Start Calculation!

Teacher Manual Class-6

Future Print

Chapter - 1

Exercise 1.1

1. **Write the following numbers in figures:**
   (a) 82439 (b) 735987 (c) 4906107
   (d) 98676853
2. **Write the following numbers in words:**
   (a) Sixty seven thousand one hundred six (b) Seven thousand ninety two hundred fifteen (c) Twenty three thousand forty five six hundred eighty two (d) Sixty eight crore fifty two thousand six hundred seventy eight
3. **Write the following in figures:**
   (a) 614111 (b) 2786699
   (c) 36812163 (d) 707606505
4. **Write the following in words:**
   (a) Forty lack eight two thousand seven (b) Twenty eight lack seventy two thousand (c) Fifty two crore six lack ninety eight thousand five hundred eighty one (d) Seventy eight crore sixty seven lack eighty six thousand seven hundred eighty six
5. **Write the following using common in India number system as well as International number system:**
   (a) 356, 892 (b) 4, 619, 786 (c) 40, 213, 878 (d) 169,729,654
6. **Write the following in expanded form:**
   (a) $4 \times 10000 + 7 \times 1000 + 6 \times 100 + 9 \times 10 + 2 \times 1$
   (b) $3 \times 100000 + 6 \times 10000 + 2 \times 1000 + 8 \times 100 + 09 \times 1$
   (c) $5 \times 1000000 + 4 \times 100000 + 9 \times 10000 + 2 \times 1000 + 8 \times 100 + 6 \times 10 + 5 \times 1$
   (d) $1 \times 100000000 + 6 \times 10000000 + 1 \times 1000000 + 7 \times 100000 + 1 \times 10000 + 8 \times 1000 + 1 \times 100 + 9 \times 10 + 0 \times 1$
7. **Write the following in standard form:**
   (a) 567894 (b) 975769
   (c) 608040790 (d) 5040670876
8. **Write the place value of encircled digits in following numbers:**
   (a) Fifty thousand (b) Five lack (c) Zero (d) Six crore

Exercise 1.2

1. **Put the correct sign (> , < or =) in the given box:**
   (a) 6258497 < 6258493
   (b) 3256987 > 32549987
   (c) 3169707 < 3169077
   (d) 4800488 > 48000488
   (e) 5876045 = 5876045
   (f) 98765432 > 98765423
2. **Arrange the following numbers in increasing order:**
   (a) 62100612, 62100621, 62106021, 921000612
   (b) 46263219, 46391632, 46291236, 46623219
   (c) 580070058, 580700580, 508070580, 850850580
3. **Arrange the following numbers in decreasing:**
   (a) 583192169, 582192169, 582196121, 581292169

(b) 492675351, 492675351, 492657351, 492675173

(c) 757575001, 757507571, 575705757, 757575001

Exercise 1.3

1 Order for producing = 13,50,550

Manufactured in Aug = 154658

Manufactured in Sep = 282660

Manufactured total = 437318

Total manufactured = 437318

Order producing = 1350550

Total manufactured = 437318

913232

2. Appeared in exam = 1262850

Failed = 115750

Pass = 1147100

3. In 2011 turnover = 625892625

Increased in 2012 = 16258786

Find the turnover = 642151411

4. One blate cost =

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

Total cost of 2025 blate

5. Pens produces in a day = 6255

Pens produces year 2018 = × 365

```
  3 1 2 7 5
3 8 1 3 0 ×
1 8 7 6 5 × ×
2 2 8 9 0 7 5
```

6. 1000000 – 228250 = 771750

```
1 0 0 0 0 0 0
– 2 2 8 2 5 0
  7 7 1 7 5 0
```

7. Total length of rope = 34992 m

Length of a piece = 144 m

Number of piece = 34992 ÷ 144

= 243 m

```
144)34992(243
    288
     619
     576
      432
      432
       ×
```

8. Place value of 9 in 8256935 = 900

Face value of 9 in 8256935 = 9

Difference between them = 900 – 9

= 891

9. 8952 × 175 + 17525 × 225

1566600 + 3943,125 = 5,509,725

```
    8 9 5 2
    × 1 7 5
  4 4 7 6 0
6 2 6 6 4 ×
8 9 5 2 × ×
1 5 6 6 6 0 0
```

10. Tanu savings = ₹105060920

Withdrew = ₹ 8585770

Balance money = ₹ 96475150

11. Distance cover by airplane in 1 hours = 1525

In 108 hours = × 108

```
  1 2 2 0 0
0 0 0 0 ×
1 5 2 5 × ×
1 6 4 7 0 0
```

So, the distance covers in 108 hrs = 164700 km

12. Two numbers = 26842816

One numbers = 728

Other = 26842816 ÷ 728

```
728)26842816(243
    2184
     5002
     4368
      6341
      5824
       5176
       5096
        90
```

Exercise 1.4

1. **Round each of following numbers to the nearest 10:**
   (a) 13 = 3 < 5 So = 10
   (b) 47 = 7 < 5 So = 50
   (c) 115 = 5 < 5 So = 120
   (d) 275 = 5 < 5 So = 280
   (e) 8672 = 2 < 5 So = 8670
2. **Round each of following numbers to the nearest 100:**
   (a) 723 = 2 < 5 So = 700
   (b) 655 = 5 < 5 So = 700
   (c) 1982 = 8 < 5 So = 2000
   (d) 4780 = 8 < 5 So = 875
   (e) 2345 = 4 < 5 So = 2300
2. **Round each of following numbers to the nearest 1000:**
   (a) 1243 = 2 < 5 So = 1000
   (b) 3582 = 5 < 5 So = 4000
   (c) 4792 = 7 < 5 So = 5000
   (d) 2872 = 8 < 5 So = 3000
   (e) 3457 = 4 < 5 So = 3000

Exercise 1.5

1. **Estimate each sum to the nearest 10:**
   (a) 43 + 86 = 40 + 90 = 130
   (b) 29 + 132 = 30 + 130 = 160
   (c) 235 + 187 = 230 + 190 = 420
   (d) 6925 + 3832 = 6930 + 3830 = 130
2. **Estimate each sum to the nearest 100:**
   (a) 245 + 825 = 240 + 800 = 1000
   (b) 358 + 925 = 200 + 900 = 1100
   (c) 678 + 235 = 700 + 200 = 900
   (d) 8450 + 7440 = 8500 + 7500
   = 15800
3. **Estimate each sam to the nearest 1000:**
   (a) 2435 + 875
   2000 + 1000 = 3000
   (b) 3925 + 625
   4000 + 600 = 4600
   (c) 8120 + 6795
   8000 + 7000 = 15000
   (d) 3520 + 4225
   4000 + 4000 = 8000
4. **Estimate each difference to the nearest 10:**
   (a) 76 – 42 80 – 40 = 40
   (b) 84 – 48 80 – 50 = 30
   (c) 475 – 218 480 – 220 = 260
   (d) 6257 – 625 6260 – 630 = 5630
5. **Estimate each difference to the nearest 100:**
   (a) 415 – 278 400 – 300 = 100
   (b) 2750 – 1658 2800–1700= 1100
   (c) 6925 – 880 6800 – 900 = 5900
   (d) 8325 – 175 8300 – 200 = 8100
6. **Estimate each difference to the nearest 100:**
   (a) 6250 – 4785
   5000 – 5000 = 1000
   (b) 9210 – 3560
   9000 – 4000 = 5000
   (c) 3582 – 752
   4000 – 1000 = 3000
   (d) 9999 – 8888
   50000 – 9000 = 1000
7. **Estimate each product to the nearest 10:**
   (a) 42 × 28 50 × 30 = 1500
   (b) 65 × 75 80 × 70 = 5600
   (c) 82 × 75 80 × 80 = 6400
   (d) 15 × 15 20 × 20 = 400
8. **Estimate each product to the nearest 100:**
   (a) 234 × 392 200 × 400 = 8000

$$\begin{array}{r} 2\ 0\ 0 \\ \times\ 4\ 0\ 0 \\ \hline 0\ 0\ 0 \\ 0\ 0\ 0\ \times \\ 8\ 0\ 0\ \times\ \times \\ \hline 8\ 0\ 0\ 0\ 0 \end{array}$$

(b) 282×175 $\quad 300 \times 200 = 60000$

$$\begin{array}{r} 3\ 0\ 0 \\ \times\ 2\ 0\ 0 \\ \hline 0\ 0\ 0 \\ 0\ 0\ 0\ \times \\ 6\ 0\ 0\ \times\ \times \\ \hline 6\ 0\ 0\ 0\ 0 \end{array}$$

(c) 704×651 $\quad 700 \times 700 = 490000$

$$\begin{array}{r} 7\ 0\ 0 \\ \times\ 7\ 0\ 0 \\ \hline 0\ 0\ 0 \\ 0\ 0\ 0\ \times \\ 4\ 9\ 0\ 0\ \times\ \times \\ \hline 4\ 9\ 0\ 0\ 0\ 0 \end{array}$$

(d) 892×645 $\quad 900 \times 700 = 630000$

$$\begin{array}{r} 9\ 0\ 0 \\ \times\ 7\ 0\ 0 \\ \hline 0\ 0\ 0 \\ 0\ 0\ 0\ \times \\ 6\ 3\ 0\ 0\ \times\ \times \\ \hline 6\ 3\ 0\ 0\ 0\ 0 \end{array}$$

9. Estimate each product to the nearest 1000:

(a) 4250×1485 $\quad 4000 \times 1000 = 4000000$

$$\begin{array}{r} 4\ 0\ 0\ 0 \\ \times\ 1\ 0\ 0\ 0 \\ \hline 0\ 0\ 0\ 0 \\ 0\ 0\ 0\ 0\ \times \\ 0\ 0\ 0\ 0\ \times\ \times \\ 4\ 0\ 0\ 0\ \times\ \times\ \times \\ \hline 4\ 0\ 0\ 0\ 0\ 0\ 0 \end{array}$$

(b) 1325×920 $\quad 1000 \times 1000 = 1000000$

$$\begin{array}{r} 1\ 0\ 0\ 0 \\ \times\ 1\ 0\ 0\ 0 \\ \hline 0\ 0\ 0\ 0 \\ 0\ 0\ 0\ 0\ \times \\ 0\ 0\ 0\ 0\ \times\ \times \\ 1\ 0\ 0\ 0\ \times\ \times\ \times \\ \hline 1\ 0\ 0\ 0\ 0\ 0\ 0 \end{array}$$

(c) 1854×785 $\quad 2000 \times 1000 = 2000000$

$$\begin{array}{r} 2\ 0\ 0\ 0 \\ \times\ 1\ 0\ 0\ 0 \\ \hline 0\ 0\ 0\ 0 \\ 0\ 0\ 0\ 0\ \times \\ 0\ 0\ 0\ 0\ \times\ \times \\ 2\ 0\ 0\ 0\ \times\ \times\ \times \\ \hline 2\ 0\ 0\ 0\ 0\ 0\ 0 \end{array}$$

(d) 625×1250 $\quad 1000 \times 1000 = 1000000$

$$\begin{array}{r} 1\ 0\ 0\ 0 \\ \times\ 1\ 0\ 0\ 0 \\ \hline 0\ 0\ 0\ 0 \\ 0\ 0\ 0\ 0\ \times \\ 0\ 0\ 0\ 0\ \times\ \times \\ 1\ 0\ 0\ 0\ \times\ \times\ \times \\ \hline 1\ 0\ 0\ 0\ 0\ 0\ 0 \end{array}$$

10. Estimate each quotient the nearest 10:

(a) $87 \div 32$
$90 \div 30 = 3$

$$\begin{array}{r} 30\overline{)90}\,(3 \\ \underline{90} \\ \times \end{array}$$

(b) $99 \div 14$
$100 \div 10 = 10$

$$\begin{array}{r} 10\overline{)100}\,(10 \\ \underline{100} \\ 0 \end{array}$$

(c) $215 \div 7$
$220 \div 10 = 22$

$$\begin{array}{r} 10\overline{)220}\,(22 \\ \underline{20} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

(d) $725 \div 12$
$700 \div 10 = 70$

$$\begin{array}{r} 70\overline{)700}\,(70 \\ \underline{70} \\ 0 \\ \underline{0} \\ 0 \end{array}$$

11. Estimate each quotient the nearest 100:

(a) $450 \div 112$
$400 \div 100 = 5$

$$\begin{array}{r} 100\overline{)400}\,(4 \\ \underline{400} \\ 0 \end{array}$$

(b) 872 ÷ 315
800 ÷ 300 = 3

```
300)900(3
    900
    ×
```

(c) 272 ÷ 282
600 ÷ 300 = 2

```
300)600(2
    600
    ×
```

(d) 4460 ÷ 461
5000 ÷ 500 = 10

```
500)5000(10
    400
      0
      0
      0
```

12. Estimate each quotient the nearest 1000:

(a) 1520 ÷ 1245
2000 ÷ 1000 = 2

```
1000)2000(2
     2000
     ×
```

(b) 8120 ÷ 2163
8000 ÷ 2000 = 4

```
2000)8000(4
     8000
     ×
```

(c) 3825 ÷ 1623
4000 ÷ 2000 = 2

```
2000)4000(2
     4000
     ×
```

(d) 970 ÷ 985
1000 ÷ 1000 = 1

```
1000)1000(1
     1000
     ×
```

Exercise 1.6

1. Write the following numerals as roman numerals:

(a) 38 = XXXVIII (b) 46 = XVI
(c) 74 = LXIV (d) 92 = XCII
(e) 155 = CLV (f) 270 = CCLXX
(g) 320 = CCCXX (h) 114 = CXIV

2. Write the following numerals as Hindi Arabic numerals:

(a) XV = 15 (b) XXVI = 26
(c) LXXVII = 77 (d) XCL = 91
(e) XCVI = 96 (f) XCIX = 99
(g) DLXIX = 569 (h) XLV = 45

3. Which of the following are meaning less:

(a) LL = Meaning less
(b) XXXX = Meaning less
(c) IC = Meaning less
(d) VC = Meaning less
(e) VVII = Meaning less
(f) IXX = Meaning less
(g) IL = Meaning less
(h) VD = Meaning less

MCQs (Mental Ability)

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

Chapter - 2

Exercise 2.1

1. 1, 2, 3 **2.** 0, 1, 2 **3.** 0
4. Not possible **5.** Not possible

6. Write the successor of following numbers:

(a) 2789217 + 1 = 2789218
(b) 6899990 + 1 = 6899991
(c) 7584321 + 1 = 7584322
(d) 6875999 + 1 = 687600
(e) 9999999 + 1 = 10000000
(f) 5487329 + 1 = 5487330
(g) 6492389 + 1 = 6492390
(h) 9872357 + 1 = 9872358

7. Write the predecessor of following numbers:

(a) 8251389 – 1 = 8251388
(b) 6297181 – 1 = 6297180
(c) 9251798 – 1 = 9251797
(d) 3215670 – 1 = 3215669
(e) 1000000 – 1 = 999999
(f) 8878665 – 1 = 8878664
(g) 7532591 – 1 = 7532590
(h) 9876543 – 1 = 9876542

8. Write down 5 consecutive whole number just after:

8627989, 8627990, 8627991, 8627993

9. **Find the predecessor of successor of 1000000:**
= 1000000

Exercise 2.2

1. **Write the name of property:**
(a) 400 + 0 = 400
Zero sum property
(b) 378 + 872 = 872 + 378
Commutive property of addition
(c) (750 + 692) + 436 = 750 + (692 + 436) Associative property of addition
(d) 1000 + 1700 = 2700
(Whole number)
Closure property of addition
(b) a + b = 0
Commutive property of addition

2. **Fill in the blanks:**
(a) 625 + 586 + 586 + 625
(b) (325 + 425) + 525 = 425 + 525
(c) 786 + 0 = 786
(d) 2852 + 0 = 2852
(e) 986 + 894 = 894 + 986

3. **Verity the commutative property i, e, a + b + b + a:**
(a) a = 950 b = 865
950 + 865 = 1815
865 + 950 = 1815
950 + 865 = 865 + 950
(b) a = 3257 b = 1296
3257 + 1296 = 4553
1296 + 3257 = 4553
3257 + 1296 = 1296 + 3257
(c) a = 999 b = 100
999 + 100 = 1099
100 + 999 = 1099
999 + 100 = 100 + 999

4. **Verity the associative property (a + b) = c = a + (b + c):**
(a) a = 521, b = 625, c = 125
521 + 625 + 125 = (521 + 625) + 125
= 1146 + 125 = 1271
521 + 625 + 125 = 521 + (625 + 125) = 521 + 750 = 1271
(521 + 625) + 125 = 521 + (625 + 125)
(b) a = 925, b = 686, c = 125
= (925 + 686) + 125
= 1611 + 125 = 1736
= 925 + (686 + 125)
= 925 + 811 = 1736
= (521 + 625) + 125
= 925 +(686 + 125)
(c) a = 1000, b = 2000, c = 3000
(1000 + 2000) + 3000 = 3000 + 3000 = 6000
= 1000 + (2000 + 3000) = 1000 + 5000 = 6000
(1000 + 2000) + 3000 = 1000 + (2000 + 3000)
(d) a = 1556, b = 2550, c = 3500
(1556 + 2550) + 3500
= 1556 + (2550 = 3500)
= 1556 + 6050 + 7606
(1556 + 2550) + 3500
= 1556 +(2550 + 3500)

5. **Find the sum by using associative property :**
(a) 625 + 850 + 250 = 1725
(b) 1975 + 2025 + 1820 = 2820
(c) 6251 + 5126 + 3280 = 14657
(d) 2020 + 8775 + 2750 = 13545

Exercise 2.3

1. **Perform the following subtraction check your result by the corresponding addition:**
(a) 72561 – 69825 = 2736
Check = 69825 + 2736 = 72561
(b) 99871 – 9999 = 89872
Check = 9999 + 89872 = 99871
(c) 202020 – 191919 = 10101

Check = 191919 + 10101 = 202020

(d) 1000000 – 999999 = 1

Check = 999999 + 1 = 1000000

2. (a) 6258 from 7102

7102 – 6258 = 844

(b) 98765 from 100000

100000 – 98765 = 1235

(c) 6000 – 5999 = 1

(d) 96541 – 48321 = 48220

3. Smallest 8 digit no. = 100000000

Greatest 7 digit no. = – 9999999

00000001

4. (8925 + 6250) – (8925 – 6250)

= 15175 – 1675 = 13500

5. Place value of 9 in 892395 = 90000 and 90

Difference between them 90000

– 90

99810

6. Solve the following:

(a)
```
 7 2 5 9 1        7 6 4 5 5
 + 3 8 6 4      + 1 6 3 8 5
 7 6 4 5 5        6 0 0 7 0
```

(b) 100000 + 20000 – 80000 – 40000

```
 1 0 0 0 0 0      8 0 0 0 0
 + 2 0 0 0 0    + 4 0 0 0 0
 1 2 0 0 0 0    1 2 0 0 0 0

 1 2 0 0 0 0
 – 1 2 0 0 0 0
 0 0 0 0 0 0
```

(c) 62870 – 32571 – 292 + 10500

62870 + 10500 – 32571 – 2921

```
  6 2 8 7 0      3 5 5 7 1
 + 1 0 5 0 0   +   2 9 2 1
  7 3 3 7 0      3 5 4 9 2

  7 3 3 7 0
 – 3 5 4 9 2
  3 7 8 7 8
```

(d) 500000 – 200000 – 200000 – 100000

```
  2 0 0 0 0      4 0 0 0 0
 + 2 0 0 0 0    + 1 0 0 0 0
  4 0 0 0 0      5 0 0 0 0

  5 0 0 0 0
 – 5 0 0 0 0
  0 0 0 0 0
```

Exercise 2.4

1. (a) Commutative property of multiplication

(b) Closure property of multiplication

(c) Associative property of multiplication

(d) Associative property of multiplication

(e) Is identify element for multiplication

(f) Multiplication by 0

(g) Distributive property of multiplication over subtractions

2. Fill in the blank:

(a) 72 × 81 = 81 × 72 (b) 92 × 0 = 0

(c) 8754 × 1 = 8754 (d) 732 × 32 + 732 + 18 = 732 × (32 + 18) (e) 958 × 156 – 978 × 56 = 958 × (156 – 56)

(f) (432 × 515) × 786 = 432 × (515 × 786) (g) 258 × 159 = 258 × (200 + 195)

3. Find the value using appropriate properties:

(a) 425 (60 + 40)

= 425 × 100 = 42500

(b) 9261 (109 + 9)

= 9261 × 100 = 9261 × (100)

= 9261000

(c) 786 (99 + 1)

= 786 × (100) = 786 × 100

= 78600

(d) 7250 (1425 – 425)

$= 7250 \times (1000) = 7250 \times 1000$
$= 250000$

4. Find the product by suitable rearrangement:

(a) $175 \times (25 \times 4)$
$= 175 \times 100 = 17500$

(b) $4876 \times (50 \times 2)$
$= 4876 \times 100 = 487600$

(c) $(15 \times 60) \times (20 \times 5)$
$= 900 \times 100 = 90000$

(d) $(40 \times 250) \times (25 \times 4)$
$= 10000 \times 100 = 1000000$

5. Find the product by using distribution laws:

(a) $545 \times (100 + 5)$
$= 545 \times 100 + 545 + 5$
$= 54500 + 2725 = 57225$

(b) $945 \times (100 + 25)$
$= 945 \times 100 + 945 + 25$
$= 94500 + 94500 = 118125$

(c) $1824 \times (100 - 4)$
$= 1824 \times 100 - 1824 \times 4$
$= 182400 - 7296 = 175104$

(d) $258 \times (100 - 80)$
$= 258 \times 100 - 258 + 80$
$= 25800 + 20440 = 20640$

6. Find the product by using column method:

(a)
```
      4 2 3 5
      × 1 2 5
    2 1 1 7 5
    8 4 7 0 ×
  4 2 3 5 × ×
  5 2 9 3 7 5
```

(b)
```
        9 8 9
      × 2 7 6
      5 9 0 4
    6 9 2 3 ×
  1 9 7 8 × ×
  2 7 2 9 3 4
```

(c)
```
      6 2 5 1
      × 7 8 6
    3 7 5 0 6
  5 0 0 0 8 ×
4 3 7 5 7 × ×
4 9 1 3 2 8 6
```

(d)
```
      1 3 2 5
      × 1 2 2 5
        6 6 2 5
      2 6 5 0 ×
    2 6 5 0 × ×
  1 3 2 5 × × ×
  1 6 2 3 1 2 5
```

7. The cost of 1 toy ₹ =
```
      1 5 7 5
      × 2 8 5
      7 8 7 5
  1 2 6 0 0 ×
  3 1 5 0 × ×
  4 4 8 8 7 5
```

285 toys cost = ₹ 448875

8. 1 section = 45 student

7 section student = $\frac{7}{315}$

Per month fee = 1250 per student

```
      1 2 5 0
      × 3 1 5
      6 2 5 0
    1 2 5 0 ×
  3 7 5 0 × ×
  3 9 3 7 5 0     one month fee
```

1 year fee = 393750 × 12 = 4725000

Exercise 2.5

1. Find the value of a if a ÷ a = 1

2. Fill in the blanks:

(a) 2278 ÷ 2278 = 1 (b) 0 ÷ 325 = 0
(c) 7896 ÷ 0 = Not defined (d) 325 ÷ 325 = 1 (e) (82 ÷ 82) × (75 ÷ 75) = 1

