hour} = 35 \text{ k.m}$$

$$\text{Total distance} = 45 + 60 + 40 + 35$$

$$\text{Distance} = 180$$

$$\text{Average} = \frac{\text{Total of values}}{\text{Number of values}}$$

$$\text{Average} = \frac{\cancel{180}^{45}}{\cancel{4}}$$

$$= 45 \text{ k.m}$$

EXERCISE 12.1

Q.1: Find the average of following:

1 20, 25, 30, 35, 40, 45, 50, 55

Sol:

Average: $\frac{20 + 25 + 30 + 35 + 40 + 45 + 50 + 55}{8}$

$= \frac{300}{8}$

Average: = 37.5 Ans:

2 20, 50, 75, 100

Sol:

Average: $\frac{20 + 50 + 75 + 100}{4}$

$= \frac{245}{4}$

Average: = 61.25 Ans:

3 300, 250, 400, 300, 350

Sol:

Average: $\frac{300 + 250 + 400 + 300 + 350}{5}$

$= \frac{1,600}{5}$

Average: = 320 Ans:

4 **6, 8, 10, 12, 14, 16**

Sol:

Average: $\frac{6 + 8 + 10 + 12 + 14 + 16}{6}$

$= \frac{66}{6}$

Average: = 11 Ans:

5 **1, 3, 5, 7, 8**

Sol:

Average: $\frac{1 + 3 + 5 + 7 + 8}{5}$

$= \frac{24}{5}$

Average: = 4.8 Ans:

6 **2.5, 3.5, 4.5, 5.5, 6.5**

Sol:

Average: $\frac{2.5 + 3.5 + 4.5 + 5.5 + 6.5}{10}$

$= \frac{22.5}{10}$

Average: = 2.25 Ans:

7 **8, 10, 14, 21, 25**

Sol:

Average: $\frac{8 + 10 + 14 + 21 + 25}{5}$

$= \frac{78}{5}$

Average: = 15.6 Ans:

8 **100, 75, 25, 20**

Sol:

Average: $\frac{100 + 75 + 25 + 20}{4}$

$= \frac{220}{4}$

Average: = 55 Ans:

Word Problem:

Q.1: **Aisha spends 75, 65, 60 and 85 on Saturday, Sunday Monday and Tuesday respectively. Find his average spent amount.**

Sol:

Average: $\frac{75 + 65 + 60 + 85}{4}$

$= \frac{285}{4}$

Average: = 71.25 Ans:

Q.2: **A bowler takes 7 wickets for 184 runs, Find his each wicket for score.**

A bowler 7 wickets for 184 runs
each wicket score =?

$= \frac{184}{7}$

= 26.285 Ans:

A bowler each wicket score is 26.285

```
   26.285
7 | 184
  -14
  ---
   44
  -42
  ---
   20
  -14
  ---
   60
  -56
  ---
    40
   -35
   ---
     00
```

Q.3: The rate of rain in Lahore in five days is 18.5. Find the rate of rain per day.

Sol:

Rate of rain in Lahore in five days is 18.5
Rate of rain per day =?

$$= \frac{18.5}{5}$$

$$= 3.7 \text{ Ans:}$$

Ans: The rate of rain per day is 3.7

$$\begin{array}{r|l} & 3.7 \\ \hline 5 & 18.5 \\ & -15 \\ \hline & 35 \\ & -35 \\ \hline & 00 \end{array}$$

Q.4: The income of workman is 6 days is under. Find his average income.