3. Divide the following and check your answer:

(a) 45389 ÷ 29

```
26)45389(1565
   29
    163
    145
     188
     174
      149
      145
        4
```

Check answer

```
      1 5 6 5
        × 2 9
  1 4 0 8 5
  3 1 3 0 ×
  4 5 3 8 5
            4
  4 5 3 8 9
```

(b) 627692 ÷ 85

```
85)627692(1565
   595
    326
    255
     719
     680
      392
      340
       52
```

Check answer

```
      7 3 8 4
        × 8 5
    3 6 9 2 0
  5 9 0 7 0 ×
  6 2 7 6 4 0
          5 2
  6 2 7 6 9 2
```

(c) 387562 ÷ 116

```
116)387562(3341
    348
     395
     348
      476
      464
       122
       116
         6
```

Check answer

```
      3 3 4 1
        × 1 1 6
    2 0 0 4 6
    3 3 4 1 ×
  3 3 4 1 × ×
  3 8 7 5 5 6
            6
  3 8 7 5 6 2
```

(d) 99999 ÷ 99

```
99)99999(1010
   99
    99
    99
     9
```

Check answer

```
      1 0 1 0
        × 9 9
    9 0 9 0
  9 0 9 0 ×
  9 9 9 9 0
          9
  9 9 9 9 9
```

(e) 362581 ÷ 205

```
205)362581(1768
    205
    1575
    1435
     1408
     1230
      2781
      1640
       141
```

Check answer

```
      1 7 6 8
        × 2 0 5
    8 8 4 0
  0 0 0 0 ×
  3 5 3 6 × ×
  3 6 2 4 4 0
        1 4 1
  3 6 2 5 8 1
```

(f) 18933 ÷ 382

```
328)6210210(18933
    328
    2930
    2624
     3062
     2952
      1101
       1170
        984
        186
```

Check answer

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

4. Greatest number 7 digit = 9999999
3 digit = 999

9999999 ÷ 999

```
999)9999999(10010
    999
     999
     999
       9
```

5. 12 toys cost = 7464 ₹
1 toy = 7464 ÷ 10 = 622 ₹

```
12)7464(1010
   72
    26
    24
     24
     24
      ×
```

6. Divided = 70, Quotient = 40
Remainder = 36

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

7. 46 LCD cost = 1140110
1 LCD cost = 1140110 ÷ 46
= 24785

```
46 )1140110(24785
   92
   220
   184
    361
    322
     391
     368
      230
      230
       ×
```

8. 6252 ÷ 14

```
14)6252(446
   56
    65
    56
     92
     84
      8
```

8 is added which is divisible by 6252

9. Divided = 62585, Quotient = 721

Divisor = 151, Remainder = 121

Dividend = Quotient × Divisor + Remainder

62585 = 721 × 151 + 121

62585 = 108,871 + 121

62585 = 108992 (false)

M.C.Q (Mental Ability)

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

True false:

(a) F (b) F (c) T (d) T (e) T (f) F (g) F (h) F (i) T (j) F

Chapter - 3

Exercise 3.1

1. **Check whether the following statement are true or false:**

   (a) False (b) True (c) True (d) False

2. **Write the factors of the following number:**

   (a) 100 – 1, 2, 4, 5, 10, 20, 25, 50, 100 (b) 84 – 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84 (c) 72 – 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72 (d) 60 – 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 (e) 52 – 1, 2, 4, 13, 26, 52 (f) 44 – 1, 2, 4, 11, 22, 44

3. **Write the firs 10 multiples of the following numbers:**

   (a) 11 – 11, 22, 33, 44, 55, 66, 77, 88, 99, 110 (b) 13 – 13, 26, 39, 52, 65, 78, 98, 104, 117, 130 (c) 15 – 15, 30, 45, 60, 75, 90, 105, 120, 135, 150 (d) 16 – 16, 32, 48, 64, 80, 96, 112, 128, 144, 160 (e) 18 – 18, 36, 54, 72, 90, 108, 126, 144, 162, 180 (f) 19 – 19, 38, 57, 76, 95, 114, 133, 152, 171, 190

4. **Fill in the blanks:**

   (a) Less (b) Greater (c) 1 (d) 2 (e) 2 (f) 1

Exercise 3.2

1. **Check whether these numbers are divisible by 2 or not:**

   (a) It is not divisible by 2 because its last digit is not divisible by 2

   (b) It is a divisible by 2 because its last digit is divisible by 2

   (c) It is a divisible by 2 because its last digit is divisible by 2

   (d) It is not divisible by 2 because its last digit is not divisible by 2

   (e) It is not divisible by 2 because its last digit is not divisible by 2

   (f) It is a divisible by 2 because its last digit is divisible by 2

2. **Check whether these number are divisible by 3 or not:**

   (a) 6070: sum of digit 6 + 2 + 7 + 0 = 15 (Multiple of 3)
   So, 6270 is divisible by 3

   (b) 2467: sum of digit 2 + 4 + 6 + 7 = 17 (not a multiple of 3)
   So, 6270 is not divisible by 3

   (c) 5436: sum of digit 5 + 4 + 3 + 6 = 18 (Multiple of 3)

So, 5436 is a divisible by 3

(d) 9006: sum of digit 9 + 0 + 0 + 6 = 15 (Multiple of 3)

So, 9006 is a divisible by 3

(e) 4329: sum of digit 4 + 3 + 2 + 9 = 18 (Multiple of 3)

So, 4329 is a divisible by 3

(f) 4562: sum of digit 4 + 5 + 6 + 2 = 17 (not a multiple of 3)

So, 6270 is not divisible by 3

3. Check whether these number are divisible by 4 or not:

(a) 2015: number formed by tens and ones digit = 15

15 is not divisible by 4, so 2015 is not divisible by 4

(b) 2242: number formed by tens and ones digit = 42

42 is not divisible by 4, so 2242 is not divisible by 4

(c) 5474: number formed by tens and ones digit = 54

54 is not divisible by 4, so 5474 is not divisible by 4

(d) 9075: number formed by tens and ones digit = 75

75 is not divisible by 4, so 9075 is not divisible by 4

(e) 5613: number formed by tens and ones digit = 13

13 is not divisible by 4, so 5613 is not divisible by 4

(f) 6552: number formed by tens and ones digit = 52

52 is not divisible by 4, so 6552 is not divisible by 4

4. Check Whether these number are divisible by 4 or not:

(a) It is divisible by 5, because its last digit is 5

(b) It is divisible by 5, because its last digit is 5

(c) It is not divisible by 5, because its last digit is 4

(d) It is divisible by 5, because its last digit is 5

(e) It is not divisible by 5, because its last digit is 3

(f) It is divisible by 5, because its last digit is 0

5. Check whether these numbers are divisible by 6 or not:

(a) 7015: 7015 is not divisible by 2 and 3 both, It will not be divisible by 6 (b) 3042: 3042 is divisible by 2 and 3 both, It will be divisible by 6

(c) 5484: 5484 is divisible by 2 and 3 both, It will not be divisible by 6

(d) 9875: 9875 is not divisible by 2 and 3 both, It will not be divisible by 6 (e) 5624: 5624 is not divisible by 2 and 3 both, It will not be divisible by 6

(f) 4582: 4582 is divisible by 2 and 3 both, It will be divisible by 6

6. Check whether these numbers are divisible by 7 or not:

(a) 147: Double of one place digit = 2 × 7 = 14

Number formed by digit leaving ones place digit = 14

Difference of 14 and 14 = 0

147 is divisible by 7

(b) 2953: Double of one place digit = 2 × 3 = 6

Number formed by digit leaving ones place digit = 295

Difference of 295 and 6 = 295 – 6 = 289

289 is not divisible by 7, 2953 is not divisible by 7

(c) 3780: Double of one place digit = 2 × 0 = 0

Number formed by digit leaving

ones place digit = 378

Difference of 378 and 0 = 378

378, is divisible by 7, 3780 is divisible by 7

(d) 6587: Double of one place digit = 2 × 7 = 14

Number formed by digit leaving ones place digit = 658

Difference of 658 and 14 = 644

644 is divisible by 7, 6587 is also divisible by 7

(e) 6106: Double of one place digit = 2 × 6 = 12

Number formed by digit leaving ones place digit = 610

Difference of 610 and 12 = 298

598 is not divisible by 7, 6106 is not divisible by 7

(f) 5359: Double of one place digit = 2 × 9 = 18

Number formed by digit leaving ones place digit = 535

Difference of 535 and 18 = 517

517 is not divisible by 7, 5359 is not divisible by 7

7. Check whether these numbers are divisible by 8 or not:

(a) 43256: Number formed by hundreds tens and ons digit = 256

256 is divisible by 8 so, the 43256 is divisible by 8

(b) 41840: Number formed by hundreds tens and ons digit = 840

840 is divisible by 8 so, 41840 is divisible by 8

(c) 87456: Number formed by hundreds tens and ons digit = 456

456 is divisible by 8 so, 87456 is divisible by 8

(d) 98782: Number formed by hundreds tens and ons digit = 782

782 is divisible by 8 so, 98782 is divisible by 8

(e) 35624: Number formed by hundreds tens and ons digit = 624

624 is divisible by 8, so 35624 is divisible by 8

(f) 54582: Number formed by hundreds tens and ons digit = 582

582 is not divisible by 8, so 54582 is not divisible by 8

8. Check whether these number are divisible by 9 or not:

(a) 75015: The sum of digit = 7 + 5 + 0 + 5 = 18

18 is divisible by 9 so, the 75015 will be divisible by 9

(b) 36042: The sum of digit = 3 + 6 + 0 + 4 + 2 = 15

15 is not divisible by 9 so, the 36042 will be divisible by 9

(c) 56484: The sum of digit = 5 + 6 + 4 + 8 + 4 = 27

27 is divisible by 9 so, the 56484 will be divisible by 9

(d) 1342: The sum of digit = 1 + 3 + 4 + 2 = 10

10 is not divisible by 9 so, the 1342 is not divisible by 9

(e) 59624: The sum of digit = 5 + 9 + 6 + 2 + 4 = 25

25 is not divisible by 9 so, the59624 is not divisible by 9

(f) 48582: The sum of digit = 4 + 8 + 5 + 8 + 2 = 27

27 is not divisible by 9 so, the 48582 is not divisible by 9

9. Check whether these number are divisible by 10 or not:

(a) 1320: It is divisible by 10 because its last digit is 0

(b) It is not divisible by 10 because its last digit is not zero

(c) It is divisible by 10 because its

last digit is 0

(d) It is not divisible by 10 because its last digit is not 0

(e) It is divisible by 10 because its last digit is 0

(f) It is not divisible by 10 because its last digit is not 0

10. Check whether these number are divisible by 11 or not:

(a) 5544: Sum of digit at add place = 4 + 5 = 9

Sum of digit at even place = 4 + 5 = 9

Difference of these two = 9 – 9 = 0

So, 5544 is divisible by 11

(b) 3042: Sum of digit at add place = 2 + 0 = 2

Sum of digit at even place = 4 + 3 = 7

Difference of these two = 7 – 2 = 5

So, 3042 is not divisible by 11

(c) 6864: Sum of digit at add place = 4 + 8 = 12

Sum of digit at even place = 6 + 6 = 12

Difference of these two = 12 – 12 = 0

So, 6864 is divisible by 11

(d) 9875: Sum of digit at add place = 5 + 8 = 13

Sum of digit at even place = 9 + 7 = 16

Difference of these two = 16 – 13 = 3

So, 9875 is not divisible by 11

(e) 3297: Sum of digit at add place = 7 + 2 = 9

Sum of digit at even place = 9 + 3 = 12

Difference of these two = 12 – 9 = 3

So, 3297 is not divisible by 11

(f) 10780:

Sum of digit at add place = 0 + 7 + 1 = 8

Sum of digit at even place = 0 + 7 + 1 = 0

Difference of these two = 8 – 8 = 0

So, 10780 is divisible by 11

11. Classify the numbers as they are divisible by 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11:

Exercise 3.3

1. Write a number which is a whole number but not a natural number 0.

2. Write the number between 11 and 30:

12, 14, 16, 18, 20, 22, 24, 28

3. Write a green number which is also prime:

2 is also prime

4. Encircle the green numbers and underline the add number:

green number – 246, 820, 2002 4868, 1998

Add number – 345, 621, 899, 2011, 2015, 3219

5. Write the prime numbers which are less them 30:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29

6. Select the co-prime numbers:

(a) 11 and 13

(b) 12 and 14

(c) 17 and 19

(d) 21 and 28

(e) 25 and 27

Exercise 3.4

1. Find the prime factor of the following by the divisible method:

(a) 144

2	144
2	72
2	36
2	18
3	9
3	3
	1

$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$

(b) 216

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

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

(c) 100

2	100
2	50
5	25
5	5
	1

$2 \times 2 \times 5 \times 5 = 100$

(d) 108

2	108
2	54
3	27
3	9
3	3
	1

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

(e) 256

2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 256$

(f) 400

2	400
2	200
2	100
2	50
5	25
5	5
	1

$2 \times 2 \times 2 \times 2 \times 5 \times 5 = 400$

2. Find the prime factors the following by three factorization method:

(a) 88

88
2 × [44]
2 × [22]
2 × [11]

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

(b) 116

166
2 × [58]
2 × [29]

$2 \times 2 \times 29 = 116$

(c) 56

56
2 × [28]
2 × [14]
2 × [7]

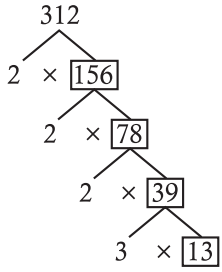
$2 \times 2 \times 2 \times 7 = 56$

(d) 256

256
2 × [128]
2 × [64]
2 × [32]
2 × [16]
2 × [8]
2 × [4]
2 × [2]

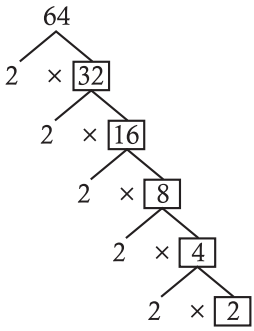
$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 256$

(e) 312



$2 \times 2 \times 2 \times 3 \times 13 = 312$

(f) 64



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

Exercise 3.5

1. (a) 15, 54

Factor of 15 = 1, 3, 5, 15

Factor of 54 = 1, 2, 3, 6, 9

Common factor of 15 and 54 = 1, 3

(b) 16, 36

Factor of 16 = 1, 2, 4, 8, 16

Factor of 36 = 1, 2, 4, 6, 9

Common factor of 16 and 36 = 1, 2, 4

(c) 15, 30, 45

Factor of 15 = 1, 3, 5

Factor of 30 = 1, 2, 3, 6,

Factor of 45 = 1, 3, 5, 9

Common factor of 15, 30, 45 = 1, 3

(d) 16, 32, 48

Factor of 16 = 1, 2, 4, 8

Factor of 32 = 1, 2, 4, 8,

Factor of 48 = 1, 2, 3, 4, 6, 8

Common factor of 16, 32, 48 = 1, 2, 4, 8

(e) 10, 20, 30

Factor of 10 = 1, 2, 5, 10

Factor of 20 = 1, 2, 4, 5,10, 20

Factor of 30 = 1, 2, 3, 5, 6, 10,15, 30

Common factor of 10, 20, 30 = 1, 2, 5, 10

2. Find the H.C.F by common factor method of the following:

(a)

5	25, 30
	5, 6

H.C.F = 5

(b)

2	12, 16
2	6, 8
	3, 4

H.C.F = 4

(c)

2	18, 36, 72
2	9, 18, 36
3	9, 9, 18
	3, 3, 6

H.C.F = 12

3. (a) 25, 30

Factor of 25 = 1, 5

Factor of 30 = 1, 2, 3, 5, 15, 10, 30

Common factor 1, 5

H.C.F = 5

(b) 12, 16

Factor of 12 = 1, 2, 4, 6, 12

Factor of 16 = 1, 2, 4, 8, 16

Common factor 1, 4, 5

H.C.F = 4

(c) 15, 30, 72

Factor of 15 = 1, 3, 5, 15

Factor of 30 = 1, 2, 3, 5, 15,30

Factor of 72 = 1, 2, 3, 8, 9, 12

Common factor 1, 3

S.C.F = 3

(d) 2, 3, 5

Factor of 15 = 1

Factor of 30 = 1

Factor of 72 = 1

Common factor 1

S.C.F = 1

(e) 18, 90, 108

Factor of 18 = 1, 2, 3, 6, 9, 18

Factor of 90 = 1, 2, 3, 5, 6, 30, 9, 10, 18

Factor of 108 = 1, 2, 3, 4, 6, 9, 12, 18

Common factor 1, 2, 3, 6, 9, 18

S.C.F = 18

3. Find The H.C.F by prime factor method of the following:

(a) 48, 24

2	48
2	24
2	12
2	6
	3

2	24
2	12
2	6
	3

48 - $\boxed{2}\times\boxed{2}\times\boxed{2}\times 2\times\boxed{3}$

24 - $\boxed{2}\times\boxed{2}\times\boxed{2}\times\boxed{3}$

H.C.F = $2\times2\times2\times3 = 24$

(b) 16, 48, 64

2	16
2	8
2	4
	2

2	48
2	24
2	12
2	6
	3

2	64
2	32
2	16
2	8
2	4
	2

16 - $\boxed{2}\times\boxed{2}\times\boxed{2}$

48 - $\boxed{2}\times\boxed{2}\times\boxed{2}\times\boxed{2}\times 3$

24 - $\boxed{2}\times\boxed{2}\times\boxed{2}\times\boxed{2}\times 2\times 2$

L.C.M = $2\times2\times2\times2 = 16$

(c) 15, 30, 45

3	15
5	5
	1

2	30
3	15
	5

3	45
3	15
	5

15 - $\boxed{3}\times\boxed{5}$

30 - $2\times\boxed{3}\times\boxed{5}$

45 - $3\times\boxed{3}\times\boxed{5}$

L.C.M = $3\times5 = 15$

(d) 18, 24, 72

2	18
3	9
3	3
	1

2	24
2	12
2	6
3	3
	1

2	72
2	36
2	18
3	9
3	3
	1

16 - $\boxed{2}\times3\times\boxed{3}$

48 - $\boxed{2}\times2\times2\times3$

72 - $\boxed{2}\times2\times2\times3\times\boxed{3}$

L.C.M = $2\times3 = 6$

(e) 32, 40, 56

2	32
2	16
2	8
2	4
	2

2	40
2	20
2	10
5	5
	1

2	56
2	28
2	14
7	7
	1

32 - $\boxed{2}\times\boxed{2}\times\boxed{2}\times2\times2$

40 - $\boxed{2}\times\boxed{2}\times\boxed{2}\times5$

56 - $\boxed{2}\times\boxed{2}\times\boxed{2}\times7$

L.C.M = $2\times2\times2 = 8$

4. Find the H.C.F by common divisible method of the following:

(a)

2	18, 24
3	9, 12
	3, 4

H.C.F $2\times3 = 6$

(b)

2	48, 80, 96
2	24, 40, 48
2	12, 20, 24
2	6, 10, 12
	3, 5, 6

H.C.F = $2\times2\times2\times2 = 16$

(c)

2	36, 48, 72
2	18, 24, 36
2	9, 12, 18
2	3, 4, 6

(d)

7	14, 28, 35
	2, 4, 4

H.C.F = 1 × 7 = 7

(e)

2	144, 180, 192
2	72, 90, 86
3	36, 45, 43
3	12, 15, 43
	4, 5, 45

H.C.F = 2 × 2× 3 × 3 = 36

5. Find the H.C.F by divisible method of the following:

(a) 32, 48

32 < 48

```
32)48(1
   32
   16)32(2
      32
      ×
```

(b) 16, 20, 30

16 < 20 < 36

```
16)20(1
   16
    4)16(4
      16
      ×
```

```
4)36(9
  36
  ×
```

H.C.F = 4

(b) 60, 96, 150

60 < 96 < 150

```
60)96(1
   60
   36)60(1
      36
      24)36(1
         24
         12)24(2
            24
            ×
```

```
12)150(9
   12
   30
   24
    6)12(2
      12
      ×
```

H.C.F = 12

(d) 144 < 312

```
144)312(2
    288
     24)144(6
        144
        ×
```

H.C.F = 24

(e) 288 < 540

```
288)540(1
    288
    252)288(1
        252
         36)252(1
            252
            ×
```

H.C.F = 36

Exercise 3.6

1. Write the common multiples of each of the following:

(a) 4, 8

4 = 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

8 = 8, 16, 24, 32, 40, 48, 56, 64, 72, 80

Common multiples = 8, 16, 24, 32, 40

(b) 6, 12

6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

12 = 12, 24, 36, 48, 60, 72, 84, 96, 108, 120

Common multiples = 12, 24, 36, 48, 60

(c) 5, 10, 15

5 = 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 150, 110, 115, 120, 125, 130, 135, 140, 145, 150

10 = 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

15 = 15, 30, 45, 60, 75, 90, 105, 120, 135, 150

Common multiples = 30, 60, 90, 120, 150

(d) 9, 18, 27

9 = 9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99, 108, 126, 135, 144, 153, 162, 180, 189, 198, 207, 216, 225, 234, 243, 252, 261, 270, 279, 288

18 = 18, 36, 54, 72, 90, 108, 126, 144, 162, 180, 198, 226, 244, 262, 280, 298, 316, 324

27 = 27, 54, 81, 108, 135, 160, 189, 216, 243, 270, 297, 324

Common multiples = 54, 108, 216, 243, 270, 297, 324

(e) 10, 20, 30

10 = 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300

20 = 20, 40, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300

30 = 30, 60, 90, 120, 150, 180, 210, 240, 270, 300

Common multiples = 60, 120, 180, 240, 300

2. Find the L.C.M by common multiples method of the following:

(a)

3	3, 18
	1, 6

L.C.M = 3 × 6 = 18

(b)

3	3, 7, 21
7	1, 7, 7
	1, 1, 1

L.C.M = 3 × 7 = 21

(c)

2	8, 16, 32
2	4, 8, 16
2	2, 4, 8
2	1, 2, 4
	1, 1, 2

L.C.M = 2 × 2 × 2 × 2 × 2 = 32

(d)

11	11, 22, 33
	1, 2, 3

L.C.M = 11 × 3 × 2 = 66

(e)

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

L.C.M = 2 × 2 × 3 = 12

3. Find the L.C.M by common division method of the following:

(a) 25, 50

(b)

2	12, 16
2	6, 8
	3, 4

L.C.M = 2 × 2 × 3 × 4 = 48

(c)

2	18, 36, 72
3	9, 18, 36
3	3, 6, 12
2	1, 2, 4
	1, 1, 2

L.C.M = 2 × 3 × 3 × 2 × 2 = 72

(d) 2, 3, 5

L.C.M = 2 × 3 × 5 = 30

(e)

2	18, 90, 108
3	9, 45, 54
3	3, 15, 18
	1, 5, 6

L.C.M = 2 × 3 × 3 × 5 × 6 = 540

4. Find the L.C.M by prime factorization method of the following:

(a) 18, 54

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

Factor of 54 = $\boxed{2} \times \boxed{3} \times \boxed{3} \times 3$

Common factor 18, 54 – 2 × 3 × 3

Remainder factor = 3

L.C.M = 2 × 3 × 3 × 3 = 54

(b) 16, 36

Factor of 16 = $\boxed{2} \times \boxed{2} \times 2 \times 2$
Factor of 36 = $\boxed{2} \times \boxed{2} \times 3 \times 3$
Common factor 16, 36 - 2×2
Remainder factor = $2 \times 2 \times 2 \times 3$
L.C.M = $2 \times 2 \times 2 \times 2 \times 2 \times 3 = 144$

(c) 15, 30, 45
Factor of 15 = $\boxed{3} \times \boxed{5}$
Factor of 30 = $2 \times \boxed{3} \times \boxed{5}$
Factor of 45 = $3 \times \boxed{3} \times \boxed{5}$
Common factor 15, 30, 45 - 3×5
Remainder factor = 2×3
L.C.M = $3 \times 5 \times 2 \times 3 = 90$

(d) 16, 32, 48
Factor of 16 = $\boxed{2} \times \boxed{2} \times \boxed{2} \times \boxed{2}$
Factor of 32 = $\boxed{2} \times \boxed{2} \times \boxed{2} \times \boxed{2} \times 2$
Factor of 48 = $\boxed{2} \times \boxed{2} \times \boxed{2} \times \boxed{2} \times 2$
Common factor 16, 32, 48 – $2 \times 2 \times 2 \times 2$
Remainder factor = 2×3
L.C.M = $2 \times 2 \times 2 \times 2 \times 2 \times 3 = 96$

(e) 10, 20, 30
Factor of 10 = $\boxed{2} \times \boxed{5}$
Factor of 20 = $\boxed{2} \times 2 \times \boxed{5}$
Factor of 30 = $\boxed{2} \times 3 \times \boxed{5}$
Common factor 10, 20, 30 – 2×5
Remainder factor = 2×3
L.C.M = $2 \times 5 \times 2 \times 3 = 96$

Exercise 3.7

1. Verify the relationship product of H.C.F and L.C.M product of two number:

(a) 20, 25

```
20)25 (1
   20
    5)20 (4
      20
       ×
```

```
5 | 20, 25
  |  4,  5
```

H.C.L = 5 $\quad 5 \times 4 \times 5 = 100$
Product of H.C.F and L.C.M = $5 \times 100 = 500$

(b) 25, 30

```
25)30 (1
   25
    5)25 (5
      25
       ×
```

```
5 | 25, 30
  |  5,  6
```

H.C.F = 25, 30 $\quad$ L.C.M = 25, 30
Product of H.C.F and L.C.M
$= 5 \times 150 = 150$

(c) 25, 30

```
40)80 (2
   80
    ×
```

```
2 | 40, 80
2 | 20, 40
2 | 10, 20
5 |  5, 10
  |  1,  2
```

H.C.F = 40, 80 $\quad$ L.C.M = 40, 80
Product of H.C.F and L.C.M
$= 40 \times 80 = 3200$

(d) 14, 84

```
14)84 (6
   84
    ×
```

```
2 | 14, 84
7 |  7, 42
  |  1,  6
```

H.C.F = 14 $\quad$ L.C.M = $2 \times 7 \times 6$
$= 84$
Product of H.C.F and L.C.M
$= 14 \times 84 = 1176$

(e) 24, 36

```
24)36 (2
   12
   12)24 (2
      24
       ×
```

```
2 | 24, 36
2 | 12, 18
3 |  9,  9
  |  2,  3
```

H.C.F = 12
L.C.M = $2 \times 2 \times 3 \times 2 \times 3 = 72$
H.C.M and L.C.M = $12 \times 72 = 864$

2. Second number $= \dfrac{\text{L.C.M.} \times \text{H.C.F}}{\text{First Number}}$

Two number $= \dfrac{750}{150}$
H.C.F = 5

3. Two number 10 and 30

H.C.F = 10

L.C.M $= \frac{10 \times 30}{10} = 30$

L.C.M = 30

4. Do yourself

5. **Find the smallest number:**

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

$2 \times 3 \times 3 = 18$

So, the smallest number = 18

M.C.Q (Mental Ability)

1. (c) **2.** (a)

3. (b) **4.** (c)

5. (d)

Fill in the blanks:

1. 1 **2.** odd

3. consecutive

4. 1

5. H.C.F × L.C.M = Product of number

True and false:

1. False **2.** False

3. False **4.** False

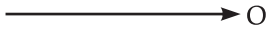
5. True

Chapter - 4

Exercise 4.1

1. A B C

2. 

3. 

4. (a) AO, OB (b) PQ, QR, RS, SP

(c) DE, EF, FD

5. (a) No (b) Yes (c) No

6. **Identify and name the line, line segment and rays in each of he following figure:**

(a) $\overrightarrow{AB}, \overrightarrow{CD}$

(b) $\overrightarrow{FE}$

(c) $\overrightarrow{AD}, \overrightarrow{CB}, \overrightarrow{FE}, \overrightarrow{FG}$

7. **Form the figure identify:**

(a) *l*, m, n

(b) l and r, m and r, n and r, l and q, m and q, n and q

(c) l and q

(d) l and r

(e) n and q

(f) n and r

(g) m and q

(h) m and r

(i) BE and CD

Exercise 4.2

1. **Fill in the blanks:**

(a) Do not intersect (b) remains constant (c) No (d) Parallel

(e) Parallel (f) Intersecting lines

(g) Point of intersection

2. **Write the pair of parallel lines in the following figures:**

(a) $\overline{AB} \,||\, \overline{CD}$ (b) $\overline{PQ} \,||\, \overline{SR}$

$\overline{AD} \,||\, \overline{BC}$ $\overline{PS} \,||\, \overline{QR}$

(c) No parallel lines

(d) $\overline{HG} \,||\, \overline{EF}$ (e) $\overline{AB} \,||\, \overline{CD}$

$\overline{HE} \,||\, \overline{GE}$ $\overline{AD} \,||\, \overline{BC}$

(f) $\overline{AB} \,||\, \overline{ED}$

$\overline{BC} \,||\, \overline{EF}$

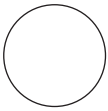
$\overline{CD} \,||\, \overline{FA}$

3. QS = 5 cm

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

Exercise 4.3

1. **Draw the rough diagrams for the following**

(a)  (b) 

2. **Classify the following curves as open or closed:**

Open: a f g j

Close: b c d e h i

3. **Which of following are polygon:**

a, b, d

4. **Which of the following are simple closed figures:**

So, b

Exercise 4.4

1. **Classify the following triangles with respect to their angels:**

(a) Acute angled

(b) Right angled

(c) Obtuse angled

(d) Acute angled

(e) Right angled

(f) Obtuse angled

2. **Check whether the following triangles are possible or not:**

(a) $\angle A + \angle B + \angle C = 180°$

$70° + 100° + 20° = 180°$

$190° > 180°$

(It is not possible)

(b) $90° + 45° + 45° = 180°$

$90° + 90° = 180°$

$180° = 180°$ (It is possible)

(c) $100° + 40° + 40° = 180°$

$180° = 180°$

(It is possible)

(d) $60° + 60° + 70° = 180°$

$190° > 180°$

(It is possible)

3. **Find the third angle in each of the following triangles:**

(a) $90° + 60° + x = 180°$

$150° + x = 180°$

$x = 180° - 150$

$x = 30°$

So, the third angle is 30°

(b) $\angle P + \angle Q + \angle R = 180°$

$\angle P + 50° + 50° = 180°$

$\angle P = 180° - 100°$

$\angle P = 80°$

(c) $\angle M + \angle N + \angle 0 = 180°$

$60° + 60° + \angle 0 = 180°$

$\angle 0 = 180° - 120°$

$\angle 0 = 60°$

(d) $\angle x + \angle y + \angle z = 180°$

$40° + \angle y + 30° = 180°$

$\angle y = 180° - 70°$

$\angle y = 110°$

(e) $\angle A + \angle B + \angle C = 180°$

$\angle A + 30° + 60° = 180°$

$\angle A = 180° - 90°$

$\angle A = 90°$

(f) $\angle D + \angle E + \angle F = 180°$

$120° + 30° + \angle F = 180°$

$\angle F = 180° - 150°$

$\angle F = 30°$

4. Answer the following questions:

(a) 3 (b) 1 (c) 1

Exercise 4.5

1. Classify the following triangles with respect to their sides:

(a) Scalene (b) Equilateral

(c) Scalene (d) Right

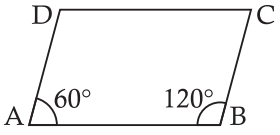
(e) Isosceles (f) Scalene

2. Check whether it is to possible to form a triangle by three line segments of the following length:

(a) Yes (b) No (c) No (d) No

Exercise 4.6

1. $\angle A = \angle C = 60°$ (opposite angles are equal of parallelogram)

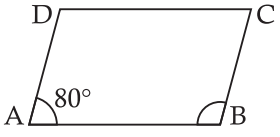


$\angle B = \angle D = 120°$

(opposite angles are equal of parallelogram)

So, other two angles are 60°, 120°

2. $\angle A = \angle C = 80°$ (opposite angles are equal)



Let $\angle B = \angle D = x°$

So, $\angle A + \angle B = 180°$ (sum of adjacent angle is 180°)

$80° + \angle B = 180°$

$\angle B = 180° - 80°$

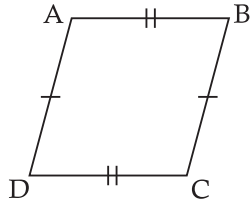
$\angle B = 100°$

$\angle B = \angle D = 100°$

(opposite angles are equal)

3. In rectangle each vertex angle should be of 90°, no such retraction in parallelogram:

4.



(a) Adjacent sides = AB, BC

(b) Adjacent angles = $\angle B$ and $\angle C$, $\angle A$ and $\angle D$

(c) Opposite sides = AB and DC, AD and BC

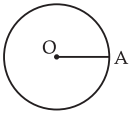
(d) Opposite angles = $\angle B$ and $\angle D$, $\angle A$ and $\angle C$

(e) Parallel sides = AB and DC, AD and BC

Exercise 4.7

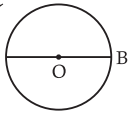
1. Explain the following terms by using figures:

(a) The distance between the center of the circle and any point on the circle is known as radius of circle



In figure OA is a radius

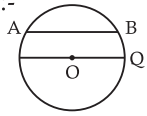
(b) Diameters:- A line segment passing through the center of the circle and having end points on



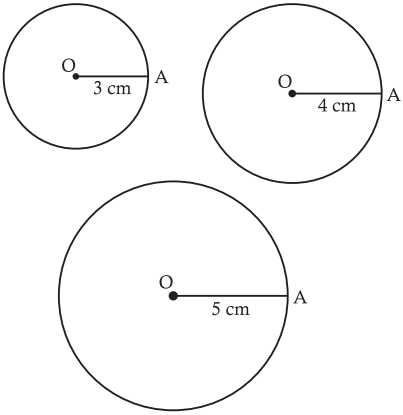
the circle is known as diameter of circle

In fig AB is a diameter

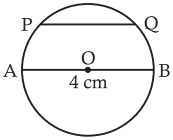
(c) Chord of a circle:- A line segment having end points on the circle is known as chord of circle



In fig AB is PQ are chords



3. Draw a circle of radius 2 cm draw the diameter and chord in the circle:



AB = diameter

PQ = chord

4. (a) Radius - OP, OQ, OD, OC, OA, OB (b) Diameter- AB, CD

(c) Chords - AB, CD, MN, AD

(d) Secants - RS

5. Radius of circle = 5 cm

Diameter = 2 × radius

= 2 × 5 = 10 cm

6. Diameter of a circle = 8 cm

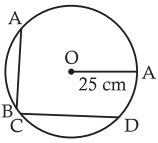
Radius of a circle = $\frac{\text{Diameter}}{2}$

$= \frac{8}{2} = 4$ cm

7. OA = radius

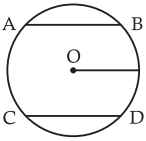
AB = minor sectors

CD = Major sectors



8. AB = minor sector

CD = major sector



9. (a) longest (b) double

(c) center (d) infinite

(e) one (f) equal

(g) equal (h) same

(i) two, minor, major

(j) outside

M.C.Q (Mental Ability)

1. (c) **2.** (b)

3. (b) **4.** (c)

5. (b)

Fill in the blanks:

1. Equal **2.** Equal

3. Circumference **4.** Diameter

5. Three

True and False:

1. True **2.** True

3. True **4.** False

5. False

Chapter - 5

Exercise 5.1

1. Name the vertex arms and angle in the following figures:

(a) Vertex = O

Arms = $\overrightarrow{AB}, \overrightarrow{OB}$

Angles = $\angle AOB$

(b) Vertex = O

Arms = $\overrightarrow{OP}, \overrightarrow{OQ}$

Angles = $\angle PQR$

(c) Vertex = Z

Arms = $\overrightarrow{XY}, \overrightarrow{YZ}$

Angles = $\angle XYZ$

2. Count and write the name of following angles:

(a) 3, $\angle AOC$, $\angle BOC$, $\angle AOB$

(b) 6, $\angle POA$, $\angle AOC$, $\angle COB$

(c) 8, $\angle AOE$, $\angle EOD$, $\angle COB$, $\angle AOD$, $\angle EOC$, <DOB, $\angle AOB$

3. Write the name of all angles i, e $\angle 1, \angle 2, \angle 3, \angle 4$:

$\angle 1 = \angle AOC$ $\angle 2 = \angle COB$

$\angle 3 = \angle BOD$ $\angle 4 = \angle AOD$

4. Write the points which are:

(a) M, O, T, D, G

(b) F, L, K, P, Q, N

(c) E, H, L, Z

5. Write the name of following angles:

(a) $\angle AGE$ (b) $\angle BGH$

(c) $\angle CHE$ (d) $\angle CHG$

(e) $\angle DHF$ (f) $\angle AGH$

6. By the inspection find which angle is greater in each pair:

(a) First (b) First

(c) First (d) Second

7. By using trace paper find which angles is smaller in each pair:

(a) Second (b) Both are equal

(c) Both are equal

(d) Both are equal

8. By using protractor find which angles in greater:

(a) First (b) First

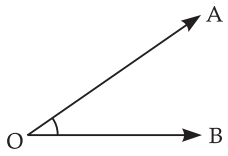
Exercise 5.2

1. Define the following angles:

(a) An angle whose measure is greater then 0° but less than 90° is known as actual angle

For example:

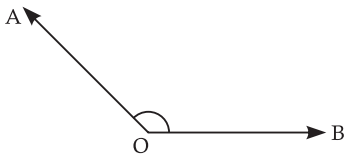
10°, 15°, 50°, 60°, 75° etc.



(b) An angle whose measure is more then 90° but less than 180° is known as obtuse angle

For example: 100°, 120°, 150°, 175°

In figure $\angle AOB$ is obtuse angle

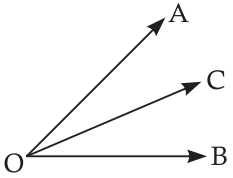


(c) Two angles whose sum is 180° are known as supplement to each other.

For example:

45° and 135°, 150°, and 30°, 90° and 90° are supple-mentary to each other.

(d) Two angles having common vertex and have one common arm an known as adjacent angle



In figure ∠AOC and ∠BOC are adjacent angle as they have common vertex and common are OC

2. What is the measure of angle in degrees at:

(a) 90° (Right angle)

(b) 0° (Zero angle)

(c) 60° (Actual angle)

3. What is the measure of angle in degrees between:

(a) 180° (b) 180° (c) 90°

4. Classify the following angles according to their measure:

(a) Actual angle

(b) Obtuse angle

(c) Actual angle

(d) obtuse angle

(e) Straight angle

(f) Actual angle

(g) Straight angle

(h) Reflex angle

(i) Zero angle

(j) Actual angle

(k) Reflex angle

(l) Right angle

(m) Obtuse angle

(n) Reflex angle

(h) Complete angle

5. Select the pair of complementary angle:

(a) 45° + 45° =90°

(It is a pair of complementary angle)

(b) 20° + 160° = 180°

(It is not a pair of complementary angle)

(c) 80° + 100° = 180°

(It is not a pair of complementary angle)

(d) 30° + 60° =90°

(It is a pair of complementary angle)

(e) 120° + 60° = 180°

(It is not a pair of complementary angle)

6. Select the pair of supplementary angle:

(a) 45° + 135° = 180°

(It is a pair of complementary angle)

(b) 20° + 160° = 180°

(It is a pair of complementary angle)

(c) 90° + 90° = 180°

(It is a pair of complementary angle)

(d) 120° + 60° = 180°

(It is a pair of complementary angle)

(e) 18° + 72° = 180° (It is not a pair of complementary angle)

7. Find the complement each of the following angles:

(a) Complement angle of 20°

$= (90° - 20°) = 70°$

(b) Complement angle of 35°

$= (90° - 35°) = 55°$

(c) Complement angle of 60°

$= (90° - 60°) = 30°$

(d) Complement angle of 80°

$= (90° - 80°) = 10°$

(e) Complement angle of 45°

$= (90° - 45°) = 45°$

(f) Complement angle of 65°

$= (90° - 65°) = 25°$

(g) Complement angle of 83°

$= (90° - 83°) = 7°$

(h) Complement angle of 0°

$= (90° - 0°) = 90°$

(i) Complement angle of 79°

$= (90° - 79°) = 11°$

(j) Complement angle of 33°

$= (90° - 33°) = 57°$

8. Find the supplement each of the following angles:

(a) Supplement angle of 45°

$= 80° - 45°) = 135°$

$(180° - 45°) = 135°$

(b) Supplement angle of 60°

$= (180° - 60°) = 120°$

(c) Supplement angle of 95°

$= (180° - 95°) = 95°$

(d) Supplement angle of 120°

$= (180° - 120°) = 60°$

(e) Supplement angle of 135°

$= (180° - 135°) = 55°$

(f) Supplement angle of 36°

$= (180° - 36°) = 44°$

(g) Supplement angle of 110°

$= (180° - 110°) = 70°$

(h) Supplement angle of 145°

$= (180° - 145°) = 45°$

(i) Supplement angle of 0°

$= (180° - 0°) = 180°$

(j) Supplement angle of 180°

$= (180° - 180°) = 0°$

9. South

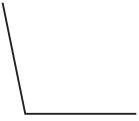
10. East

11. Using rule only draw the following angles in your note book:

(a) 

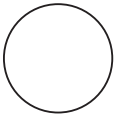
(b) 

(c) 

(d) 

(e) 

(f) 

(g) 

12. Let the equal angle be x

$x + x = 90°$

$2x = 90°$

$x = \frac{90°}{2}$ $\quad x = 45°$

So, the value of both equal angle are 45°

13. Let the equal angle be x

$x + x = 180°$

$2x = 180°$

$x = \frac{180°}{2}$ $\quad x = 90°$

So, the value of both supplement angle are 90°

14. Let the other angle be x

$x + 60° = 180°$

$x = 180° - 60°$ $\quad x = 120°$

So, the other angle are 120°

15. (a) $90° + 90° = 180°$

(Two right angles)

(b) $90° + 90° + 90° = 270°$

(Three right angles)

(c) $90° + 90° + 90° + 90° = 360°$

(Four right angles)

(d) $90° + 90° + 90° + 90° + 90° = 360°$ (Five right angles)

16. Find the value of x° in each of the following:

(a) $x° + 60° = 180°$ (Linear pair)

$x° = 180° - 60°$ $\quad x° = 120°$

(b) $x° + 30° = 180°$

(Complimentary angle)

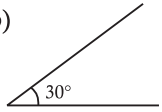
$x° = 180° - 30°$ $\quad x° = 150°$

Exercise 5.3

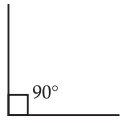
1. Draw the following angles by using protector:

(a)

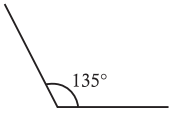
(b)



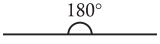
(c)



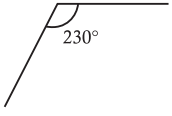
(d)



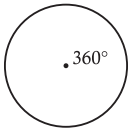
(e)



(f)



(g)



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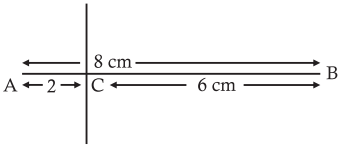
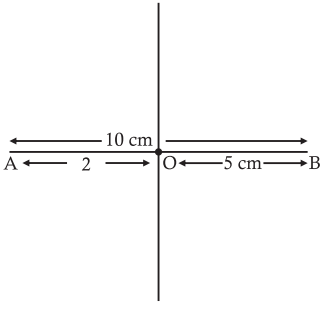


3.