Sol:

The income of workman in days is 3600.
Average income = ?

$$= \frac{\overset{600}{\cancel{3600}}}{\cancel{6}_{1}}$$

$$= 600 \text{ Ans:}$$

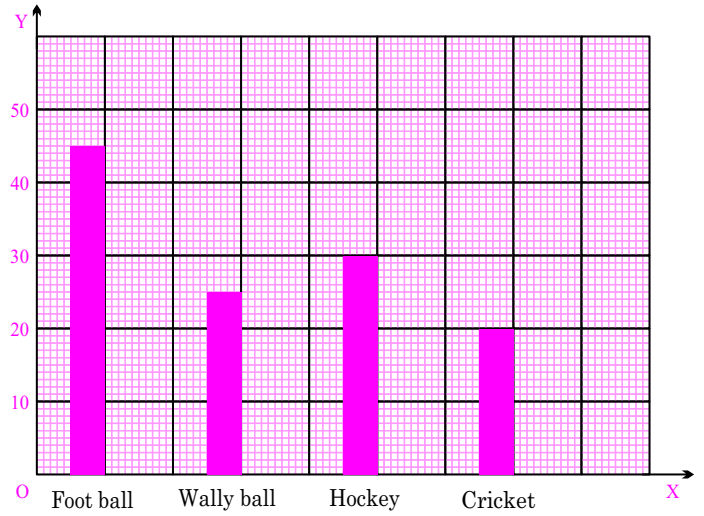
Ans: The average income of a workman is 600.

First day	Second day	Third day	Fourth day	Fifth day	Sixth day
200	350	350	300	420	400

Block or column Graph

Example: Fifth class students play games, show these games in Bar graph or Block graph.

Games	Foot ball	Vallyball	Hockey	Cricket
	45	25	30	20

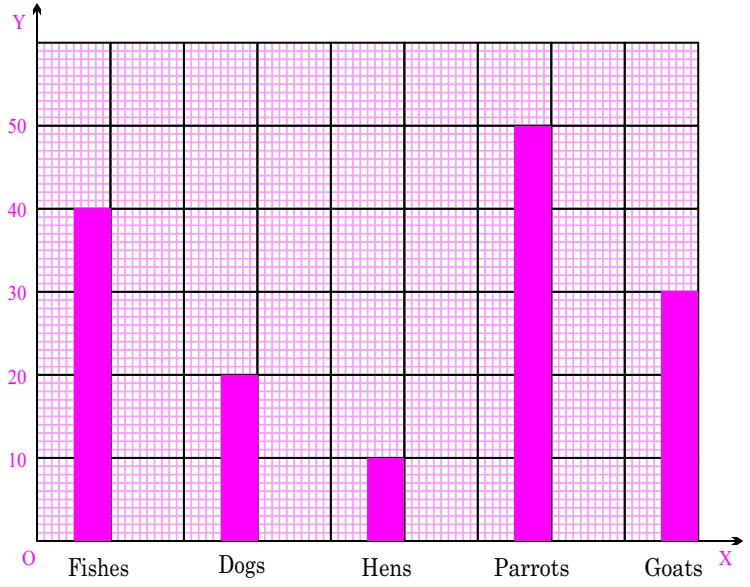


Give the answers of given questions:

1. What is the number of Foot ball games. 45
2. What is difference between vallyball and Hockey games. 5
3. Which game is most prefer. Foot ball
4. Which game is least to played. Cricket

Example: Given table shows the numbers of pets of a place.

Pets	Fishes	Dogs	Hens	Parrots	Goats
	40	20	10	50	30



Give the answer of following questions.

1. How much fishes are more than doss. 20
2. How much parrots are more than fishes. 10
3. How much goats are more than parrots. 20
4. What is the total of pets? 150