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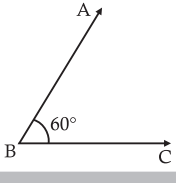


5. **Measure the following angles and classify them:**

(a) 0° (b) 290°

(c) 180° (d) 90°

(e) 60° (f) 360°

Exercise 5.4

1. **Identify the following shapes:**

(a) Cuboid

(b) Cylinder

(c) Cube

(d) Triangular pyramid

(e) Square pyramid

(f) Sphere

(g) Cone

(h) Triangular prism

2. **Write number of faces vertex and edges of the three-dimensional shapes mentioned here:**

	Face	Vertex	Edge
(a) Cylinder	3	0	0
(b) Cone	2	1	0
(c) Triangular prism	5	6	9
(d) Triangular pyramid	4	4	6
(e) Square	5	5	8
(f) Cube	6	8	12
(g) Cuboid	6	8	12

3. **Give two examples of:**

(a) Pillar, gas cylinder

(b) Ice-cream, birthday cap

(c) Room, match box

(d) Dice

MCQs (Mental Ability)

1. (c) **2.** (a)

3. (b) **4.** (c)

5. (c)

Fill in th e blanks:

1. 0°

2. Supplement

3. Complement

4. 360°

5. 180°, 60°

True and False:

1. False **2.** True

3. True **4.** False

5. True

Chapter - 6

Exercise 6.1

1. **Write the opposite of each of the following :**

(a) Loss in business

(b) Going right

(c) Earning money

(d) Project of ₹ 1000

(e) Decrease in earning

(f) Loss a weight of 8 kg

(g) Withdraw of ₹ 500

(h) Going 10 m to west

2. **Write the following by using + or – sign:**

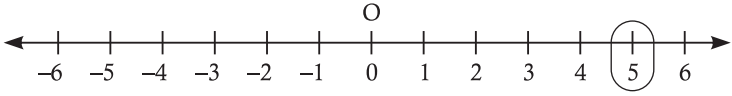
(a) + 5 km (b) – 5 km

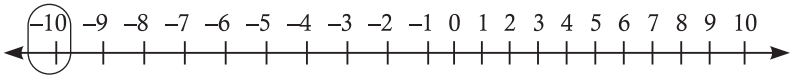
(c) – ₹ 25000 (d) + ₹ 5000

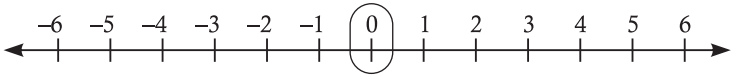
(e) ₹ 500 (f) – ₹ 2000

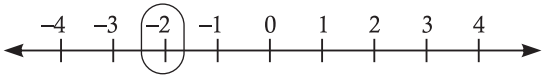
(g) + 10°c (h) – 10°c

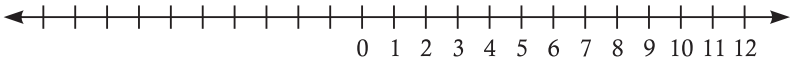
3. Indicate the following integers on the number line

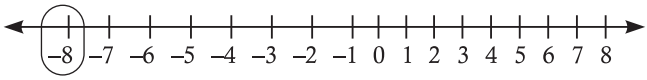
(a)


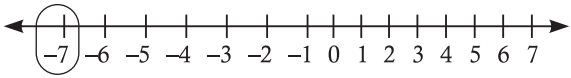
(b)


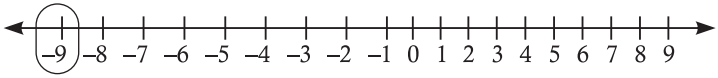
(c)


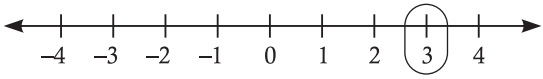
(d)


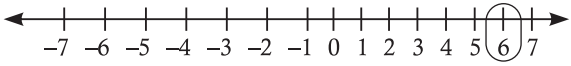
(e)


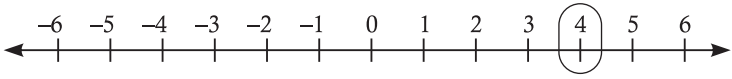
(f)


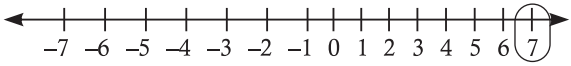
(g)


(h)


(i)


(j)


(k)


(l)


4. Write the all integers between:

(a) 1, 2, 3, 4, 5, 6, 7

(b) –1, 0, 1

(c) –8, –7, –6, –5, –4, –3, – 2, –1

(d) –8, –7, – 6

(e) –5, –4, –3, –2, –1, 0, 1, 2, 3, 4, 5

(f) –2, –1, 0, 1, 2, 3, 4, 5, 6

5. Encircle the greatest integer:

(a) –11, 15, –28 (b) 7, –12, –19

(c) 16, 0, –16 (d) 38, 72, –38

(e) 82, –80, –0 (f) 12, 18, 100

6. Encircle the smallest integer:

(a) 16, –18, 20 (b) 16, –22, – 16

(c) 0, –7, 7 (d) – 7, – 9, – 11

(e) – 8, 0, 8 (f) 0, 22, – 18

7. Fill in the blanks:

(a) > (b) < (c) < (d) < (e) < (f) >

8. Write the following in increasing order:

(a) – 52 < – 19 < – 17 < 0 < 18

(b) – 98 < – 74 < – 32 < 0 < 85

(c) – 18 < – 6 < 0 < 8 < 18

(d) – 400 < – 200 < 0 < 200 < 400

9. Write the following in decreasing order:

(a) 62 > 0 > – 72 > – 92 > – 100

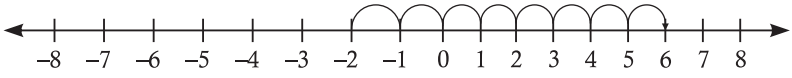
(b) 1000 > 900 > 800 > – 800 > – 900

(c) 82 > 25 > 0 > – 25 > – 82

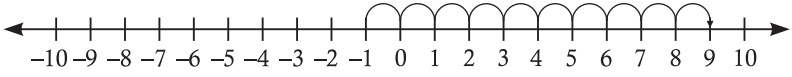
(d) 128 > 126 > 28 > – 128 > – 222

10. Use number line to find the following integer:

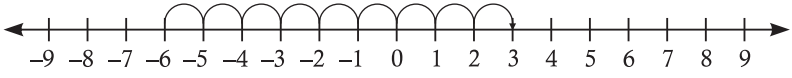
(a)



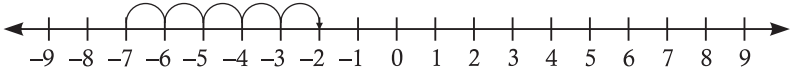
(b)



(c)



(d)



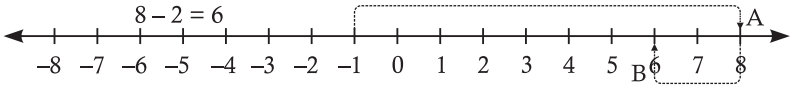
11. Find the value of the following:

(a) 7 (b) 9 (c) – 81 (d) 4 (e) 1 (f) 1 (g) – 7 (h) 9

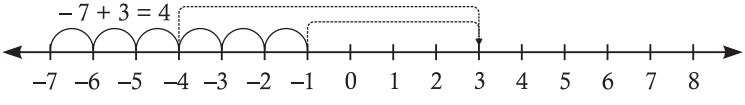
Exercise 6.2

1. Find the sum of following integers by using number line:

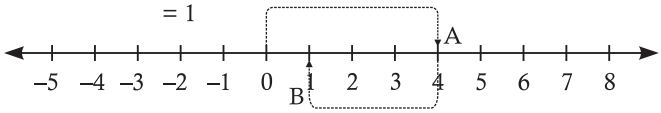
(a) 8 + (– 2)



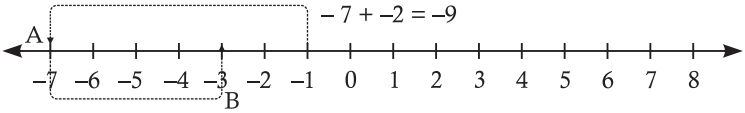
(b) (– 7) + 3



(c) $4 + (-3)$



(d) $(-7) + (-2)$



2. Fill in the blanks:

(a) $-8-9=-\underline{17}$ (b) $-12-5=-\underline{17}$

(c) $5-5=\underline{0}$ (d) $-7-2=-\underline{9}$

(e) $-3-2+5=-5+5=+\underline{0}$

(f) $8-2-3=5-5=\underline{0}$

3. Write the name of properties if a, b, c are integers:

(a) Closure Property

(b) Commutative Property

(c) Associate Property

(d) Zero is identity element for addition

(e) $-a$ is additive inverse of a

(f) $-b$ is additive inverse of b

4. Write the additive inverse each of the following:

(a) Additive inverse of $-65 = +65$

(b) Additive inverse of $-500 = +500$

(c) Additive inverse of $2080 = -2080$

(d) Additive inverse of $1000 = -1000$

(d) Additive inverse of $-700 = 700$

5. Write the successor of each of the following:

(a) $-1000 + 1 = -999$ (b) $-288 + 1 = -287$ (c) $-600 + 1 = -599$ (d) $-81 + 1 = -80$ (e) $700 + 1 = -701$

6. Write the predecessor of each of the following

(a) $-1000 - 1 = -1001$ (b) $179 - 1 = -178$ (c) $-408 - 1 = -409$ (d) $-501 - 1 = -502$ (e) $786 - 1 = 785$

7. Find the sum of the following:

(a) $-772 + 850 = 78$

(b) $655 + (-320) = 655 - 320 = 335$

(c) $2567 + (-2567) = 2567 - 2567 = 0$

(d) $-1252 + (-1348) = 1252 - 1348$
$= -2600$

(e) $-5000 + 1 = 4999$

(f) $7259 + (-325) = 7259 - 325$
$= -7548$

8. True and False:

(a) False (a) False (c) True (d) True

Exercise 6.3

1. Subtract the following:

(a) $-92 - 85 = -177$

(b) $62 - (-32) = 62 + 32 = 94$

(c) $0 - 62 = -62$

(d) $-786 - (-125) = -786 + 125$
$= -661$

(e) $-100 - 0 = -100$

(f) $-3751 - 8240 = -11991$

(g) $621 - (-621) = 621 + 621$
$= 1242$

(h) $-4321 - 1234 = -5555$

(i) $3296 - (-32) = 3296 + 856$
$= 4142$

2. Solve the following:

(a) $48 - 76 + 32 - 82 + 91 - 30$
$= 48 + 32 + 91 - 76 - 82 - 30$
$= 171 - 158 - 30$
$= 171 - 188 = -7$

(b) $-60 - 35 + 82 + 90 - 50$
$= -61 - 35 - 50 + 82 + 90$
$= -146 + 82 + 90$
$= -146 + 172 = 26$

(c) $100 + 200 + 700 - 800 - 200$
$= 1000 - 1000 = 0$

(d) $-85 - 72 - 91 + 85 + 72 + 91$
$= -157 - 91 + 248$
$= -248 + 248 = 0$

(e) $75 - 75 + 85 - 85 + 95 - 95$
$= -75 - 85 - 95 + 75 + 85 + 95$
$= -150 - 95 + 255$
$= -255 + 255 = 0$

3. $[(-81) + (-62)] - [(-62) + (-81)]$
$= [-81 - 62] - [-62 - 81]$
$= [-143]\ [-143] = 0$
$= -143 + 143 = 0$

4. $(-900 + 800) - (-100)$
$= -900 + 800 + 100$
$= -900 + 900 = 0$

5. Let the other integer be x
$600 + x = -500$
$x = -500 + 600 \quad = x = 100$
So, the other integer is 100

6. $84 - (-95) = (-95) - 85$
$84 + 95 = -95 - 85$
$179 \neq -179$
No, they are not equal

7. $-85 + x = -125$
$x = -125 + 85$
$x = -40$

8. $[(-10) - (60)] + [(-125)]$
$= [-10 - 60] - [-125]$
$= -70 - 125 = -195$

9. Let the third integer be x
$85 + (-65) + x = -250$
$85 - 65 + x = -250$
$20 + x = -250$
$x = -250 + 20$
$x = -230$
So, the third integer is -230

10. The height of a tower = 450 m
The shadow of tower peak = -450
So, the distance of peak and peak of shadow $= 450 - (-450)$
$= +900$ m

MCQs (Mental Ability)

1. b **2.** a **3.** a **4.** a **5.** c

Fill in the blanks:

1. Count less **2.** 0 **3.** 28 **4.** Left
5. 119, 19

True and False:

1. False **2.** False **3.** True **4.** False
5. False

Chapter - 7
Exercise 7.1

1. Write the fraction for shaded and unshaded portions:

(a) $\frac{3}{5}, \frac{2}{5}$ (b) $\frac{1}{3}, \frac{2}{3}$ (c) $\frac{1}{3}, \frac{2}{3}$

2. Represent the given fractions as shaded the figure:

(a) 

(b) 

(c) 

3. Write the fractions if:

(a) $\frac{5}{17}$ (b) $\frac{8}{12}$

4. (a) Numerator – 4
Denominator – 9

(b) Numerator – 11
Denominator – 17

(c) Numerator – 17
Denominator – 18

(d) Numerator – 7
Denominator – 16

(e) Numerator – 1
Denominator – 10

5. Calculate the following:

(a) $\frac{1}{4} \times 24 \quad = 1 \times 6 = 6$

(b) $\frac{2}{9} \times 27 \quad = 2 \times 3 = 6$

(c) $\frac{3}{8} \times 40$ $= 3 \times 5 = 15$

(d) $\frac{11}{40} \times 160$ $= 11 \times 4 = 44$

(e) $\frac{6}{5} \times 80$ $= 6 \times 16 = 96$

6. Find:

(a) $\frac{1}{2} \times 12$ $\therefore$ 1 dozen = 6 pieces

$= 1 \times 6 = 6$

(b) $\frac{1}{4} \times 20$ $\therefore$ 1 scare = 20

$= 1 \times 5 = 5$

(c) $\frac{3}{4} \times 1000$ $\therefore 1\,l = 1000$

$= 3 \times 250 = 750\,l$

(d) $\frac{1}{4} \times 1000$ $\therefore$ 1 kg = 1000

$= 1 \times 250 = 250$ gm

(e) $\frac{2}{3} \times$ $\therefore 1$

7. Number of oranges = 50

She gave oranges to Diksh = $\frac{2}{10}$

So, the Diksh get oranges = $50 \times \frac{2}{10}$
$= 5 \times 2 = 10$
And oranges left with Aditi = 50 – 10 = 40 oranges

Exercise 7.2

1. Encircle the proper fractions:

$\frac{2}{5}, \frac{3}{2}, \frac{4}{9}, \frac{1}{8}, \frac{2}{7}, \frac{5}{9}, \frac{2}{3}, \frac{11}{15}, \frac{5}{11}, \frac{11}{5}$

2. Encircle the improper fractions:

$\frac{11}{8}, \frac{12}{5}, \frac{3}{8}, \frac{4}{7}, \frac{15}{15}, \frac{14}{3}, \frac{11}{17}, \frac{17}{11}, \frac{2}{1}, \frac{19}{20},$

3. Convert each of the following in to improper fraction:

(a) $\frac{5 \times 2 + 1}{2} = \frac{11}{2}$

(b) $\frac{7 \times 3 + 2}{3} = \frac{23}{3}$

(c) $\frac{4 \times 5 + 3}{5} = \frac{23}{5}$

(d) $\frac{8 \times 7 + 3}{7} = \frac{59}{7}$

(e) $\frac{11 \times 6 + 9}{11} = \frac{75}{11}$

(f) $\frac{8 \times 4 + 3}{4} = \frac{35}{4}$

(g) $\frac{2 \times 8 + 3}{8} = \frac{19}{8}$

(h) $\frac{50 \times 2 + 1}{2} = \frac{11}{2}$

(i) $\frac{100 \times 100 + 9}{100} = \frac{10009}{100}$

(j) $\frac{68 \times 5 + 1}{5} = \frac{341}{5}$

4. Convert each of the following in to mixed fraction:

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

$$\begin{array}{r} 1 \\ 4\overline{)7} \\ \underline{4} \\ 3 \end{array}$$

(b) $5\frac{1}{2}$

$$\begin{array}{r} 5 \\ 2\overline{)11} \\ \underline{10} \\ 1 \end{array}$$

(c) $3\frac{4}{5}$

$$\begin{array}{r} 3 \\ 5\overline{)19} \\ \underline{15} \\ 4 \end{array}$$

(d) $1\frac{5}{7}$

$$\begin{array}{r} 1 \\ 7\overline{)12} \\ \underline{7} \\ 5 \end{array}$$

(e) $10\frac{1}{10}$

$$\begin{array}{r} 1 \\ 10\overline{)101} \\ \underline{10} \\ 1 \end{array}$$

(f) $11\frac{5}{16}$

$$\begin{array}{r} 16\overline{)181}(1 \\ \underline{16} \\ 21 \\ \underline{16} \\ 5 \end{array}$$

(g) $115\frac{1}{5}$

$$\begin{array}{r} 2\overline{)231}(115 \\ \underline{2} \\ 3 \\ \underline{2} \\ 11 \\ \underline{10} \\ 1 \end{array}$$

(h) $4\frac{1}{4}$

$$\begin{array}{r} 5\overline{)21}(4 \\ \underline{20} \\ 1 \end{array}$$

(i) $109\frac{6}{9}$

$$\begin{array}{r} 9\overline{)987}(109 \\ \underline{9} \\ 87 \\ \underline{81} \\ 6 \end{array}$$

(j) $19\frac{13}{18}$

$$\begin{array}{r} 18\overline{)355}(19 \\ \underline{18} \\ 175 \\ \underline{162} \\ 13 \end{array}$$

5. $\frac{3}{10}$ **6.** $\frac{8}{11}$

7. Fill in the blanks:

(a) $\frac{15}{2} = \boxed{7}\frac{1}{2}$ (b) $5\frac{1}{3} = \frac{\boxed{16}}{3}$

(c) $\frac{\boxed{24}}{7} = 3\frac{3}{7}$

Exercise 7.3

1. Check whether the following fractions are equivalent or not:

(a) $\frac{2}{3}, \frac{12}{18}$ $[\therefore N_1D_2 = N_2D_1]$

$2 \times 18 = 3 \times 12$

$36 = 36$

(Yes, it is equivalent)

(b) $\frac{5}{8}, \frac{18}{48}$ $5 \times 48 = 8 \times 18$

$240 = 144$

(No, it is not equivalent)

(c) $\frac{11}{22}, \frac{88}{196}$

$11 \times 196 = 22 \times 88$

$2156 = 1936$

(No, it is not equivalent)

(d) $\frac{3}{5}, \frac{60}{100}$

$3 \times 100 = 5 \times 60$

$300 = 300$

(Yes, it is equivalent)

(e) $\frac{40}{50}, \frac{5}{10}$

$40 \times 10 = 50 \times 5$

$400 = 250$

(No, it is not equivalent)

(f) $\frac{18}{27}, \frac{2}{3}$

$18 \times 3 = 27 \times 2$

$54 = 54$

(Yes, it is equivalent)

(g) $\frac{60}{72}, \frac{5}{6}$

$60 \times 6 = 72 \times 5$

$360 = 360$

(Yes, it is equivalent)

(h) $\frac{45}{80}, \frac{9}{16}$

$45 \times 16 = 80 \times 9$

$720 = 720$

(Yes, it is equivalent)

2. Fill in the blanks:

(a) $\frac{2 \times 5}{3 \times 5} = \frac{\boxed{10}}{15}$ (b) $\frac{7}{8} \times \frac{3}{3} = \frac{11}{\boxed{24}}$

(c) $\frac{9}{11} \times \frac{9}{9} = \frac{\boxed{81}}{99}$ (d) $\frac{11}{12} \times \frac{11}{11} = \frac{121}{\boxed{132}}$

(e) $\frac{60}{70} \div \frac{10}{10} = \frac{\boxed{6}}{7}$ (f) $\frac{72}{81} \div \frac{9}{9} = \frac{\boxed{8}}{9}$

(g) $\frac{14}{84} \div \frac{7}{7} = \frac{\boxed{2}}{42}$ (h) $\frac{100}{200} \div \frac{25}{25} = \frac{4}{\boxed{8}}$

3. Write a fraction equivalent to 2/3 with numerator:

(a) $\frac{2}{3} \times \frac{6}{6} = \frac{12}{18}$ (b) $\frac{2}{3} \times \frac{15}{15} = \frac{40}{45}$

(c) $\frac{2}{3} \times \frac{22}{22} = \frac{30}{45}$ (d) $\frac{2}{3} \times \frac{20}{20} = \frac{44}{66}$

(e) $\frac{2}{3} \times \frac{50}{50} = \frac{100}{150}$

4. Write a fraction equivalent to 5/8 with denominator:

(a) $\frac{5}{8} \times \frac{3}{3} = \frac{15}{24}$ (b) $\frac{5}{8} \times \frac{7}{7} = \frac{35}{56}$

(c) $\frac{5}{8} \times \frac{9}{9} = \frac{45}{72}$ (d) $\frac{5}{8} \times \frac{10}{10} = \frac{50}{80}$

(e) $\frac{5}{8} \times \frac{100}{100} = \frac{500}{800}$

Exercise 7.4

1. Examine whether the following fraction are in simplest form or not:

(a) $\frac{25}{75} \div \frac{5}{5} = \frac{5}{15}$

$\frac{5}{15} \div \frac{5}{5} = \frac{1}{3}$ (Yes)

(b) $\frac{6}{9} \div \frac{3}{3} = \frac{2}{3}$ (Yes)

(c) $\frac{8}{15}$ (No)

(d) $\frac{7}{12}$ (No)

(e) $\frac{150}{70} \div \frac{5}{5} = \frac{30}{14}$

$\frac{30}{14} \div \frac{2}{2} = \frac{15}{7}$ (Yes)

(f) $\frac{2}{5}$ (No)

2. Reduce the following fractions in to its simplest form:

(a) $\frac{64}{72}$

$\frac{64}{72} \div \frac{8}{8} = \frac{8}{9}$

$64\overline{)72}(1$
$\quad 64$
$\quad 8\overline{)64}(8$
$\quad\quad 64$
$\quad\quad \times$

H.C.F is = 8

(b) $\frac{12}{60}$

$\frac{12}{60} \div \frac{12}{12} = \frac{1}{5}$

$12\overline{)60}(5$
$\quad 60$
$\quad \times$

H.C.F is = 12

(c) $\frac{120}{40}$

$\frac{120}{40} \div \frac{40}{40} = \frac{3}{1}$

$40\overline{)120}(3$
$\quad 120$
$\quad \times$

H.C.F is = 40

(d) $\frac{84}{96} \div \frac{12}{12} = \frac{7}{8}$

$84\overline{)96}(1$
$\quad 84$
$\quad 12\overline{)84}(7$
$\quad\quad 84$
$\quad\quad \times$

H.C.F is = 12

(e) $\frac{99}{33} \div \frac{33}{33} = \frac{3}{1}$

$33\overline{)99}(3$
$\quad 99$
$\quad \times$

H.C.F is = 33

(f) $\frac{100}{75} \div \frac{25}{25} = \frac{4}{3}$

$75\overline{)100}(1$
$\quad 75$
$\quad 25\overline{)75}(3$
$\quad\quad 75$
$\quad\quad \times$

H.C.F is = 25

3. Write 5 fractions equivalent to each of the following:

(a) $\frac{2}{3}$

$\frac{2}{3} \times \frac{2}{2} = \frac{4}{6} \Rightarrow \frac{2}{3} \times \frac{3}{3} = \frac{6}{9}$

$\frac{2}{3} \times \frac{4}{4} = \frac{8}{12} \Rightarrow \frac{2}{3} \times \frac{5}{5} = \frac{10}{15}$

$\frac{2}{3} \times \frac{6}{6} = \frac{12}{18}$

$\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}$

(b) $\frac{5}{7} \times \frac{2}{2} = \frac{10}{14} \Rightarrow \frac{5}{7} \times \frac{3}{3} = \frac{15}{21}$

$\frac{5}{7} \times \frac{4}{4} = \frac{20}{28} \Rightarrow \frac{5}{7} \times \frac{5}{5} = \frac{25}{35}$

$\frac{5}{7} \times \frac{6}{6} = \frac{30}{42}$

$\frac{10}{14}, \frac{15}{21}, \frac{20}{28}, \frac{25}{35}, \frac{30}{42}$

(c) $\frac{3}{11} \times \frac{2}{2} = \frac{6}{22} \Rightarrow \frac{3}{11} \times \frac{3}{3} = \frac{9}{33}$

$\frac{3}{11} \times \frac{4}{4} = \frac{12}{44} \Rightarrow \frac{3}{11} \times \frac{5}{5} = \frac{15}{55}$

$\frac{3}{11} \times \frac{6}{6} = \frac{18}{66}$

$\frac{6}{22}, \frac{9}{33}, \frac{12}{44}, \frac{15}{55}, \frac{18}{66}$

(d) $\frac{5}{9} \times \frac{2}{2} = \frac{10}{18} \Rightarrow \frac{5}{9} \times \frac{3}{3} = \frac{15}{27}$

$\frac{5}{9} \times \frac{4}{4} = \frac{20}{36} \Rightarrow \frac{5}{9} \times \frac{5}{5} = \frac{25}{45}$

$\frac{5}{9} \times \frac{6}{6} = \frac{30}{54}$

$\frac{10}{18}, \frac{15}{27}, \frac{20}{36}, \frac{25}{45}, \frac{30}{54}$

(e) $\frac{11}{13} \times \frac{2}{2} = \frac{22}{26} \Rightarrow \frac{11}{13} \times \frac{3}{3} = \frac{33}{39}$

$\frac{11}{13} \times \frac{4}{4} = \frac{44}{52} \Rightarrow \frac{11}{13} \times \frac{5}{5} = \frac{55}{65}$

$\frac{11}{13} \times \frac{6}{6} = \frac{66}{78}$

$\frac{22}{26}, \frac{33}{39}, \frac{44}{52}, \frac{55}{65}, \frac{66}{78}$

(f) $\frac{17}{19} \times \frac{2}{2} = \frac{34}{38} \Rightarrow \frac{17}{19} \times \frac{3}{3} = \frac{51}{57}$

$\frac{17}{19} \times \frac{4}{4} = \frac{68}{76} \Rightarrow \frac{17}{19} \times \frac{5}{5} = \frac{85}{95}$

$\frac{17}{19} \times \frac{6}{6} = \frac{102}{114}$

$\frac{34}{38}, \frac{51}{57}, \frac{68}{76}, \frac{85}{95}, \frac{102}{114}$

Exercise 7.5

1. Select the set of fractions:

(a) $\frac{2}{3}, \frac{1}{3}, \frac{4}{3}, \frac{5}{3}$ (b) $\frac{4}{11}, \frac{4}{9}, \frac{4}{7}, \frac{4}{6}$

(c) $\frac{2}{3}, \frac{4}{5}, \frac{5}{6}, \frac{7}{8}$ (d) $\frac{4}{11}, \frac{3}{11}, \frac{8}{11}, \frac{3}{10}$

(e) $\frac{7}{8}, \frac{6}{8}, \frac{5}{8}, \frac{4}{8}$ (f) $\frac{1}{9}, \frac{2}{9}, \frac{3}{9}, \frac{4}{9}$

Ans: (a), (d), (e), (f)

2. Select the set of unlike fractions:

(a) $\frac{6}{12}, \frac{5}{12}, \frac{4}{12}, \frac{3}{12}$ (b) $\frac{2}{9}, \frac{2}{8}, \frac{2}{7}, \frac{2}{6}$

(c) $\frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}$ (d) $\frac{7}{8}, \frac{6}{8}, \frac{5}{8}, \frac{4}{8}$

(e) $\frac{10}{20}, \frac{20}{10}, \frac{30}{10}, \frac{10}{30}$ (f) $\frac{6}{11}, \frac{6}{12}, \frac{6}{13}, \frac{6}{14}$

Ans: b, c, e, f

3. Put the correct sign >,< or = in the given boxes:

(a) < (b) > (c) > (d) < (e) > (f) < (g) > (h) <

4. Compare the fraction given below:

(a) $N_1d_2 = d_1N_2$

$8 \times 8 \square 9 \times 9$

$64 \boxed{<} 81$

$\frac{8}{9} \boxed{<} \frac{9}{8}$

(b) $3 \times 12 \square 4 \times 1$

$36 \boxed{<} 4$

$\frac{3}{4} \boxed{<} \frac{1}{12}$

(c) $5 \times 8 \square 6 \times 3$

$40 \boxed{<} 18$

$\frac{5}{6} \boxed{>} \frac{3}{8}$

(d) $9 \times 9 \square 6 \times 3$

$81 \boxed{>} 80$

$\frac{9}{16} \boxed{>} \frac{5}{9}$

(e) $1 \times 30 \square 15 \times 4$

$30 \boxed{<} 60$

$\frac{9}{16} \boxed{<} \frac{5}{9}$

5. Arrange the following fractions in ascending order:

(a) First, we have to find L.C.M of 3, 12, 3, 15

L.C.M of 3, 12, 3 and 15 = 60

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

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

$\frac{1}{3} \times \frac{20}{20} = \frac{20}{60}$

$\frac{4}{15} \times \frac{4}{4} = \frac{16}{60}$

3	3, 12, 3, 15
4	1, 4, 1, 5
5	1, 1, 1, 5
	1, 1, 1, 1

$3 \times 4 \times 5 = 60$

$\frac{100}{60}, \frac{15}{60}, \frac{20}{60}, \frac{16}{60}$

$15 < 16 < 20 < 100$

(b) First, we have to find L.C.M of 12, 15, 3, 3

L.C.M of 12, 15, 3, 3 is 60

Now, $\frac{1}{2} \times \frac{30}{30} = \frac{30}{60}$

$\frac{4}{15} \times \frac{4}{4} = \frac{16}{60}$

$\frac{1}{3} \times \frac{20}{20} = \frac{20}{60}$

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

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

$2 \times 2 \times 3 \times 5 = 60$

$\frac{30}{60}, \frac{16}{60}, \frac{20}{60}, \frac{100}{60}$

$15 < 20 < 30 < 100$

(c) First, we have to find L.C.M of 7, 35, 14, 28

L.C.M of 7, 35, 14, 28

Now, $\frac{2}{7} \times \frac{20}{20} = \frac{40}{140}$

$\frac{11}{35} \times \frac{4}{4} = \frac{44}{140}$

$\frac{9}{14} \times \frac{10}{10} = \frac{90}{140}$

$\frac{13}{28} \times \frac{5}{5} = \frac{65}{140}$

2	7, 35, 14, 28
2	7, 35, 7, 14
5	7, 35, 7, 7
7	7, 7, 7, 7
	1, 1, 1, 1

$2 \times 2 \times 5 \times 7 = 140$

$\frac{40}{140}, \frac{44}{140}, \frac{90}{140}, \frac{65}{140}$

40, 44, 65, 90

$40 < 44 < 65 < 90$

$\frac{2}{7} < \frac{11}{35} < \frac{13}{28} < \frac{9}{14}$

(d) $\frac{5}{9}, \frac{3}{12}, \frac{1}{2}, \frac{5}{18}$

First, we have to find L.C.M of 9, 12, 2, 18

L.C.M of 9, 12, 2, 18 is 36

$\frac{5}{9} \times \frac{4}{4} = \frac{20}{36}, \frac{3}{12} \times \frac{3}{3} = \frac{9}{36},$

$\frac{1}{2} \times \frac{18}{18} = \frac{18}{36}, \frac{5}{18} \times \frac{2}{2} = \frac{10}{36}$

$9 < 10 < 18 < 20$

$\frac{3}{12} < \frac{5}{18} < \frac{1}{2} < \frac{5}{9}$

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

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

(e) $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{6}$

$\frac{1}{6} < \frac{1}{4} < \frac{1}{3} < \frac{1}{2}$

(f) $\frac{3}{8}, \frac{2}{7}, \frac{1}{4}, \frac{2}{3}$

$\frac{3}{8} \times \frac{21}{21} = \frac{63}{168}, \frac{2}{7} \times \frac{24}{24} = \frac{48}{168}$

$\frac{1}{4} \times \frac{42}{42} = \frac{42}{168}, \frac{2}{3} \times \frac{56}{56} = \frac{112}{168}$

$42 < 48 < 63 < 112$

$\frac{1}{4} < \frac{2}{7} < \frac{3}{8} < \frac{2}{3}$

2	8, 7, 4, 3
2	4, 7, 2, 3
2	2, 7, 1, 3
3	1, 7, 1, 3
7	1, 7, 1, 1
	1, 1, 1, 1

$2 \times 2 \times 2 \times 3 \times 7 = 168$

6. (a) $\frac{5}{7}, \frac{9}{14}, \frac{17}{21}, \frac{31}{42}$

$\frac{5}{6} \times \frac{6}{6} = \frac{30}{42}, \frac{9}{14} \times \frac{3}{3} = \frac{27}{42}$

$\frac{17}{21} \times \frac{2}{2} = \frac{34}{42}, \frac{31}{42} \times \frac{1}{1} = \frac{31}{42}$

$27 > 30 > 31 > 34$

$\frac{9}{14} > \frac{5}{7} > \frac{31}{42} > \frac{17}{21}$

2	7, 14, 21, 42
3	7, 7, 21, 21
7	7, 7, 7, 7
	1, 1, 1, 1

$2 \times 3 \times 7 = 42$

(b) $\frac{5}{3}, \frac{7}{6}, \frac{8}{9}, \frac{5}{18}$

$\frac{5}{3} \times \frac{6}{6} = \frac{30}{18}, \frac{7}{6} \times \frac{3}{3} = \frac{21}{18}$

$\frac{8}{9} \times \frac{2}{2} = \frac{16}{18}, \frac{5}{18} \times \frac{1}{1} = \frac{5}{18}$

$5 > 16 > 21 > 30$

$\frac{5}{18} > \frac{8}{9} > \frac{7}{6} > \frac{5}{3}$

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

(c) $\frac{2}{3}, \frac{3}{4}, \frac{4}{12}, \frac{5}{6}$

$\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}, \frac{3}{4} \times \frac{3}{3}$

$= \frac{9}{12}, \frac{4}{12} \times \frac{1}{1} = \frac{4}{12}$

$\frac{5}{6} \times \frac{2}{2} = \frac{10}{12}$

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

$4 > 8 > 9 > 10$

$\frac{4}{12} > \frac{2}{3} > \frac{3}{4} > \frac{5}{6}$

$2 \times 2 \times 3 = 12$

(d) $\frac{7}{10}, \frac{8}{15}, \frac{4}{5}, \frac{15}{30}$

$\frac{7}{10} \times \frac{15}{15} = \frac{105}{150}, \frac{2}{3} \times \frac{50}{50} = \frac{100}{150}$

$\frac{4}{5} \times \frac{30}{30} = \frac{120}{150}, \frac{15}{30} \times \frac{5}{5} = \frac{75}{150}$

$75 > 100 > 105 > 120$

$\frac{15}{30} > \frac{2}{3} > \frac{7}{10} > \frac{4}{5}$

5	10, 15, 4, 30
5	2, 15, 5, 15
3	2, 3, 1, 3
2	2, 1, 1, 1
	1, 1, 1, 1

$5 \times 5 \times 3 \times 2 = 150$

(e) $\frac{2}{3}, \frac{7}{12}, \frac{1}{5}, \frac{5}{9}$

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

$\frac{2}{3} \times \frac{60}{60} = \frac{120}{180},$

$\frac{7}{12} \times \frac{15}{15} = \frac{105}{180}$

$\frac{1}{5} \times \frac{36}{36} = \frac{36}{180},$

$\frac{5}{9} \times \frac{20}{20} = \frac{100}{180}$

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

$36 > 100 > 105 > 120$

$\frac{1}{5} > \frac{5}{9} > \frac{7}{12} > \frac{2}{3}$

(f) $\frac{3}{4}, \frac{11}{12}, \frac{17}{24}, \frac{5}{8}$

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

$\frac{3}{4} \times \frac{6}{6} = \frac{18}{24},$

$\frac{11}{12} \times \frac{2}{2} = \frac{22}{24}$

$\frac{17}{24} \times \frac{1}{1} = \frac{17}{24},$

$\frac{5}{8} \times \frac{3}{3} = \frac{15}{24}$

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

$15 > 17 > 18 > 22$

$\frac{5}{8} > \frac{17}{24} > \frac{3}{4} > \frac{11}{12}$

Exercise 7.6

1. Add the following fractions:

(a) $\frac{4}{13} + \frac{8}{13}$

$\frac{4+8}{13} = \frac{12}{13}$

(b) $\frac{8}{15} + \frac{2}{5}$

$\frac{8+6}{15} = \frac{14}{15}$

(c) $\frac{4}{3}+\frac{3}{4}$

$\frac{16+9}{12}=\frac{25}{12}$

(d) $2\frac{1}{2}+1\frac{7}{3}$

$=\frac{5}{2}+\frac{10}{3}$

$=\frac{15+20}{6}=\frac{35}{6}$

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

(e) $5\frac{1}{6}+2\frac{2}{3}$

$=\frac{31}{6}+\frac{8}{3}=\frac{31+16}{6}=\frac{47}{6}$

$=\frac{47}{6}=7\frac{5}{6}$

(f) $3+2\frac{5}{11}$

$=\frac{3}{1}+\frac{27}{11}=\frac{33+27}{11}=\frac{60}{11}$

$=\frac{60}{11}=5\frac{5}{11}$

(g) $5\frac{1}{4}+4\frac{2}{4}$

$=\frac{21}{4}+\frac{14}{3}=\frac{36+56}{12}=\frac{119}{12}$

$=\frac{119}{12}=9\frac{11}{12}$

(h) $4\frac{3}{5}+2+3\frac{1}{10}$

$=\frac{23}{5}+\frac{2}{1}+\frac{31}{10}$

$=\frac{46+20+31}{10}=\frac{97}{10}$

$=\frac{97}{10}=9\frac{7}{10}$

(i) $\frac{11}{10}+5\frac{1}{15}+3$

$\frac{11}{10}+\frac{76}{15}+\frac{3}{1}=\frac{33+152+3}{30}=\frac{188}{30}$

(j) $4\frac{2}{3}+2\frac{5}{6}+5\frac{1}{4}$

$=\frac{14}{3}+\frac{17}{6}+\frac{21}{4}=\frac{56+34+63}{12}=\frac{153}{12}$

$=\frac{153}{12}=12\frac{9}{12}12\frac{3}{4}$

(k) $4\frac{1}{3}+5\frac{1}{4}+7\frac{1}{6}$

$=\frac{13}{3}+\frac{21}{4}+\frac{43}{6}=\frac{52+63+86}{12}$

$=\frac{201}{12}=16\frac{9}{12}$

(l) $4\frac{1}{3}+1\frac{2}{9}+5\frac{2}{9}+3\frac{5}{18}$

$=\frac{13}{3}+\frac{11}{9}+\frac{47}{9}+\frac{59}{18}$

$=\frac{26+22+94+59}{18}=\frac{201}{18}=11\frac{3}{18}$

2. Cost of pen = ₹$15\frac{1}{2}$ =₹$\frac{31}{2}$

Cost of a copy = ₹$26\frac{2}{3}$ = ₹$\frac{80}{3}$

Total cost = ₹$\frac{31}{3}$ + ₹$\frac{80}{3}$

$=\frac{93+160}{6}=$ ₹$\frac{153}{6}=$ ₹$41\frac{7}{6}$

3. Price of cloth = ₹$3\frac{1}{4}$ = ₹$\frac{13}{4}$

Trousers price = ₹$1\frac{2}{3}$ = ₹$\frac{5}{3}$

Total cost = $\frac{13}{4}+\frac{5}{3}=\frac{39+20}{12}$

= ₹$\frac{59}{12}$ = ₹$4\frac{11}{12}$

4. Price of apple = ₹$6\frac{1}{3}=\frac{19}{3}$

Price of orange = ₹$5\frac{1}{7}=\frac{36}{7}$

Total cost $= \frac{19}{3} + \frac{36}{7} = \frac{133+108}{21}$

$= \frac{241}{21}$ = ₹$\frac{241}{21}$ = ₹$11\frac{11}{21}$

5. Two ropes length $= 6\frac{1}{3} = \frac{19}{3}\,m$

Long $= 7\frac{1}{5} = \frac{36}{5}\,m$

Total length $= \frac{19}{3} + \frac{36}{15}$

$\frac{95+36}{15} = \frac{131}{15}\,m = 13\frac{8}{15}\,m$

6. Traveled by train $= 25\frac{1}{4} = \frac{101}{4}\,km$

Traveled by car $= 8\frac{1}{3} = \frac{25}{3}\,km$

Total km $= \frac{101}{4} + \frac{25}{3}$

$= \frac{303+100}{12} = \frac{403}{12}\,km$

$= \frac{403}{12} = 33\frac{7}{12}\,km$

7. Weight of boxes $= 14\frac{2}{3}\,kg, 10\frac{1}{6}\,kg, 18kg$

Total weight $= \frac{44}{3} + \frac{61}{6} + \frac{18}{1}$

$= \frac{88+61+108}{6} = \frac{257}{6}\,kg$

8. Milk $= 4\frac{1}{2}\,l$ Morning

Milk $= 2\frac{2}{3}\,l$ Evening

gandy milk $= \frac{9}{2} + \frac{8}{3}$

$= \frac{9}{2} + \frac{8}{3} = \frac{27+16}{6} = \frac{43}{6}$

$= \frac{43}{6} = 7\frac{1}{6}\,l$

Exercise 7.7

1. Subtract the following:

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

(b) $\frac{5}{12} - \frac{8}{12} = \frac{5-8}{12} = \frac{3}{12} = \frac{1}{4}$

(c) $5\frac{2}{3} - 4\frac{1}{2} = \frac{17}{3} - \frac{9}{2}$

$\frac{34-27}{6} = \frac{7}{6} = 1\frac{1}{6}$

(d) $11\frac{1}{2} - 4\frac{2}{3}$

$\frac{23}{2} - \frac{14}{3} = \frac{69-28}{6} = \frac{41}{6} = 6\frac{5}{6}$

(e) $-4\frac{1}{7} - 2\frac{3}{14}$

$\frac{29}{7} - \frac{31}{14} = \frac{58-31}{14} = \frac{27}{14} = 1\frac{13}{14}$

$= 1\frac{13}{14}$

(f) $-5\frac{3}{10} - 2\frac{1}{5}$

$\frac{53}{10} - \frac{11}{5} = \frac{53-22}{10} = \frac{31}{10} = 3\frac{1}{10}$

(g) $11\frac{1}{3} - 8$

$\frac{34}{3} - \frac{8}{1} = \frac{34-24}{3} = \frac{10}{3} = 3\frac{1}{3}$

(h) $\frac{13}{24} - \frac{5}{16}$

$= \frac{26-15}{48} = \frac{11}{48}$

(i) $12\frac{1}{5} - 9\frac{4}{15}$

$$= \frac{183-139}{15} = \frac{44}{15}$$

$$= 2\frac{14}{15}$$

2. Simplify the following:

(a) $4+2\frac{1}{3}-3\frac{2}{5}$

$$= \frac{4}{1}+\frac{7}{3}-\frac{17}{5} = \frac{60+35-51}{15} = \frac{44}{15}$$

$$\frac{44}{15} = 2\frac{14}{15}$$

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

$$= \frac{7}{3}-\frac{4}{3}+\frac{4}{3} = \frac{7-4+4}{3} = \frac{7}{3}2\frac{1}{3}$$

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

(c) $5\frac{2}{7}+4\frac{1}{14}-2\frac{1}{21}$

$$\frac{37}{7}+\frac{57}{14}-\frac{1}{21}$$

$$\frac{222+171-86}{42} = \frac{307}{42} = 7\frac{13}{42}$$

(d) $6\frac{1}{4}-2\frac{1}{2}+4\frac{3}{8}$

$$\frac{25}{4}-\frac{5}{2}+\frac{35}{8}$$

$$\frac{50-20+35}{8} = \frac{65}{8} = 8\frac{1}{8}$$

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

$$\frac{10}{1}-\frac{9}{2}-\frac{11}{2}$$

$$\frac{20-9-11}{2} = \frac{0}{2} = 0$$

(f) $\frac{8}{1}+2\frac{1}{3}-5\frac{2}{7}$

$$\frac{8}{1}+\frac{7}{3}-\frac{37}{7}$$

$$\frac{168+49-111}{21} = \frac{106}{21} = 5\frac{1}{21}$$

(g) $8\frac{1}{3}-2\frac{5}{7}-3\frac{1}{4}$

$$\frac{25}{3}-\frac{19}{7}-\frac{13}{4}$$

$$\frac{700-228-273}{84}$$

$$= \frac{700-501}{84} = \frac{199}{84}$$

(h) $9\frac{1}{2}-4\frac{1}{2}-\frac{4}{1}$

$$= \frac{19}{12}-\frac{9}{2}-\frac{4}{1}$$

$$= \frac{19-9-8}{2} = \frac{19-17}{2} = \frac{2}{2} = 1$$

(i) $7\frac{1}{4}+2\frac{1}{2}-1\frac{1}{3}-2\frac{1}{3}$

$$= \frac{29}{4}+\frac{5}{2}-\frac{4}{3}-\frac{7}{3}$$

$$= \frac{87+30-16-28}{12}$$

$$= \frac{117-44}{12} = \frac{73}{12} = 6\frac{1}{12}$$

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

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

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

$$= \frac{21}{2}-\frac{17}{3} = \frac{63-34}{6} = \frac{29}{6}$$

$$= \frac{29}{6} = 4\frac{5}{6}$$

5. $1\frac{2}{5} - 1\frac{3}{4}$

$$= \frac{7}{5} - \frac{7}{4} = \frac{28-35}{20} = \frac{7}{20}m$$

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

$$= \left(\frac{5}{2} + \frac{14}{3}\right) - \left(\frac{6}{5} + \frac{11}{3}\right)$$

$$= \left(\frac{15-28}{6}\right) - \left(\frac{18+55}{15}\right)$$

$$\frac{-13}{6} - \frac{73}{15} = \frac{-65-146}{30} = \frac{211}{30}$$

7. Tanu walk $= 3\frac{1}{2}$ minute

His sister walk $= 2\frac{1}{2}$ minute

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

1 min Tanu

8. Total length of rope = 10 m

1 places $= 2\frac{2}{3}$ m

2 places $= 5\frac{1}{2}$ m

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

$$= \frac{7}{3} + \frac{11}{2}$$

$$= \frac{14+33}{6}$$

$$= \frac{47}{6}m$$

Length of left rope $= \frac{10}{1} - \frac{47}{6}m$

$$= \frac{60-47}{6}$$

$$= \frac{13}{6}m$$

$$= 2\frac{1}{6}m$$

M.C.Q (Mental Ability)

1. (a) **2.** (c)

3. (c) **4.** (a)

5. (b)

NCERT CORNER:

1. (a) Fraction with some denominators

(b) Fraction with different denominators

2. (a) Two fifty

(b) Six sevenths

3. (a) $\frac{5}{11} \times 66 = 5 \times 6 = 30$

(b) $\frac{8}{12} \times 72 = 8 \times 6 = 48$

= 4 Dozen

4. (a) $25\frac{1}{4}$

(b) $14\frac{6}{15}, 5$

(c) $\frac{33}{7}$

(d) $\frac{137}{12}$

Chapter - 8

Exercise 8.1

1. **Write each of the following in figures:**

   (a) 12.46 (b) 86.345

   (c) 603.002 (d) 563.103

2. **Write each of the following in words:**

   (a) Seventy two point zero zero five (b) Four hundred sixty two point zero one eight (c) One hundred three point three five six (d) Two hundred sixteen point zero seven two

3. **Arrange the following numbers in place value chart. Also find the place value of each digit:**

	Hundreds	Tens	Ones	Tenth	Hundredth	Thousandths
a		3	1	9	5	0
b	2	3	4	9	3	5
c		1	8	0	0	5
d	6	3	2	5	0	0

4. **Write the following in expanded terms:**

   (a) $30 + 6 + \frac{9}{10} + \frac{5}{100}$

   (b) $100 + 60 + 3 + \frac{1}{10}$

   (c) $90 + 20 + 5$

   (d) $\frac{6}{10} + \frac{2}{100} + \frac{5}{100}$

   (e) $200 + 10 + 3 + \frac{1}{10}$

   (f) $600 + 80 + 5 + \frac{7}{1000}$

   (g) $60 + 5 + \frac{3}{10} + \frac{2}{100} + \frac{5}{1000}$

   (h) $700 + \frac{5}{100}$

5. **Write each of the following in decimal:**

   (a) 478.796 (b) 650.304

   (c) 845.07 (d) 111.111

6. **Convert each of the following in to like fractions:**

   (a) 3.600, 4.6500, 7.000, 8.2120, 123.6254 (b) 16.720, 222.331, 25.620, 28.100, 28.100, 28.325 (c) 32.650, 18.720, 19.100, 20.220, 7.865 (d) 18.070, 18.071, 18.710, 21.170, 2.172