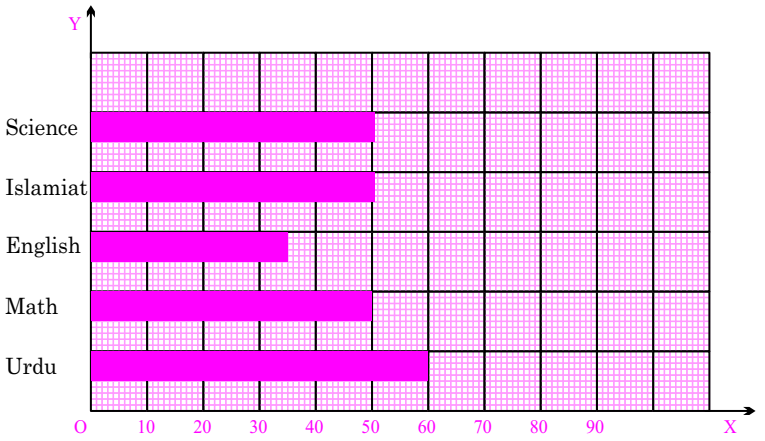
Vertical and horizontal bar graph

In vertical bar graph, things are shown in rectangle shape which are called bars. There are at same width.

Horizontal bar graph

Activity:

There are 80 students sat in examination of fifth class horizontal bar graph shows the number of student whose passed.



Give the answers of following question.

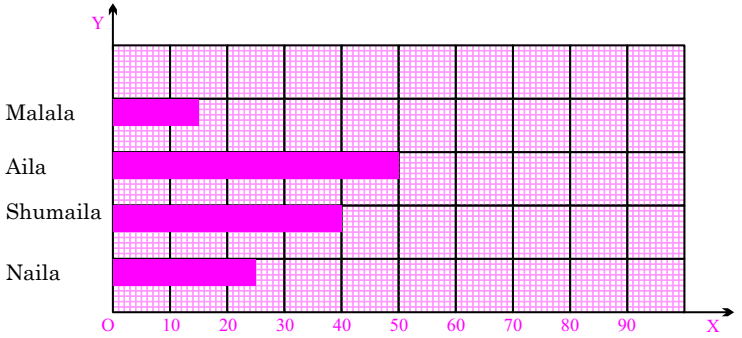
1. In which subjects most of student passed. Urdu
2. How much students are passed in Mathematic. S. Students
3. In which subject science or English, more student were passed. Science
4. How much students were passed in Islamiat. S Students

Activity:

After the end of Eid holidays Naila, Shumaila, Anila and in horizontal graph.

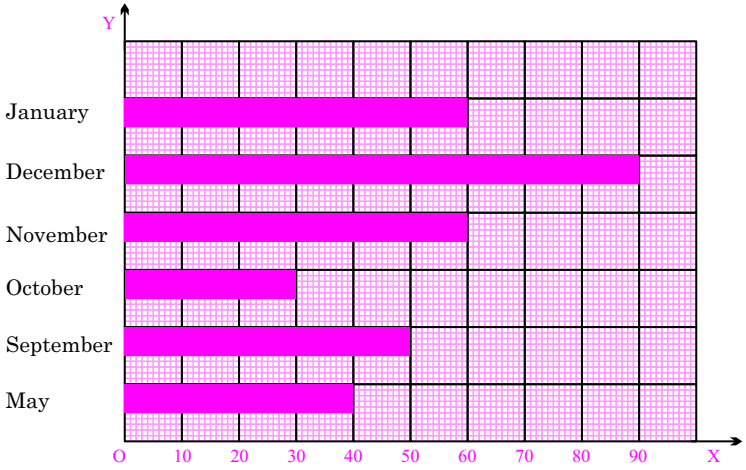
Give the answers of the following questions.

1. How much Eid had Naila?



2. How much eidi of shumaila was less than Naila's eidi. — 15 rupees
3. Who have most amount in all. — Aila
4. Who have least amount in all. — Malala
5. How much eidi was totaly. — 13 rupees