Exercise 8.2

1. **Put >, < or = in given boxes:**

   (a) < (b) < (c) = (d) = (e) > (f) =

2. **Arrange the following decimals in increasing order:**

   (a) 0.004 < 0.04 < 0.042 < 0.4 < 0.444 (b) 0.576 < 5.76 < 56.7 < 57.6 < 67.5 (c) 78.0 < 78.2 < 78.5 < 780 < 782 (d) 5.005 < 5.05 < 5.15 < 5.5 < 5.59

3. **Arrange the following decimals in decreasing order:**

   (a) 19.5 > 11.9 > 1.95 > 1.91 > 1.9 (b) 44.41 > 44.4 > 44.04 > 4.44 > 0.444 (c) 186.5 > 18.65 > 18.56 > 1.865 > 1.865 (d) 6.54 > 6.55 > 6.4 > 6.051

Exercise 8.3

1. **Convert each of the following decimals in to a fraction in its simplest form:**

   (a) 0.5

   $0.5 = \frac{0.5}{10} = \frac{1}{2}$

   (b) 0.8

   $0.8 = \frac{8}{10} = \frac{4}{5}$

   (c) $0.07 = \frac{7}{100}$

   (d) $0.25 = \frac{25}{100} = \frac{1}{4}$

   (e) $0.52 = \frac{52}{100} = \frac{26}{50} = \frac{13}{25}$

(f) $0.005 = \frac{5}{1000} = \frac{1}{200}$

(g) $0.092 = \frac{92}{1000} = \frac{46}{500} = \frac{23}{250}$

(h) $0.165 = \frac{165}{1000} = \frac{33}{200}$

(i) $0.82 = \frac{82}{100} = \frac{41}{50}$

(j) $0.007 = \frac{7}{1000}$

(k) $0.225 = \frac{225}{1000} = \frac{45}{200} = \frac{9}{40}$

(l) $1.250 = \frac{1250}{1000} = \frac{625}{500} = \frac{125}{100} = \frac{25}{20} = \frac{5}{4}$

2. Convert each of the following in to a mixed fraction:

(a) $5.2 = \frac{52}{10} = \frac{26}{5} = 5\frac{4}{5}$

(b) $25.4 = \frac{254}{10} = \frac{127}{5} = 25\frac{2}{5}$

(c) $5.25 = \frac{525}{100} = \frac{105}{20} = \frac{21}{4} = 5\frac{1}{4}$

(d) $15.004 = \frac{15004}{1000} = \frac{7502}{500} = \frac{3751}{250}$
$= 15\frac{1}{250}$

(e) $20.375 = \frac{20375}{1000} = \frac{4075}{200} = \frac{815}{40}$
$= \frac{162}{8}$

(f) $6.18 = \frac{618}{100} = \frac{309}{50} = 6\frac{9}{50}$

(g) $19.11 = \frac{1911}{100} = 19\frac{11}{100}$

(h) $600.75 = \frac{60075}{100} = \frac{12015}{20} = \frac{2403}{4}$
$= 600\frac{3}{4}$

(i) $10.25 = \frac{1025}{100} = \frac{205}{20} = \frac{41}{4} = 10\frac{1}{4}$

(j) $20.50 = \frac{2050}{100} = \frac{410}{20} = \frac{82}{4} = \frac{41}{2} = 20\frac{1}{2}$

(k) $100.25 = \frac{10025}{100} = \frac{2005}{20} = \frac{401}{4}$
$= 100\frac{1}{4}$

(l) $200.200 = \frac{200200}{1000} = \frac{40040}{200} = \frac{808}{40}$
$= \frac{404}{20} = \frac{202}{10} = \frac{101}{5}$

3. Convert each of the following in to decimals fractions:

(a) 0.7 (b) 0.08 (c) 0.029 (d) 62.55
(e) 0.275 (f) 565.4 (g) 1.05 (h) 0.225
(i) 9.23 (j) 0.850 (k) 3.76 (l) 0.786

4. Convert each of the following in to decimals fraction:

(a) $\frac{1}{2} = 0.5$

$$\begin{array}{r} 2\overline{)10}(.5 \\ \underline{10} \\ \times \end{array}$$

(b) $\frac{1}{4} = 0.25$

$$\begin{array}{r} 4\overline{)10}(.25 \\ \underline{8} \\ 20 \\ \underline{20} \\ \times \end{array}$$

(c) $\frac{1}{8} = 0.125$

$$\begin{array}{r} 8\overline{)10}(.125 \\ \underline{8} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ \times \end{array}$$

(d) $4\frac{3}{5} = \frac{23}{5} = 4.6$

$$\begin{array}{r} 5\overline{)23}(4.6 \\ \underline{20} \\ 30 \\ \underline{30} \\ \times \end{array}$$

(e) $2\frac{2}{25} = \frac{54}{25} = 2.16$

$$\begin{array}{r} 25\overline{)54}(2.16 \\ \underline{50} \\ 40 \\ \underline{25} \\ 150 \\ \underline{150} \\ \times \end{array}$$

(f) $12\frac{1}{2} = \frac{25}{2} = 12.5$

$$2\overline{)25}\,(12.5$$
$$\begin{array}{r} 2 \\ \hline 5 \\ 4 \\ \hline 10 \\ 10 \\ \hline \times \end{array}$$

(g) $\frac{5}{2} = 2.5$

$$2\overline{)5}\,(2.5$$
$$\begin{array}{r} 4 \\ \hline 10 \\ 10 \\ \hline \times \end{array}$$

(h) $\frac{19}{20} = 0.95$

$$20\overline{)190}\,(265$$
$$\begin{array}{r} 180 \\ \hline 100 \\ 100 \\ \hline \times \end{array}$$

(i) $\frac{37}{50} = 0.74$

$$50\overline{)370}\,(.74$$
$$\begin{array}{r} 350 \\ \hline 200 \\ 200 \\ \hline \times \end{array}$$

(j) $1\frac{8}{25} = \frac{33}{25} = 1.32$

$$25\overline{)33}\,(1.32$$
$$\begin{array}{r} 25 \\ \hline 80 \\ 75 \\ \hline 50 \\ 50 \\ \hline \times \end{array}$$

(k) $3\frac{3}{5} = \frac{18}{5} = 3.6$

$$5\overline{)18}\,(3.6$$
$$\begin{array}{r} 15 \\ \hline 30 \\ 30 \\ \hline \times \end{array}$$

(l) $2\frac{19}{40} = \frac{99}{40} = 2.475$

$$40\overline{)99}\,(2.4$$
$$\begin{array}{r} 80 \\ \hline 190 \\ 160 \\ \hline 30 \end{array}$$

Exercise 8.4

1. express in kilograms, using decimals:

(a) 5 kg 500 g

5 kg + 500 g

$5\text{ kg} + \frac{500}{1000}\text{ kg}$

5 kg + 0.5 kg = 5.5 kg

(b) 25 kg 85 g

25 kg + 85 g

$25\text{ kg} + \frac{85}{1000}\text{ kg}$

25 kg + 0.085 kg = 25.085 kg

(c) 75 kg 5 g

75 kg + 5 g

$75\text{ kg} + \frac{5}{1000}\text{ kg}$

75 kg + 0.005 kg = 75.0005 kg

(d) 200 kg 75 g

200 kg + 75 g

$75\text{ kg} + \frac{75}{1000}\text{ g}$

200 kg + 0.75 kg = 200.075 kg

(e) 125 kg 145 g

125 kg + 145 g

$125\text{ kg} + \frac{145}{1000}\text{ g}$

125 kg + 0.145 kg = 125.145 kg

(f) 250 kg 250 g

250 kg + 250 g

$250\text{ kg} + \frac{250}{1000}\text{ g}$

250 kg + 0.250 kg = 250.250 kg

2. Express in kilometers using decimals:

(a) 8 km 20 m = 8 km + 20 m

$8\text{ km} + \frac{20}{1000}\text{ km}$

8 km + 0.02 km = 8.200 km

(b) 21 km 250 m = 21 km + 250 m

$21\text{ km} + \frac{250}{1000}\text{ km}$

$21\text{ km} + 0.25\text{ km} = 21.25\text{ km}$

(c) $35\text{ km } 5\text{ m} = 35\text{ km} + 5\text{ m}$

$35\text{ km} + \frac{5}{1000}\text{ km}$

$35\text{ km} + 0.005\text{ km} = 35.005\text{ km}$

(d) $67\text{ m} = \frac{67}{1000}\text{ km} = 0.067$

(e) $285\text{ m} = \frac{285}{1000}\text{ km} = 0.285$

(f) $75\text{ km } 75\text{ m} = 75\text{ km} + 75\text{ m}$

$75\text{ km} + \frac{75}{1000}\text{ km}$

$75\text{ km} + 0.075\text{ km} = 75.075\text{ km}$

3. Express in meters using decimals:

(a) $5\text{ m } 25\text{ cm} = 2\text{ m} + \frac{20}{100}\text{ cm}$

$5\text{ m} + 0.25\text{ m} = 5.25$

(b) $21\text{ m } 6\text{ cm} = 21\text{ m} + 6\text{ cm}$

$21\text{ m} + \frac{6}{100}\text{ cm}$

$21\text{ m} + 0.06\text{ m} = 21.06\text{ m}$

(c) $85\text{ cm} = \frac{85}{1000} = 0.085\text{ m}$

(d) $50\text{ m } 50\text{ cm} = 50\text{ m} + 50\text{ cm}$

$50\text{ m} + \frac{50}{100}\text{ cm}$

$50\text{ m} + 0.50\text{ m} = 50.50\text{ m}$

(e) $4\text{ cm} = \frac{4}{100}\text{ m} = 0.04\text{ m}$

(f) $25\text{ m } 2\text{ cm} = 25\text{ m} + 2\text{ cm}$

$25\text{ m} + \frac{2}{100}\text{ cm}$

$25\text{ m} + 0.02\text{ m} = 25.02\text{ m}$

4. Express in rupees using decimals:

(a) ₹ 15 and 75 paise

$= ₹\,15 + \frac{75}{100}$ paise

$= ₹\,15 + ₹\,0.75 = ₹\,15.75$

(b) 50 paise $= ₹\,\frac{50}{100} = ₹\,0.5$

(c) ₹ 525 and 35 paise

$= ₹\,525 + 35$ paise

$= ₹\,525 + \frac{35}{100}$ paise

$= ₹\,525 + ₹\,0.35 = ₹\,525.35$

(d) ₹ 786 and 50 paise

$= ₹\,786 + 50$ paise

$= ₹\,786 + \frac{50}{100}$ paise

$= ₹\,786 + ₹\,0.50 = ₹\,786.50$

(e) 8 paise $₹\,\frac{8}{100} = ₹\,0.08$

(f) 505 paise $₹\,\frac{505}{100} = ₹\,5.05$

Exercise 8.5

1. Find the sum in each of the following:

(a)
```
  105.75
   49.825
+   0.9
  156.475
```

(b)
```
  506   .8
   45   .927
+  6   .  58
  101.7785
```

(c)
```
   4   .5
+ 12   .72
   13
```

(d)
```
    0.0008
    1.273
   10.79
+ 125.51
```

2. Arrange the column and add:

(a)
```
  44.500
  32.678
+  9.230
 486.408
```

(b)
```
   6.000
   5.782
  31.270
+ 81.005
 123.957
```

(c)
```
  2.001
  2.789
  6.780
+ 5.800
 15.370
```

(d)
```
  72.575
  61.385
  23.000
+ 48.120
 205.070
```

3.

Cost of a cricket ball =	₹ 38.50
Cost of a ball =	₹150.00
Cost of a stumps =	+ ₹111.50
So, cost of all items =	₹300.00

Thus, the total cost of all three item = ₹ 300

4. Empty gas cylinder = 14 kg . 500 gm
Weight of gas filled = + 16 . 20
Total weight = 300 . 520
So, the total weight of a cylinder = 30 kg

5. Quantity of tea = 2 kg . 50 g
Mass of empty bag = + 0.350
Total bag with tea = 2.400
So, the mass of bag with = 2.4 kg

6. Labor earn in a weak = ₹95.50 + ₹ 118.75 + ₹100 + ₹162.25 ₹852.25 ₹210.45 + ₹150
So, the total earning of labor of full weak = ₹ 1622.20

7. Distance between bus stop and Aditi's house = 0 km . 852 m
Dis. bus stop to school = + 9 . 80
Distance house & school = 9 . 932
Thus, the total distance between Aditi's house and school 9 km 932 m

8. Quantity of apple = 5 kg . 250 g
Quantity of grapes = + 2 . 500
Quantity of = 3 . 75
So, the total quantity = 10 . 825
Thus, the total quantity of fruits purchased by Diksha = 10 kg 825 gm

Exercise 8.6

1. Subtract the following:

(a) 457 . 200 − 18 . 945 = 438 . 255

(b) 282 . 520 − 178 . 386 = 104 . 134

(c) 800 . 000 − 645 . 235 = 157 . 765

(d) 324 . 930 − 68 . 078 = 256 . 852

2. Arrange in column and then subtract:

(a) 678 . 270 − 562 . 789 = 115 . 481

(b) 1000 . 00 − 935 . 52 = 64 . 75

(c) 462 . 10 − 385 . 01 = 71 . 09

(d) 965 . 072 − 858 . 000 = 107 . 072

(e) 8 . 000 − 0 . 008 = 7 . 992

3. Simplest the following:

(a) 65 . 070 + 38 . 325 = 350. 395 → 350.395 − 162.728 = 107.667

(b) 386. 92 − 221.728 = 165.192 → 165.192 + 1.007 = 166.199

(c) 100.00 − 75.25 = 24.75 → 24. 75 − 12.625 = 12.125

(d) 392.1 − 165.625 = 226.475 → 226. 475 − 25.800 = 200.675

4. 212.865 + 75.358 = 288.223 → 900.000 − 288.223 = 611.777

5. Total money Aditi = ₹ 268 . 75
Needs of money = ₹ 500 . 00
₹ 500 . 00
Money required = − 268 . 75
₹ 231 . 25

6. Let, The no should be added be x
$853.725 + x = 1100$
$x = 1100 - 853.725$
$x = 246.275$

1100.000
− 853.725
246.275

So, the no should be added246.275

7. 750.000 – 115.786

$$\begin{array}{r} 750.000 \\ -115.786 \\ \hline 634.214 \end{array}$$

8. Let the other decimals be x

$285.987 + x = 484$

$x = 484.000 - 285.987$

$x = 198.013$

So, the other numbers 198.013

M.C.Q (Mental ability)

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

NCERT CORNER

Fill in the blank:

1. 565.423 **2.** 0 **3.** like **4.** 2.55 **5.** 6.98

True and False:

1. False **2.** True **3.** False **4.** True **5.** False

Chapter - 9

Exercise 9.1

1.

Interval	Tally Mark	Frequency
0 - 10	I	1
10 - 20	IIII	4
20 - 30	IIII	4
30 - 40	~~IIII~~ I	6
40 - 50	~~IIII~~	5
50 - 60	II	2
60 - 70	~~IIII~~ III	8
70 - 80	~~IIII~~ II	7
80 - 90	~~IIII~~ I	6
90 - 100	~~IIII~~ II	7
	Total	50

(a) 100 (b) 9

(c) 91 (d) 9

(e) 20

2. Arrange was thrown 50 times and following numbers were obtained prepare a frequency table for the given scare:

Outcome	Tally Mark	Frequency
1	~~IIII~~ ~~IIII~~	9
2	~~IIII~~ ~~IIII~~	10
3	~~IIII~~ II	7
4	~~IIII~~ III	8
5	~~IIII~~ I	6
6	~~IIII~~ ~~IIII~~	10
	Total	50

3. Following are the choice of fruits of 50 students of class VI. Arrange the name of fruits in frequency table:

Fruits	Tally Mark	Frequency
Apple	~~IIII~~ ~~IIII~~ II	12
Grapes	~~IIII~~ I	6
Oranges	~~IIII~~ ~~IIII~~ IIII	14
Banana	IIII	4
Mango	~~IIII~~ IIII	9
Pineapple	~~IIII~~	5

(a) Orange (b) Pine apple

4. Prepare a frequency table of the following ages of 25 students of class VI in your school:

Age	Tally Mark	Frequency
10	II	2
11	~~IIII~~ II	7
12	~~IIII~~ IIII	9
13	IIII	4
14	IIII	3

(a) 14 (b) 10 (c) 4

Exercise 9.2

1. Liking of colors of some students are given below represent this information by using picto-graphs:

Colour	Picture □ = students
Red	□□□□□
Green	□□□□□□□□□□

White	□□□□□□□□□
Black	□□□□□□□
Yellow	□□□□
Blue	□□□
Gray	□□

2. **A survey was made on 400 people to know their favourite cricket player the following information is obtained:**

Player	1 Player ○ = 10 people
Sachin	○○○○○○○○○○
Dhoni	○○○○○○○○
Dravid	○○○○○○
Zaheer	○○○
Praveen	○○○○○
Kohli	○○○○○○○

3. **There is a basket full of fruits. The number of fruits in the basket is as follow:**

Fruits	Picture △ = 5 child
Banana	△ △ △ △
Mango	△ △
Melon	△ △ △ △
Apple	△ △
Orange	△ △
Pineapple	△

4. **The sale of cold drinks of a shop 1 week is given below:**

Brand	Picture = 5 Bottle
Banana	
Mango	
Melon	
Apple	
Orange	
Pineapple	

5. **Arrange the given date in proper way by using frequency table and then represent is by using pictograph:**

Number	Tally Mark	Frequency
0	卌 I	6
1	卌 卌 IIII	13
2	卌 卌 卌 I	16
3	卌 III	8
4	卌 卌 I	11
5		0
6	IIII	3

6. **A survey was made on class VI students to know their liking of sports. The obtained date is given below:**

Sport	Tally Mark	Frequency
Badminton	卌 II	7
Cricket	卌 IIII	8
Football	卌 IIII	8
Tennis	III	3
Hockey	IIII	4

Pictograph

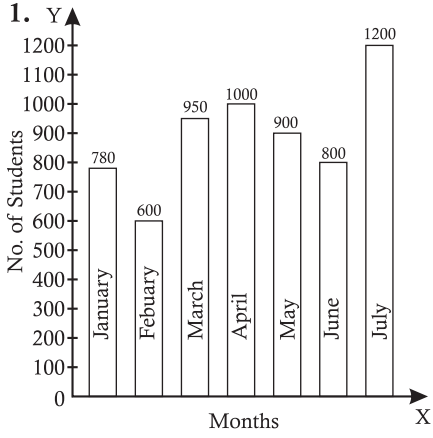
Sports	Picture
Badminton	
Cricket	
Football	
Tennis	
Hockey	

7. **Read the flower plants in a nursery:**
(a) Jasmine, 60 (b) Daisy, 20 (c) 80 (d) 200 (e) No, of flower plants in a nursery

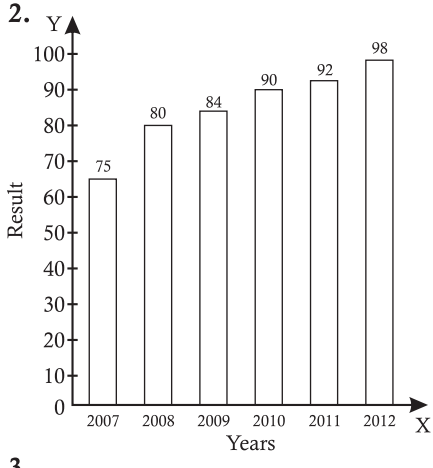
8. **The following date represent the number of books on different subject in a library of school represent it in a form of pictograph and given the answer of a given question:**
(a) G.K (b) Hindi (c) 500 (d) 3600 (e) No. of books subject use in library

Exercise 9.3

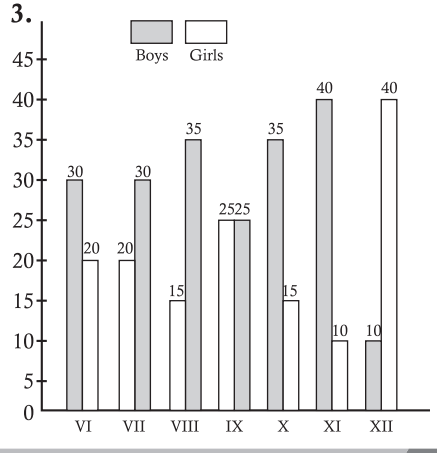
1.



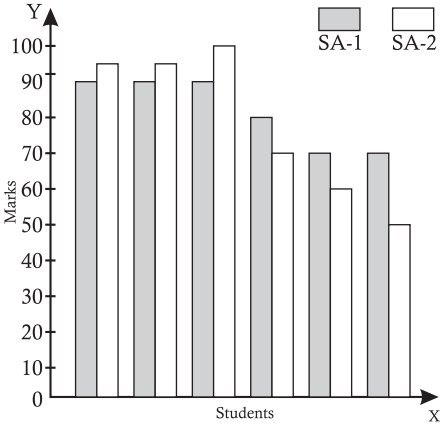
2.



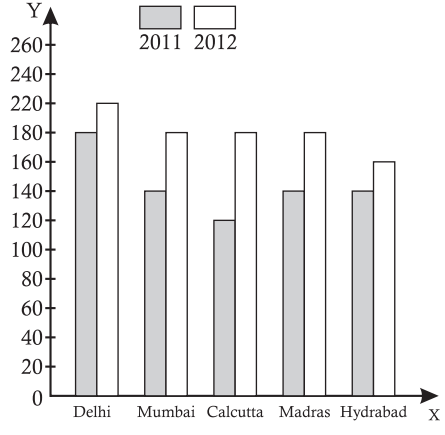
3.



4.



5.



MCQs (Mental Ability)

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

NCERT CORNER

Fill in the blanks:

1. Increasing or decreasing

2. 0

3. 20

4. Frequency

5. Rectangle equal

True and False

1. True **2.** False **3.** True **4.** False **5.** False

Chapter - 10
Exercise 10.1

1. Find the perimeter of following figures:

(a) 5 cm + 5 cm + 4 cm + 8 cm = 20 cm (b) 1 cm + 1 cm + 1 cm + 1 cm 1 cm + 5 cm + 5 cm = 15 cm

(c) 2 cm + 2 cm + 1 cm + 1 cm + 1 cm + 1 cm + 2 cm + 1 cm + 2 cm + 1 cm + 1 cm + 1 cm = 16 cm (d) 3 cm + 3 cm + 5 cm + 5 cm = 16 cm

2. Find the perimeter of rectangular field in which:

(a) Perimeter of rectangular field
$= 2\,[2 + b]$
$= 2\,[12.2 + 10.4]$
$= 2\,[22.6] = 2 \times 22.6 = 45.2$ m

(b) Perimeter of rectangular field
$= 2\,[l + b]$
$= 2\,[2.75 + 0.8]$
$= 2\,[3.55] = 2 \times 3.55.6 = 7.10$ m

3. (a) Perimeter of square = 4 × side
$= 4 \times 4 = 16$ m

(b) Perimeter of square = 4 × side
$= 4 \times 4.20 = 16.80$ m

4. Find the perimeter of triangles having sides:

(a) 3 m, 4 m, 5 cm
a = 3 m, b = 4 m, c = 5 cm
Perimeter of triangle = a + b + c
= 3 m + 4 m + 5 m = 12 m

(b) a = 6 m, b = 8 m, c = 10 cm
Perimeter of triangle = a + b + c
= 6 m + 8 m + 10 m = 24m

5. Perimeter of circumference of circle having radius:

(a) Circumference of circle = 2πr

$$= 2 \times \frac{22}{7} \times 14 = 88 \text{ cm}$$

(b) Circumference of circle = 2πr

$$2 \times \frac{22}{7} \times 3 = 132 \text{ m}$$

(c) Circumference of circle = 2πr

$$= 2 \times \frac{22}{7} \times 4.2 = 26.4 \text{ cm}$$

6. Find the circumference of circle having diameters:

(a) Radius of a circle $= \frac{D}{2}$

$$= \frac{2.1}{2} \text{ m}$$

Circumference of a circle = 2πr

$$= 2 \times \frac{22}{7} \times \frac{2.1}{2}$$

$= 22 \times 0.3 = 6.6$ m

(b) Radius of a circle $= \frac{D}{2}$

$$= \frac{14}{2} 7 \text{ m}$$

Circumference of a circle = 2πr

$$= 2 \times \frac{22}{7} \times 7$$

$= 44$ m

(c) Radius of a circle $= \frac{D}{2}$

$$= \frac{3.5}{2} \text{ m}$$

Circumference of a circle = 2πr

$$= 2 \times \frac{22}{7} \times \frac{3.5}{2} = 11.0 \text{ m}$$

7. Length of fence of a rectangular field = 16.6 m
Breadth of fence of a rectangular field = 10.4
Perimeter of fence of a rectangular field $= 2\,[l + b]$
$= 2\,[16.6 + 10.4]$
$= 2 \times 27.0 = 54$ m

8. Length of a playground = 450 m
Breadth of a playground = 275 m
Perimeter of a playground
$= 2\,[l + b]$
$= 2\,[450 + 275] = 2\,[725] = 1450$ m

Distance traveled by Akash in 4 rounds

$= 4 \times 1450\text{ m} = 5800$

$= 5\text{ km } 800\text{m}$

9. Perimeter of rectangle = 1500 m

Length of rectangle = 125 m

Perimeter of rectangle = $2\,[l + b]$

$= 2\,[125 + b]$

$1500 = 2\,[125 + b]$

$\frac{1500}{2} = [125 + b]$

$750 = 125 = b$

$750 - 125 = b$

$b = 625\text{ m}$

10. Perimeter of playground = 1024 m

Perimeter of square = 4 × side

$1024 = 4 \times \text{side}$

$\text{side} = \frac{1024}{4}$

$\text{side} = 231\text{ m}$

11. Side of a square field = 85 m

Perimeter of a square field = 4 × side

$= 4 \times 85 = 340$

So, the length of wire = 340×5

$= 1700\text{ cm}$

12. Side of a square = 100

Length of a rectangle = 150 m

Perimeter of a square = 4 × side

$= 4 \times 100 = 400\text{ m}$

Perimeter of a rectangle = $2\,[l + b]$

$= [150 + b]$

According to question,

Perimeter of a square = perimeter of a rectangle

$400\text{ m} = 2\,[150 + b]$

$\frac{400}{2} = 150 + b$

$200 - 150 = b$

$b = 50\text{ m}$

So, the breadth of a rectangle

$= 50\text{ m}$

13. The sides of a triangle = 6 m, 8 m, 10m

So, the perimeter of triangle = sum of all sides

$= 6\text{ m} + 8\text{ m} + 10\text{ m} = 24\text{ m}$

14. Two sides of an isosceles triangle = 8 cm

and the third side = 10 m

So, the perimeter of an isosceles triangle = sum of all sides

$= 8\text{ m} + 10\text{ m} + 10\text{ m} = 28\text{ m}$

15. The sides of an equilateral triangle = 8 cm

So, the perimeter of an equilateral triangle = sum of its all sides

$= 8\text{ cm} + 8\text{ cm} + 8\text{ cm} = 24\text{ m}$

16. Perimeter of a triangle = 35 cm

Two sides of triangles are = 10 m, 18 cm

Perimeter of a triangle = $a + b + c$

$35\text{ cm} = 10\text{ m} + 18\text{ m} + c$

$35\text{ cm} = 28\text{ m} + c$

$35\text{ cm} - 28\text{ m} = c$

$c = 7\text{ cm}$

So, the third side of a triangle = 7

17. Let the breadth of rectangle = x

and, the length of rectangle = $x + 5$

and, the perimeter of rectangle

= 50 cm

$50\text{ cm} = 2\,[l + b]$

$50\text{ cm} = 2\,[x + x + 5]$

$50\text{ cm} = 2\,[2x + 5]$

$50\text{ cm} = x + 10$

$50\text{ cm} - 10 = 4x$

$40\text{ cm} = 4x$

$x = \frac{40}{4}$

$x = 10$

So, the breadth of rectangle = 10 cm

and the length of rectangle = 10 + 5 = 15

18. Radius of a ring = 10 cm

Circumference of a ring = $2\pi r$

$= 2 \times \frac{22}{7} \times 10 = \frac{440}{7}$

= 62.8 cm

So, the length of the wire= 62.8 cm

19. Radius of a circle = 126 cm

Circumference of a circle = $2\pi r$

$= 2 \times \frac{22}{7} \times 126$

$= 2 \times 22 \times 18 = 792$ cm

20. Circumference of a circle = 88 m

$2\pi r = 88$ m

$= 2 \times \frac{22}{7} r = 88$ m

$= r \frac{88 \times 7}{2 \times 22}$

$r = 2 \times 7$ $\quad = r = 14$ m

So, the radius of a circle = 14 m

21. Diameter of a circle = 84 m

Radius of a circle = $\frac{\text{Diameter}}{2}$

$= \frac{84}{2}$ 42 m

Circumference of a circle = $2\pi r$

$= 2 \times \frac{22}{7} \times 42 = 264$ m

Exercise 10.2

1. Do yourself

2. (a) Exactly half squares = 4

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

= 2 square unit

(b) Complete square = 6

Exactly half square = 4

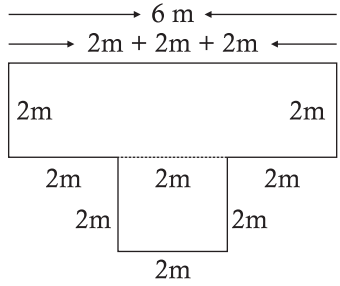
Total area = $6 + \frac{1}{2} \times 4$

6 + 2 = 8 square unit

Exercise 10.3

1. Find the area of following figures:

(a)



area of rectangle = $l \times b$

$= 2\text{ m} \times 6\text{ m} = 12\text{ m}^2$

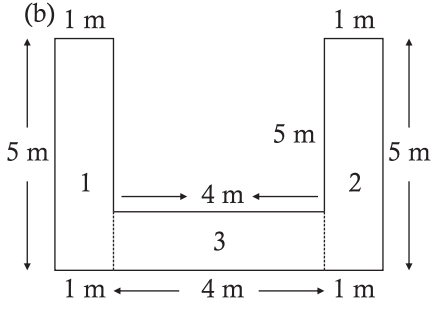
area of square = side × side

$= 2\text{ m} \times 2\text{ m} = 4\text{ m}^2$

Total area of a square

$= 12\text{ m}^2 + 4\text{ m}^2 = 16\text{ m}^2$

(b)



area of fig (1) = $l \times b$

$= 5\text{ m} \times 1\text{ m} = 5\text{ m}^2$

area of fig (2) = $l \times b$

$= 5\text{ m} \times 1\text{ m} = 5\text{ m}^2$

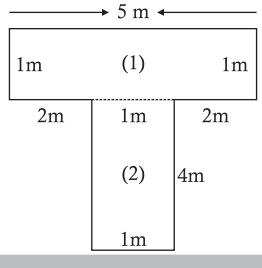
area of fig (3) = $l \times b$

$= 4\text{m} \times 1\text{m} = 4\text{m}^2$

Total area of a given shape

$= 5\text{ m}^2 + 5\text{ m}^2 + 4\text{ m}^2 = 14\text{ m}^2$

(c)



area of fig (1) = $l \times b$

$= (5 \times 1)\ m^2 = 5\ m^2$

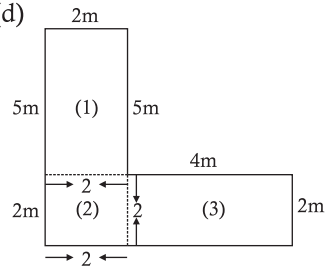
area of fig (2) = $l \times b$

$= 4\ m \times 1\ m = 4\ m = 4m^2$

Total area of a given shape

$= 5\ m^2 + 4\ m^2 = 9\ m^2$

(d)



area of fig (1) = $l \times b$

$= 5\ m \times 2\ m = 10\ m^2$

area of fig (2) = $l \times b$

$= 2\ m \times 2\ m = 4\ m^2$

area of fig (3) = $l \times b$

$= 4\ m \times 2\ m = 8\ m^2$

Total area of a given shape

$= 10\ m^2 + 4\ m^2 + 8\ m^2 = 22\ m^2$

2. Find the area of following rectangle whose:

(a) area of rectangle = $l \times b$

$= 8\ m \times 20\ cm$

$= 160\ m^2 = 16000\ cm^2$

(b) area of rectangle = $l \times b$

$= 5.2\ m \times 18.5\ m$

$= 96.20\ m^2$

3. Find the area of square whose sides are:

(a) area of square

$= (side)^2$

$= (8.2\ cm)^2 = 67.24\ cm^2$

(b) area of square = $(side)^2$

$= (10.1\ m)^2$

$= 102.01\ m^2$

(c) area of square = $(side)^2$

$= (6.25\ m)^2 = 39.0625\ m^2$

4. Area of rectangular field = $300\ m^2$

Length of field = 30 m

Breadth of the rectangle = $\frac{\text{area}}{\text{length}}$

$= \frac{300m^2}{30m} = 10\ m$

5. Area of tile = $15\ cm \times 20\ cm$

$= 300\ cm^2$

area of well = $6\ m \times 12 = 72\ m^2$

Number of tiles = $\frac{\text{area of wall}}{\text{area of tile}}$

$= \frac{300}{72} = 4$

6. Side of a square plot = 125 m

area of the square plot = $(side)^2$

$= (125)^2 = 15625\ m^2$

7. Find the change in area of a square if:

(a) New area will be 4 times

(b) New area of will be 1/4 times

8. Length of a rectangular field = 1.56 m

and the breadth of a rectangular = 0.75 m

area of rectangular field = $l \times b$

$= (1.56 \times 0.75)\ m^2 = 1.17\ m^2$

9. The area of a rectangle field

$= 4500\ m^2$

Length of rectangle = 90 m

breadth of rectangle field = $\frac{\text{area}}{\text{length}}$

$= \frac{4500m^2}{90m} = 50\ m$

10. Perimeter of rectangle = 200 m

Breadth of rectangle = 75 m

Perimeter of rectangle $2\,[l + b]$

$200\ m = [1 + 75]$

$200\ m = 2\,l + 150$

$200 - 150 = 2\,l$

$2\,l = 50 \quad = l = \frac{50}{2} \qquad l = 25\ m$

11. Which piece of cloth has larger area by how much:

(a) area of piece (a) = $l \times b$

$= (10.4 \times 8.25)\ m^2 = 85.8\ m^2$

area of piece (b) = $l \times b$

$= (9.82 \times 7.45)\ m$

$= 73.1590\ m^2$

area of piece (a) – area of piece (b)

$= (85.8 - 73.1590)\ m^2$

$= 12.641\ m^2$

First by $12.641\ m^2$

12. Length of slabs = $l \times b$

$= (48 \times 30)\ cm^2 = 1440\ cm^2$

So, the area of 52 slabs = 52×1440

$= 74880\ cm^2$

13. Length of room = 24 m

breadth of room = 12 m

area of room = $l \times b$

$= 24\ m \times 12\ m = 288\ m^2$

$\therefore$ cost of carpeting its flour at the rate of ₹ 20 per m^2

= 288 m × ₹ 20 m = ₹ 5760

14. Side of square shape courtyard = 50.25 m

Area of courtyard $(\text{side})^2$

$= (50.25 \times 50.25)\ m^2$

$= 2.525.0625\ m^2$

Cost of plastering at the rate of ₹5

= 5 × 2.525.0625 = ₹ 12625.3125

15. Which has larger area and by how much:

Area of square (a) = $(\text{side})^2$

$= (5.25\ m)^2$

$= 27.5625\ m^2$

Area of square (b) = $(525 \times 525)\ m^2$

$= 275625\ m$

Both area are equal

16. (a) Length of rectangle $= \dfrac{\text{Area}}{\text{Breadth}}$

$= \dfrac{144m^2}{9m} = 16\ m$

(b) length of rectangle $= \dfrac{\text{Area}}{\text{Breadth}}$

$= \dfrac{1625m^2}{25m} = 65\ m$

(c) length of rectangle $= \dfrac{\text{Area}}{\text{Breadth}}$

$= \dfrac{900m^2}{18m} = 50\ m$

(d) length of rectangle $= \dfrac{\text{Area}}{\text{Breadth}}$

$= \dfrac{1000m^2}{50m} = 20\ m$

17. Find the breadth of rectangle whose:

(a) Breadth of rectangle $= \dfrac{\text{Area}}{\text{Length}}$

$= \dfrac{1000m^2}{50m} = 200\ m$

(b) Breadth of rectangle $= \dfrac{\text{Area}}{\text{Length}}$

$= \dfrac{40000m^2}{50m} = 800\ m$

(c) Breadth of rectangle $= \dfrac{\text{Area}}{\text{Length}}$

$= \dfrac{30.25m^2}{5.5m} = 5.5\ m$

(d) Breadth of rectangle $= \dfrac{\text{Area}}{\text{Length}}$

$= \dfrac{625m^2}{25m} = 25\ m$

18. Find the area of shaded portion:

Length of rectangle = 30 – 4 = 24m

Breadth of rectangle= 60 – 4 = 56m

Area = $l \times b$

$= 26 \times 56 = 1456\ m^2$

Area of inner portion = 60 × 30

= 1800

Area shaded portion = 1800 – 1456

= 344 m

M.C.Q (Mental Ability)

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

NCERT CORNER

1. Perimeter **2.** Perimeter **3.** 48 m

4. Perimeter **5.** Diameter

True and False:

1. True **2.** True **3.** True **4.** True **5.** False

Chapter - 11

Exercise 11.1

1. **Identify the literal and numerals:**
   Literal = x, p, y, a, b, z, v, s, o, m
   Numerals = 7, 12, 10, 5, 9
2. **Find the sum of the following:**
   (a) $x + y$ (b) $7 + p$
   (c) $a + 7 + y = a + y + 7$
   (d) $5 + 6 + z = z + 11$
   (e) $x + y + z$ (f) $p + q + o$
3. **Find the difference of the following:**
   (a) $x - y$ (b) $7 - p$ (c) $y - o$
   (d) $p - q$ (e) $x + y - 7$ (f) $m - n$
4. **Find the product of the following:**
   (a) $x \times y = xy$ (b) $10 \times p = 10p$
   (c) $6 \times p \times q = 6pq$
   (d) $(x + y)xz + yx$
   (e) $x \times 1 = x$ (f) $x \times o = 0$
5. **Divide the follow:**
   (a) $\frac{x}{y}$ (b) $\frac{10}{z}$ (c) $\frac{m}{20}$
   (d) $\frac{x+y}{z}$ (e) $\frac{80}{(x-y)}$ (f) $\frac{92}{xy}$
6. **Write the following statements by using literal numerals an sign of basic operations:**
   (a) $100 + x$ (b) $y + 10$ (c) $y - 15$
   (d) $18 - x$ (e) $y - x$ (f) $10z$
   (g) $\frac{10a}{x}$ (h) $\frac{x+y}{10}$ (i) $15(a - b)$
   (j) $xy + \frac{x}{y}$
7. Aditi scored marks in maths = k
   And her sister scored marks
   = k + 10
   So, her sister scored k + 10 marks in maths.
8. The cost of a chair = ₹ x
   And cost of a 10 table = ₹ y
   The cost of 10 chairs = ₹ x × 10
   = 10 x
   And the cost of 5 table = ₹ x × 5 = 5
   So, the total cost of 5 tables and 10 chairs = ₹ (10x + 5y)
9. The cost of 1 pencil = ₹ 5
   So, the cost of x pencil = ₹ 5 × x
   = ₹ 5x
10. $10x + y - 5$

Exercise 11.2

1. **Write the following in the exponential form:**
   (a) m^{20} (b) $x^4 y^4$ (c) $4a^3b^2c^2$ (d) $12x^{10}y^{10}$ (e) $96a^5b^8c^8$
2. **Write down the following in product form:**
   (a) $y \times y \times y \times y \times y \times y \times y$
   (b) $x \times x \times x \times x \times x \times x \times x \times x \times x \times x$
   (c) $x \times x \times y \times y \times y \times y \times y$
   (d) $x \times y \times y \times z$
   (e) $2 \times a \times a \times a \times b \times b \times b \times c \times c \times c$
   (f) $3 \times a \times a \times y \times y \times y \times x \times x \times x$
   (g) $9 \times a \times a \times b \times b \times c \times c$
   (h) $16 \times x \times x \times y \times z \times z$
   (i) $17 \times p \times p \times q \times q$
   (j) $15 \times a \times a \times a \times a \times b \times b$
3. **Write down each of the following in exponential form:**
   (a) $2 \times 3 \times x^2 \times y^2$
   $= 6x^2y^2$
   (b) $5 \times 3 \times 2 \times a \times a \times a \times b \times b \times b^2$
   $= 30a \times b = 30a^4b^4$
   (c) $2 \times 3 \times a^5 \times b^2 \times b^3 = 6a^5 \times b^5$
   (d) $8 \times 2 \times a^4 \times a^5 \times b^3 = 16a^9 \times b^3$
   (e) $3 \times 2 \times 4 \times x \times x \times y \times y \times z \times z$
   $= 24x^2y^2z^2$
   (f) $3 \times 2 \times x^3 \times x \times x^2 \times y^2 \times y^2 = 6x^6y^4$
4. Number of rows in a classroom = x

Number of student in a row = xy

So, the total number of student = $x \times xy = x^2y$

5. The cost of 1 pen = ₹ xy

So, the cost of xy^2 pens $= xy^2 \times xy$

$= ₹\ x^2y^3$

Exercise 11.3

1. **Write the variables and constant in each of the following:**

(a) V → x C → 2

(b) C → No constant terms

V → x, y, x

(c) V → x, y, x C = No constant

(d) V → m, n, p

C → Constant terms

(e) V → x C = 8

(f) V = x, y

C = Constant terms

(g) V = x C = 7

(h) V = x, y C = 9

2. **Identify the monomials binomials and trinomials:**

(a) Monomials (b) Binomial

(c)Trinomial (d) Monomials

(e) Binomial (f) Trinomial

(g) Binomial (h) Binomial

(i) Monomials (j) Trinomial

3. **Write the coefficient of x in each of the following:**

(a) 1 (b) 0 (c) 5 (d) y (e) 0 (f) $-2y^2$

(g) 1 (h) $7y^2$ (i) 1

4. **Write the numerals coefficient of each of the following:**

(a) 1 (b) – 1 (c) 7 (d) – 2 (e) 8 (f) – 9

(g) – 24 (h) 1 (i) 100

5. **Write the like terms of the algebraic expression given below:**

(a) $7x^2, -8y^2, 3xy, -7, 9y, 16$

(b) $8x^5, -9y^5, -3x^2y, -6xy, 9x, 3y, 7$

6. **Identify the like terms in the following:**

(a) xy and 2xy (b) $9x^3$ and $-7x^3$

(c) $2x^2y$ and $7y^2x$ (d) x and $-x, \frac{3}{7}x^2$

7. **If x = 2, y = 1, then the value of following:**

(a) $x + y$

Put $x = 2, y = 1$ $2 + 1 = 3$

(b) $x + x$

Put $x = 2$ $= (2)^2 + 2$

$= 4 + 2 = 6$

(c) $x^2 - y^2$

Put $x = 2, y = 1$

$= (2)^2 - (1)^2$ $= 4 - 1 = 3$

(d) $3x + 4y$

Put $x = 2, y = 1$

$= 3 \times 2 + 4 \times 1$

$= 6 + 4 = 10$

(e) $xy^2 - yx^2$

Put $x = 2, y = 1$

$2 \times (1)^2 - 1 \times (2)^2$

$2 - 4 = -2$

8. **If a = 1, b = 2, c = 3 then find the value of following:**

(a) $a + b + c$

Put $a = 1, b = 2, c = 3$

$1 + 2 + 3 = 6$

(b) $a^2 + b^2 + c^2$

Put $a = 1, b = 2, c = 3$

$(1)^2 + (1)^2 + (1)^2$

$1 + 1 + 1 = 3$

(c) $a^2 - abc$

Put $a = 1, b = 2, c = 3$

$(1)^2 - 1 \times 2 \times 3$

$1 - 6 = -5$

(d) $b^2 - bca$

Put $a = 1, b = 2, c = 3$

$= (2)^2 - 2 \times 3 \times 1$

$= 4 - 6 = -2$

(e) $a^2 - b^2 - c^2$

Put $a = 1, b = 2, c = 3$

$(1)^2 - (2)^2 - (3)^2$

$= 1 - 4 - 9 = 1 - 13 = -12$

Exercise 11.4

1. **Write each of the following statements as an equation:**

(a) $x + 2 = 12$ (b) $x - 5 = 20$

(c) $2x \times x5 = 10$ (d) $\frac{x}{4} = 12$

(e) $x + 10 = 20$ (f) $x + 3x = 50$

(g) $4x - 5 = 18$ (h) $x + 50 = 100$

(i) $5x = 60$ (j) $\frac{x}{5} = 80$

2. **Write a statements for each of the following equation:**

(a) Sum of number and 10 is 10

(b) When a numbers is subtracted from 7 gives 18

(c) 8 times of a number is 90

(d) When 12 is subtracted from 5 times a number gives 18

(e) Twice of a number divided by 5 gives 6

(f) When 4 times of a number is subtracted from 50 gives 14

3. **Solve the following equations by using trial and error method:**

(a) $x - 4 = 2$

x	L.H.S	R.H.S	Result
0	$0 - 4 = -4$	2	No
1	$1 - 4 = -3$	2	No
2	$2 - 4 = -2$	2	No
3	$3 - 4 = -1$	2	No
4	$4 - 4 = 0$	2	No
5	$5 - 4 = 1$	2	No
6	$6 - 4 = 2$	2	Yes

On putting $x = 6$ we get

L.H.S = 2

R.H.S = 2

L.H.S = R.H.S

i.e So $x = 6$ is the solution of given equation

(b) $z + 8 = 12$

x	L.H.S	R.H.S	Result
0	$0 + 8 = 8$	12	No
1	$1 + 8 = 9$	12	No
2	$2 + 8 = 10$	12	No
3	$3 + 8 = 11$	12	No
4	$4 + 8 = 12$	12	Yes