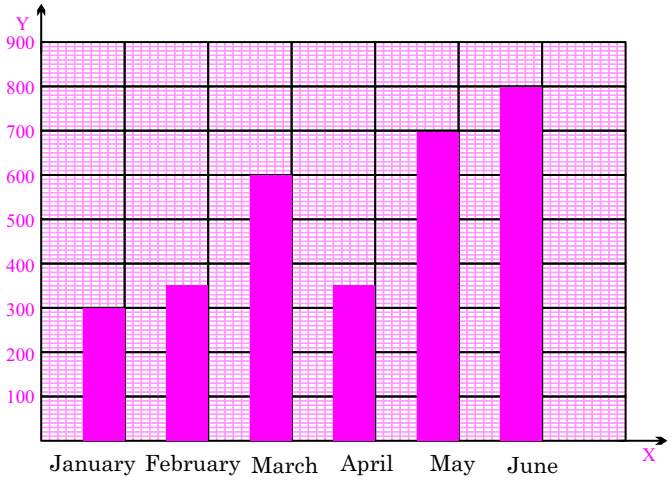
Activity: The obtained marks of Kashif's examination are under.



Give the answers of following questions.

1. Find the total marks of May. — 40 marks
2. In which months marks are equal,. — November and January
3. Find the most number of any month. — December
4. Find the least of marks in any month. — October
5. Show the ratio of September and December. — 40

Activity: The table of expensive of six month of Aisha is given below.



Give the answers of following questions.

1. In which month expensive is least in all. — January
2. How much expensive was in February. — 350
3. In which months expensive is same. — February and April
4. In which month the expensive was 6000 rupee. — March
5. What is difference between April and march expensive. — 250

Order of materials

The information of any material is called data It is show in numbers and it is also obtained by direct way.

Example:

Tourists in Pakistan in July 2015 was 975000.

In Lahore There are 255000 students gave examination in 2012.

To set the order of material

There are many methods to collect the materials.

Materials can be collected by pictures, Tables, charts and graphs.

Example: An organizor wants to know the ages of two cricket team player, which are under.

21, 30, 19, 27, 21, 27, 21, 22, 19, 27, 22, 23, 24, 22, 25, 21, 27, 21, 30, 22, 23, 24

19, 19, 21, 21, 21, 21, 21, 22, 22, 22, 22, 23, 23, 24, 24, 25, 27, 27, 27, 27, 30, 30

In this ways it is easy to collect.

Numbers of players	Telly	In years	Numbers of players	Telly	In years
19	II	2	21	IIII	5
22	IIII	4	22	II	2
24	II	2	25	II	2
27	IIII	4	30	II	2

ANSWERS

EXERCISE 1.1

Q.1:

1. Twenty million three hundred forty one thousand four hundred ninety five.
2. Seven hundred million three hundred fourteen thousand four hundred ten.
3. Two Hundred forty four million eight hundred seventy three thousand four hundred forty five.
4. Eighty five million eight hundred thousand two hundred thirty seven.
5. One hundred ninety one million eight hundred twenty five thousand one hundred.
6. Three Hundred twenty seven million sixteen thousand two hundred fifty seven.
7. Seven hundred five million two hundred forty five thousands one hundred twenty four.
8. Eight hundred seventy six million five thousand four hundred nine.

Q.2:

1. 2,404,651
2. 2,542,573,034
3. 689,819,020
4. 9,786,305,401
5. 4,152,562,000
6. 3,542,106
7. 8,327,000,000
8. 4,973,114

EXERCISE 1.2

i

1. 7185400
2. 140984545
3. 586553
4. 5535639
5. 7580048
6. 120787363
7. 53972567
8. 85541613
9. 9272263
10. 5926627
11. 1015137520
12. 152030197
13. 848259
14. 861144
15. 900453
16. 811202
17. 1299843
18. 1113734
19. 1121533
20. 1647729

ii

1. 102327444
2. 37728390
3. 940525
4. 68392946
5. 1393942
6. 119002465

EXERCISE 1.3

i

1. 842489
2. 191737
3. 351316
4. 1121280
5. 553712
6. 2152377
7. 19318907
8. 266599356
9. 22103667
10. 117212
11. 1793899
12. 6672471

ii

1. 459643
2. 189512
3. 180706
4. 400993
5. 216366
6. 762697

EXERCISE 1.4

1. 91585900
2. 267729000
3. 19950
4. 28091600
5. 44373693
6. 35053473
7. 128289602
8. 12276304
9. 19492880
10. 15591625
11. 50004240
12. 320152575

EXERCISE 1.5

1. 4092
2. 7823
3. 925
4. 32717
5. 6589
6. 7842
7. 1598
8. 4598
9. 3792
10. 4426
11. 13347
12. 1096
13. 39115.7
14. 3865
15. 5843

EXERCISE 1.6

1. 85
2. 2
3. 10
4. 9
5. 5
6. 34
7. 2749
8. 84
9. 42
10. 77
11. 54
12. 101

EXERCISE 1.7

All properties has been proved

EXERCISE 1.8

1. 32717 Oranges
2. 136.856 Books
3. 199989 Rupees
4. 19916480 Rupees
5. 225953 Showman
6. 223.38 Audience
7. 697823 Rupees
8. 35156250 Liters
9. 8965 Shoes
10. 222013 Rupees

EXERCISE 2.1

1. 5
2. 5
3. 12
4. 11
5. 24
6. 10
7. 23
8. 5
9. 4
10. 21
11. 7
12. 10
13. 24
14. 13
15. 1
16. 35

EXERCISE 2.2

1. 5
2. 3
3. 48
4. 13
5. 5
6. 11
7. 17
8. 6
9. 4
10. 4
11. 4
12. 11
13. 13
14. 21
15. 5
16. 48

EXERCISE 2.3

1. 900
2. 78
3. 648
4. 1125
5. 325
6. 144
7. 700
8. 8712
9. 1950
10. 1008
11. 216
12. 210

EXERCISE 2.4

1. 2925
2. 108
3. 720
4. 390
5. 60
6. 375
7. 576
8. 225
9. 252
10. 960
11. 108
12. 2565

EXERCISE 2.5

1. 60 Oranges
2. 12
3. 180
4. 9
5. 168
6. 40 Toffees
7. 132
8. 2.4 Meters
9. 8 Meters
10. 540 Mangoes

EXERCISE 3.1

1. $6\frac{2}{7}$
2. $\frac{16}{27}$
3. $\frac{5}{6}$
4. $\frac{5}{3}$
5. $\frac{74}{9}$
6. $\frac{19}{12}$
7. $\frac{29}{18}$
8. $\frac{457}{40}$
9. $\frac{238}{12}$
10. $\frac{23}{26}$
11. $\frac{427}{15}$
12. $\frac{117}{88}$

EXERCISE 3.2

1. $5\frac{22}{35}$
2. $\frac{19}{20}$
3. $\frac{17}{4}$
4. $\frac{1}{4}$
5. $\frac{7}{24}$
6. $2\frac{25}{42}$
7. $\frac{1}{9}$
8. $1\frac{31}{35}$
9. $\frac{13}{30}$
10. $5\frac{5}{24}$
11. $\frac{11}{21}$
12. $\frac{1}{10}$

EXERCISE 3.3

1. $2\frac{2}{5}$
2. $2\frac{7}{10}$
3. $\frac{5}{14}$
4. $\frac{9}{11}$
5. $\frac{33}{490}$
6. $\frac{3}{4}$
7. $20\frac{5}{14}$
8. $\frac{2}{9}$
9. $\frac{4}{7}$
10. $\frac{5}{28}$
11. $13\frac{13}{15}$
12. $15\frac{5}{6}$

EXERCISE 3.4

All properties has been proved

EXERCISE 3.5

1. $\frac{7}{9}$ Part
2. $\frac{5}{9}$ Part
3. $\frac{11}{15}$ Part
4. 5 Minutes
5. 1 Minute

EXERCISE 3.6

1. $29\frac{1}{4}$
2. 48
3. $5\frac{3}{8}$
4. $17\frac{3}{6}$
5. $15\frac{5}{6}$
6. $\frac{7}{4}$
7. $9\frac{19}{60}$
8. $5\frac{3}{5}$
9. $2\frac{1}{4}$, $1\frac{2}{4}$
10. $2\frac{2}{5}$

EXERCISE 4.1

1. 7.007
2. 7.422
3. 19.15
4. 4.295
5. 10.0094
6. 21.4843
7. 99.38
8. 9.796
9. 62.515
10. 6.3197
11. 5.2256
12. 6.022
13. 8.6968
14. 15.3266
15. 59.3551
16. 36.694
17. 16.483
18. 10.27

EXERCISE 4.2

1. 40.85
2. 18.39
3. 22.25
4. 82.02
5. 5.19
6. 8.6918
7. 5.1187
8. 4.9055
9. 4.266
10. 1.3221
11. 3.1318
12. 10.089
13. 2.2333
14. 1.7894
15. 1.0945

EXERCISE 4.3

1. 177.675
2. 374.43
3. 1033.48
4. 1506.114
5. 7675
6. 335.31
7. 372
8. 53.85
9. 103.572
10. 18.905
11. 13675
12. 931752
13. 176.5
14. 171855.21
15. 0.513
16. 322591.15
17. 35426
18. 125.235
19. 22187.52
20. 37
21. 2189.125
22. 28763.28
23. 7969.13
24. 0.3525

EXERCISE 4.4

1. 155.213
2. 21.017
3. 19.58
4. 9.3801
5. 3.07
6. 3.77
7. 17.157
8. 3.618
9. 1.025
10. 1.9328
11. 1.16775
12. 6.17285
13. 0.0009
14. 17.192
15. 0.0007

EXERCISE 4.5

1. 3.44
2. 115.07
3. 190
4. -3.44
5. 8.055
6. 30.91
7. 21.19
8. 10.66
9. 11.15
10. 23.98
11. 77.621
12. 9.43
13. 50.07

EXERCISE 4.6

i
1. 4.25
2. 10.72
3. 56.19
4. 0.35
5. 55.7
6. 7.85
7. 9.37
8. 2.73
9. 3.5
10. 3.25
11. 74.32
12. 35.86

ii
1. 4.01
2. 0.01
3. 0.86
4. 10.8
5. 5.2
6. 57.8
7. 5.2
8. 9.3
9. 0.8
10. 57.0
11. 78.8
12. 18.70

EXERCISE 4.7

1. 0.5
2. 0.12
3. 0.75
4. 3.4
5. 0.375
6. 0.3125
7. 1.6667
8. 2.14285
9. 3.461
10. 15.625
11. 0.625
12. 0.85
13. 0.92
14. 0.685
15. 0.41666
16. 1.3333
17. 1.9090909
18. 0.294117647

EXERCISE 4.8

1. $\frac{7}{10}$
2. $\frac{9}{2500}$
3. $\frac{63}{10000}$
4. $\frac{1}{20}$
5. $\frac{114}{250}$
6. $\frac{1207}{250}$
7. $\frac{29}{1000}$
8. $\frac{6}{25}$
9. $\frac{123}{50}$
10. $\frac{1511}{20}$
11. $\frac{75}{1000}$
12. $\frac{281}{250}$
13. $\frac{212}{25}$
14. $\frac{4773}{500}$
15. $\frac{3}{20}$
16. $\frac{429}{200}$

EXERCISE 4.9

1. 135.05 Km
2. 168.75 Rupees
3. 10.2 Kg
4. 32749.25 Rupees
5. 21.99
6. 41.07 Meter
7. 9082.2 Meter
8. 289 Rupees

EXERCISE 5.1

i
1. $\frac{7}{20}$
2. $\frac{3}{5}$
3. $\frac{91}{200}$
4. $\frac{43}{50}$
5. $\frac{4}{5}$
6. $\frac{65}{2}$
7. $\frac{3}{4}$
8. $\frac{19}{200}$
9. $\frac{14}{25}$
10. $\frac{31}{50}$

ii
1. 0.64
2. 1.05
3. 1.25
4. 0.23
5. 0.75
6. 0.65
7. 0.68
8. 1.15
9. 2.05
10. 0.405

iii
1. 75%
2. 266.66%
3. 87.5%
4. 37.5%
5. 16.%
6. 38%
7. 140%
8. 41.667%
9. 52.5%
10. 88.88%
6. 65%
7. 20%
8. 375%
9. 77.78%
10. 76.19%

EXERCISE 6.1

1. 43 Km 710 m
2. 70 Km 679 m
3. 48 Km 131 m
4. 53 Km 101 m
5. 68 Km 86 m
6. 189 Km 121 m
7. 99 Km 67 m
8. 116 Km 16 m

EXERCISE 6.2

1. 109 Km 27 mm
2. 151 Km 35 m
3. 151 KM, 35 mm
4. 2 M, 7 dM, 5 cm
5. 1 Km 992m
6. 24 Km 65 m
7. 6 Km 997 m
8. 9 Km 30 m

EXERCISE 6.3

1. 12 m 10 cm
2. 585Km 67 m
3. 1 Km 700 m
4. 1 m 62 cm
5. 11 m 48 cm

EXERCISE 7.1

i
1. 240 Minutes
2. 450 Minutes
3. 190 Minutes
4. 480 Minutes

ii
1. 600 Seconds
2. 300 Seconds
3. 2110 Seconds
4. 1515 Seconds

iii
1. 11.25 hours
2. 60 h 65 m
3. 8.53 hours
4. 5.7 hours
5. 2.083 hours
6. 4.5 hours
7. 12 hours
8. 7 hours

iv
1. 7.5 years
2. 4 Year 6 Month
3. 1 Year 1 Month
4. 10 Year
5. 6 Year 3 Month
6. 1 Year 9 Month
7. 10.66 years
8. 38.33 years

v
1. 42 Days
2. 88 Days
3. 602 Days
4. 59 Days
5. 72 Days
6. 315 Days
7. 18 Days
8. 147 Days

EXERCISE 7.2

i
1. 76 Minutes 29 Seconds
2. 48Minutes 4 Seconds
3. 61 Minutes 25 Seconds
4. 62 Minutes 23 Seconds
5. 6 Minutes 37 Seconds

ii
1. 19 Minutes 39 Seconds
2. 5 Minutes 55 Seconds
3. 7 Minutes 7 Seconds
4. 12 hours, 6 minutes
5. 55Minutes

EXERCISE 7.3

1. 6 years 9 months
2. 20 Minutes takes Fatima
3. 15 Minutes
4. 9 Days

EXERCISE 8.1

i
1. 140° F
2. 284° F
3. 122° F
4. 239° F
5. 113° F
6. 95° F
7. 176° F
8. 158° F
9. 77° F
10. 149° F
11. 248° F
12. 203° F
13. 410° F
14. 293° F
15. 212° F

ii
1. 60° C
2. 90° C
3. 15° C
4. 10° C
5. 110° C
6. 75° C
7. 80° C
8. 40° C
9. 30° C
10. 35° C
11. 25° C
12. 85° C
13. 210° C
14. 14° C
15. 160° C
16. 50° C
17. 20° C
18. 225° C
19. 115° C
20. 90° C

EXERCISE 8.2

1. 90° C
2. 60° F
3. 77° F
4. 80° C
5. 35° F

EXERCISE 9.1

1. 392 Rupees
2. 150 Rupees
3. 126 Rupees
4. 60 Rupees
5. 600 Rupees
6. 525 Rupees
7. 360 Meter
8. 300.6 Kilogram

EXERCISE 9.2

1. 18
2. 2 Days
3. 9 Machines
4. 194 Rupees
5. 5 Liters
6. 12 Kilometer