On putting $x = 4$

L.H.S = 12

R.H.S = 12

i.e So $x = 12$ is the solution of given equation

(c) $5x = 8$

x	L.H.S	R.H.S	Result
0	$5 \times 0 = 0$	30	No
1	$5 \times 1 = 6$	30	No
2	$5 \times 2 = 10$	30	No
3	$5 \times 3 = 15$	30	No
4	$5 \times 4 = 20$	30	No
5	$5 \times 5 = 25$	30	No
6	$5 \times 6 = 30$	30	Yes

On putting $x = 6$ we get

L.H.S = 30

R.H.S = 30

i.e So $x = 6$ is the solution of given equation

(d) $\frac{x}{2} = 4$

x	L.H.S	R.H.S	Result
0	$\frac{0}{2} = 0$	4	No
1	$\frac{1}{2} = \frac{1}{2}$	4	No
2	$\frac{2}{2} = 1$	4	No
3	$\frac{3}{2} = \frac{3}{2}$	4	No

4	$\frac{4}{2}=2$	4	No
5	$\frac{5}{2}=\frac{5}{2}$	4	No
6	$\frac{6}{2}=3$	4	No
7	$\frac{7}{2}=\frac{7}{2}$	4	No
8	$\frac{8}{2}=4$	4	Yes

On putting x = 8 we get

L.H.S = 4

R.H.S = 4

L.H.S = R.H.S

i.e So x = 8 is the solution of given equation

(e) $2x + 2 = 6$

x	L.H.S	R.H.S	Result
0	2×0+2=2	6	No
1	2×1+2=4	6	No
2	2×2+2=6	6	Yes

On putting x = 2 we get

L.H.S = 6

R.H.S = 6

L.H.S = R.H.S

i.e So, x = 2 is the solution of given equation

(f) $7x - 5 = 30$

x	L.H.S	R.H.S	Result
0	7×0–5=5	30	No
1	7×1–5=2	30	No
2	7×2–5=9	30	No
3	7×3–5=19	30	No
4	7×4–5=23	30	No
5	7×5–5=30	30	Yes

On putting x = 5 we get

L.H.S = 30

R.H.S = 30

i.e So x = 5 is the solution of given equation

(d) $\frac{4x}{3}=4$

x	L.H.S	R.H.S	Result
0	$\frac{4\times1}{3}=\frac{4}{3}$	12	No
1	$\frac{4\times2}{3}=\frac{8}{3}$	12	No
2	$\frac{4\times3}{3}=\frac{12}{3}$	12	No
3	$\frac{4\times4}{3}=\frac{16}{3}$	12	No
4	$\frac{4\times5}{3}=\frac{25}{3}$	12	No
5	$\frac{4\times6}{3}=\frac{24}{3}$	12	No
6	$\frac{4\times7}{3}=\frac{28}{3}$	12	No
7	$\frac{4\times8}{3}=\frac{32}{3}$	12	No
8	$\frac{4\times9}{3}=\frac{36}{3}$	12	No
9	$\frac{4\times9}{3}=\frac{36}{3}$	12	Yes

On putting x = 9 we get

L.H.S = 12

R.H.S = 12

L.H.S = R.H.S

i.e So, x = 9 is the solution of given equation

(h) $y - 3y = -8$

y	L.H.S	R.H.S	Result
0	$0-3\times0=-3$	-8	No
1	$1-3\times1=-1$	-8	No
2	$2-3\times2=-4$	-8	No
3	$3-3\times3=-6$	-8	No
4	$4-3\times4=-8$	-8	Yes

On putting $x = 4$ we get

L.H.S $= -8$

R.H.S $= -8$

L.H.S = R.H.S

i.e So $x = 4$ is the solution of given equation

(i) $10x - 10 = 0$

x	L.H.S	R.H.S	Result
0	$10\times0-10=-10$	0	No
1	$10\times1-10=0$	0	Yes

On putting $x = 1$

L.H.S = R.H.S

i.e So $x = 1$ is the solution of given equation

(j) $4x - 3 = 3x - 3$

x	L.H.S	R.H.S	Result
0	$4\times0-3=-3$	0	No

On putting $x = 0$ we get

L.H.S = 0

R.H.S = 0

i.e So $x = 0$ is the solution of given equation

4. Check whether the given values are the roots of equation or not:

(a) $x + 8 = 3, x = 4$

L.H.S $= x + 8$

Put $x = 4$ $= 4 + 8 = 12$

L.H.S $\neq$ R.H.S

So, it is not a root of equation

(b) $3x + 7 = 5, x = 5$

L.H.S $= 3x + 7$

Put $x = 5$ $= 3\times5 + 7 = 22$

L.H.S $\neq$ R.H.S

So, it is not a root of equation

(c) $5x = 25, x = 5$

L.H.S $= 5x$

Put $x = 5$ $= 5\times5 = 25$

L.H.S = R.H.S

So, it is a root of given equation

(d) $\frac{5}{3}x + 1 = 16, x = 6$

L.H.S $= \frac{5}{3}x + 1$

$= \frac{5}{3}\times6 + 1$

$= 5\times2 + 1$

$= 10 + 1 = 11$

L.H.S = R.H.S

So, it is a root of equation

(e) $8x - 3 = 13, x = 2$

L.H.S $= 8x - 3$

Put $x = 2$ $= 8\times2 - 3$

$= 16 - 3 = 13$

L.H.S = R.H.S

So, it is a root of equation

(f) $9x + 9 = 9, x = 1$

L.H.S $= 9x + 9$

Put $x = 1$ $= 9\times1 + 9$

$= 9 + 9 = 18$

L.H.S = R.H.S

So, it is a root of equation

M.C.Q (Mental Ability)

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

NCERT CORNER:

Fill in the blanks:

1. Monomial **2.** Trinomial **3.** 7 **4.** One **5.** Zero

True and False:

1. False **2.** False **3.** False **4.** True **5.** False

Chapter - 12

Exercise 12.1

1. Find each of the following ratio in simplest form:

(a) 12:84

To convert in to simplest form find H.C.F of 12 and 84

$$12\overline{)84}\,(7 \qquad \text{H.C.f is} = 12$$
$$\underline{84}$$
$$\times$$

Now $12:84 = \frac{12}{84} \div \frac{12}{12} = \frac{1}{7} = 1:7$

Thus $12:84 = 1:7$

(b) 60:18

To convert in to simplest form find H.C.F of 60 : 18

$$\begin{array}{l} 18\overline{)60}\,(3 \\ \quad\underline{54} \\ \quad 6\overline{)18}\,(3 \\ \qquad\underline{18} \\ \qquad\ \times \end{array}$$

H.C.F is = 6

Now $60:18 = \frac{60}{18} \div \frac{6}{6} = \frac{10}{3}$

Thus $60:18 = 10:3$

(c) 45 : 12

To convert in to simplest form find H.C.F of 45:12

$$\begin{array}{l} 12\overline{)45}\,(3 \\ \quad\underline{36} \\ \quad 9\overline{)12}\,(1 \\ \qquad\underline{9} \\ \qquad 3\overline{)9}\,(3 \\ \qquad\ \underline{9} \\ \qquad\ \times \end{array}$$

H.C.F is = 3

Now $45:12 = \frac{45}{12} \div \frac{3}{3} = \frac{15}{4}$

Thus $45:12 = 15:4$

(d) 85:17

To convert in to simplest form find H.C.F of 85:17

$$\begin{array}{l} 17\overline{)85}\,(5 \\ \quad\underline{85} \\ \quad\ \times \end{array}$$

H.C.F is = 5

Now $85:17 = \frac{85}{17} \div \frac{17}{17} = \frac{5}{1}$

Thus $85:17 = 5:1$

(e) 15:13

To convert in to simplest form find H.C.F of 15:13

$$\begin{array}{l} 13\overline{)15}\,(1 \\ \quad\underline{13} \\ \quad\ 2 \end{array}$$

H.C.f is = 1

$$\begin{array}{l} 2\overline{)13}\,(6 \\ \quad\underline{12} \\ \quad 1\overline{)2}\,(2 \\ \qquad\underline{2} \\ \qquad\ \times \end{array}$$

Now $15:13 = \frac{15}{13} \div \frac{1}{1} = \frac{15}{13}$

(f) 30:35

To convert in to simplest form find H.C.F of 30 : 35

$$\begin{array}{l} 30\overline{)35}\,(1 \\ \quad\underline{30} \\ \quad 5\overline{)30}\,(6 \\ \qquad\underline{30} \\ \qquad\ \times \end{array}$$

H.C.f is = 5

Now $30:35 = \frac{30}{35} \div \frac{5}{5} = \frac{6}{7}$

Thus $30:35 = 6:7 = \frac{30}{35}$

(g) 9 : 27

$$\begin{array}{l} 9\overline{)27}\,(3 \\ \quad\underline{27} \\ \quad\ \times \end{array}$$

H.C.F is = 9

Now $9:27 = \frac{9}{27} \div \frac{9}{9} = \frac{1}{3}$

Thus $9:27 = \frac{9}{27} = 1:3$

(h) 16:18

To convert in to simplest form find H.C.F of 16:18

$$\begin{array}{l} 16\overline{)18}\,(1 \\ \quad\underline{16} \\ \quad 2\overline{)16}\,(8 \\ \qquad\underline{16} \\ \qquad\ \times \end{array}$$

H.C.F is = 2

Now $16:18 = \frac{16}{18} \div \frac{2}{2} = \frac{8}{9}$

Thus $16:18 = \frac{16}{18} = 8:9$

2. Express each of the following ratios in simplest lest form:

(a) First we have to convert in to same unit

50 paise to 2 rupees

50 paise to 200 paise

Ratio = 50:200

H.C.F = 50

$$50\overline{)200}(4$$
$$\underline{200}$$
$$\times$$

So, $50:200 = \frac{50}{200} \div \frac{50}{50} = \frac{1}{4} = 1:4$

(b) 2 kg: 250 gm

First we have to convert in to same unit 2 kg to 250 gm

1 kg = 1000 gm

2 kg = 2 × 1000 = 2000 gm

So, 2000 to 250

2000:250

$$250\overline{)2000}(8$$
$$\underline{2000}$$
$$\times$$

So, $\frac{2000}{250} \div \frac{250}{250} = \frac{8}{1}$

2000:250, 8:1 H.C.F = 250

(c) 3 m:400 cm

First we have to convert in to same unit 3m:400cm

1 m = 100 cm

3 m = 3 × 100 cm = 300 cm

So, 300:400

$\frac{300}{400} \div \frac{100}{100} = \frac{3}{4} = 3:4$

$$300\overline{)400}(1$$
$$\underline{300}$$
$$100\overline{)300}(3$$
$$\underline{300}$$
$$\times$$

H.C.F = 100

(d) 4 l: 500 ml

First we have to convert in to same unit 4 l:1000 ml

4 l = 4 × 1000 = 4000 ml

So, 4000 ml: 500 ml

$$500\overline{)4000}(8$$
$$\underline{4000}$$
$$\times$$

$\frac{4000}{500} \div \frac{500}{500} = \frac{8}{1}$

4000:50 = 8:1 H.C.F = 8

(e) Do same as above.

(f) 8 km: 8000m

First we have to convert in to same unit

1 km = 1000 m

8 km = 8 × 1000 = 8000

8000 m: 8000 m

$\frac{8000}{8000} = \frac{1}{1} = 1:1$

(g) 6 kg: 3 kg: 500 g

First we have to convert in to same unit

6 kg to 3 kg 500 gm

1 kg = 1000 gm

6 kg = 6 × 1000 = 6000

3 kg = 3000 gm

3000 gm + 500 gm = 3500

6000 gm to 3500 m

$\frac{6000}{3500} \div \frac{500}{500} = \frac{12}{7}$

= 12:7

$$3500\overline{)6000}(1$$
$$\underline{3500}$$
$$2500\overline{)3500}(1$$
$$\underline{2500}$$
$$\underline{1000}$$

$$1000\overline{)2500}(2$$
$$\underline{2000}$$
$$500\overline{)1000}(1$$
$$\underline{1000}$$
$$\times$$

(h) 800 cm: 10 m

1 m = 100 cm

10 m = 10 × 100 = 1000 cm

So, 800 cm: 1000 cm

$\frac{800}{1000} \div \frac{200}{200} = \frac{4}{5}$

800:200 = 4:5

$$800\overline{)1000}(1$$
$$\underline{800}$$
$$200\overline{)800}(1$$
$$\underline{800}$$
$$\times$$

H.C.F = 200

3. Length of a field = 675 m

Breadth of a field = 250 m

675 m: 250 m

$$250\overline{)675}(1$$
$$\underline{250}$$
$$25\overline{)250}(1$$
$$\underline{250}$$
$$\times$$

$\frac{675}{250} \div \frac{25}{25} = \frac{27}{10}$

So, 675:250, 27:10

H.C.F = 25

4. Let the first angle be = 5x
and the second angle be = 3x
the third angle be = 2x
So, 5x + 3x + 2x = 180
(Sum of all angles of triangles)
10x = 180

$x = \frac{18\cancel{0}}{1\cancel{0}}$ = x = 18

So, the first angle is = 5 × 18 = 90°
The second angle is = 3 × 18 = 54°
The third angle is = 2 × 18 = 36°
So, the ratio of all angles = 90° : 54° : 36°

5. Let the number of boys in a school = 5x
The number of girls in a school = 3x
Given, total number of student in a school = 560
Solution = 5x + 3x = 560
8x = 560

$x = \frac{560}{8}$

$8\overline{)560}(70$
560
×

$x = \frac{560}{8} \div \frac{8}{8} = \frac{70}{1}$

x = 70 H.C.F = 8

So, the number of boys in a school = 5x = 5 × 70 = 350
And the number of girls in a school = 3x = 3 × 70 = 210

6. Total amount = ₹1000
Let the Aditi have ₹ = 4x
The Diksha have ₹ = 3x
The Tanu have ₹ = 3x
So, 4x + 3x + 3x + = 1000
= 10x = 1000

$x = \frac{1000}{10}$ = x = 100

So, the Aditi have 4x = 4 × 100
= 400 ₹
And the Diksha have 3x = 3 × 100
= 300 ₹
The Tanu have = 3x = 3 × 100
= 300 ₹

7. Let the A have = 8x
And the B have = 7x
8x + 7x = ₹ 1500
15x = ₹ 1500

$x = \frac{1500}{15}$ = x = 100

So, the A have 8x = 8 × 100 = 800
And B have 7x = 7 × 100 = 700

8. Let the one number be 5x
And the other number is 4x
According to the question
5x + 4x = 630
9x = 630

$x = \frac{630}{9}$ = x = 70

So, the one number = 5x = 5 × 70
= 350
And the other number = 4x = 4 × 70 = 280
Thus, the two numbers are 350,280

9. Let the one number be 7x
And the other number be 4x
According to the question = 7x – 4x = 600
3x = 600

$x = \frac{60\cancel{0}}{\cancel{3}}$ = x = 200

So, the one number = 7x = 7 × 200
= 1400
And the other number = 4x = 4 × 200 = 800
Thus, the two numbers are 1400,800

10. Fill in the blanks by using >, < or =:

(a) $\frac{2}{3}$ and $\frac{12}{6}$

L.C.M of 3 and 6 = 6

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

and $\frac{12}{6} \times \frac{1}{1} = \frac{12}{6}$

Thus $\frac{4}{6} < \frac{12}{6} \quad = \frac{2}{3} < \frac{12}{6}$

(b) $\frac{1}{4} \square \frac{1}{2}$

Now, we have to compare $\frac{1}{4}$ and $\frac{1}{2}$

L.C.M of 4 and 2 = 4

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

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

Thus, $\frac{1}{4} < \frac{2}{4} \quad = \frac{1}{4} < \frac{1}{2}$

(c) $\frac{3}{5} \square \frac{3}{4}$

Now, we have to compare $\frac{3}{5}$ and $\frac{3}{4}$

L.C.M of 3 and 4 = 12

$\frac{5}{4} \times \frac{4}{4} = \frac{20}{12}$ and $\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$

Thus, $\frac{20}{12} > \frac{9}{12} \quad = \frac{5}{3} > \frac{3}{4}$

(d) $\frac{2}{9} \square \frac{4}{11}$

Now, we have to compare $\frac{2}{9}$ and $\frac{4}{11}$

L.C.M of 9 and 11 = 99

$\frac{2}{9} = \frac{2}{9} \times \frac{11}{11} = \frac{1}{4}$

$\frac{4}{11} = \frac{4}{11} \times \frac{9}{9} = \frac{36}{99}$

Thus, $\frac{22}{99} < \frac{36}{99} \quad = \frac{2}{9} < \frac{4}{11}$

(e) $\frac{16}{18} \square \frac{2}{33}$

Now, we have to compare $\frac{16}{18}$ and $\frac{2}{33}$

L.C.M of 18, 33 = 198

$\frac{16}{18} = \frac{16}{18} \times \frac{11}{11} = \frac{176}{198}$

$\frac{2}{33} = \frac{2}{33} \times \frac{11}{11} = \frac{22}{198}$

3	18, 33
3	6, 11
2	2, 11
11	1, 11
	1, 1

Thus, $\frac{176}{198} > \frac{22}{198} = \frac{16}{18} > \frac{2}{33}$

(f) $\frac{9}{10} \square \frac{10}{9}$

Now, we have to compare $\frac{9}{10}$ and $\frac{10}{9}$

L.C.M of 10 and 9 = 90

$\frac{9}{10} = \frac{9}{10} \times \frac{9}{9} = \frac{81}{90}$

$\frac{10}{9} = \frac{10}{9} \times \frac{10}{10} = \frac{100}{90}$

Thus, $\frac{81}{90} < \frac{100}{90} \quad = \frac{9}{10} < \frac{10}{9}$

(g) $\frac{3}{5} \square \frac{4}{4}$

Now, we have to compare $\frac{3}{5}$ and $\frac{4}{4}$

L.C.M of 5 and 4 = 20

$\frac{3}{5} = \frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$

$\frac{3}{4} = \frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$

Thus, $\frac{12}{20} < \frac{15}{20} \quad = \frac{3}{5} < \frac{3}{4}$

(h) $\frac{1}{10} \square \frac{2}{5}$

Now, we have to compare $\frac{1}{10}$ and $\frac{2}{5}$

L.C.M of 10 and 5 = 50

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

Thus, $\frac{1}{10} < \frac{4}{10} \quad = \frac{1}{10} < \frac{2}{5}$

11. Fill in the blanks:

(a) $\frac{5}{2} \times \frac{2}{2} = \frac{4}{\boxed{10}}$ (b) $\frac{3}{8} \times \frac{4}{4} = \frac{12}{\boxed{32}}$

(c) $\frac{6}{11} \times \frac{3}{3} = \frac{18}{\boxed{33}}$ (d) $\frac{\boxed{2}}{3} \times \frac{6}{6} = \frac{12}{18}$

12. Write equivalent ratios to each of the following:

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

$2:5 = \frac{2 \times 2}{5 \times 2} = \frac{4}{10} = 4:10$

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

So, 4:10 = 6:15

(b) 6:11

$$\frac{6 \times 2}{11 \times 2} = \frac{12}{12} = 12:22$$

$$\frac{6 \times 3}{11 \times 3} = \frac{18}{33} = 18:33$$

So, 6:11, 12:22, 18,33

(c) 3:7

$$\frac{3 \times 2}{7 \times 2} = \frac{6}{7} = 6:7$$

$$\frac{3 \times 3}{7 \times 3} = \frac{9}{21} = 9:21$$

So, 3:7, 6:7, 9:12

(d) 3:4

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

$$\frac{3 \times 3}{4 \times 3} = \frac{9}{21} = 9:12$$

So, 3:4, 6:8, 9:12

(e) 11:33

$$\frac{11 \times 2}{33 \times 2} = \frac{22}{66} = 22:66$$

$$\frac{11 \times 3}{33 \times 3} = \frac{33}{99} = 33:99$$

11:33, 22:66, 33:99

(f) 6:7

$$\frac{6 \times 2}{7 \times 2} = \frac{12}{14} = 12:14$$

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

6:7, 14:14, 18:21

(g) 7:6

$$\frac{7 \times 2}{6 \times 2} = \frac{14}{12} = 14:12$$

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

So, 7:6, 14:12, 21:18

(h) 11:5

$$\frac{11 \times 2}{5 \times 2} = \frac{22}{10} = 22:10$$

$$\frac{11 \times 3}{5 \times 3} = \frac{33}{15} = 33:15$$

So, 11:5, 22:10, 33:15

Exercise 12.2

1. Determine whether the following number are in proportion:

(a) 2, 4, 6, 8

Here 2 : 4 : : 6 : 8

Product of extremes = 2 × 8 = 16

Product of means = 4 × 6 = 24

It is not a proportion

(b) 2, 4, 8, 16

Here 2 : 4 : : 8 : 16

Product of extremes = 2 × 16 =32

Product of means = 4 × 8 = 32

It is a proportion

(c) 5, 6, 18, 20

Here 5 : 6 : : 18 : 20

Product of extremes = 5× 20 = 100

Product of means = 6 × 18 = 108

It is not a proportion

(d) Here 16 : 24 : : 20 : 30

Product of extremes = 16 × 30

= 480

Product of means = 24 × 20 = 480

It is a proportion

(e) Here 12 :18 : : 28 : 12

Product of extremes = 12 × 12

= 144

Product of means = 18 × 28 = 504

It is not a proportion

(f) Here 21 : 6 : : 35 : 10

Product of extremes = 21 × 10

= 210

Product of means = 6 × 35 = 210

It is a proportion

2. True and False:

(a) 5 : 15 : : 3 : 9

5 × 9 = 15 × 3

45 = 45 (True)

(b) 20 : 18 : : 5 : 6

20 × 6 = 18 × 5

120 = 90 (False)

(c) $30 : 40 :: 45 : 60$

$1800 = 40 \times 45$

$1800 = 1800$ (True)

(d) $16 : 36 :: 4 : 9$

$16 \times 9 = 36 \times 4$

$144 = 144$ (True)

(e) $8 : 2 :: 32 : 4$

$8 \times 4 = 2 \times 32$

$32 = 64$ (False)

(f) $15 : 6 :: 25 : 10$

$15 \times 10 = 6 \times 25$

$150 = 150$ (True)

3. Find the value of x:

(a) $4 : 11 :: x : 44$

$4 \times 44 = 11 \times x$

$x = \frac{4 \times \cancel{44}^{4}}{\cancel{11}}$

$x = 4 \times 4$ $= x = 16$

(b) $15 : 8 :: 35 : x$

$15 \times x = 18 \times 35$

$x = \frac{18 \times \cancel{35}^{7}}{\cancel{15}_{3}}$

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

$x = 6 \times 7$ $= x = 42$

(c) $18 : x :: 27 : 3$

$18 \times 3 = x \times 27$

$x = \frac{\cancel{18}^{2} \times \cancel{3}}{\cancel{27}_{9}}$ $x = 2$

(d) $x : 18 :: 6 : 12$

$x \times 12 = 18 \times 6$

$x = \frac{18 \times \cancel{6}}{\cancel{12}_{2}}$ $x = \frac{\cancel{18}^{9}}{\cancel{2}}$ $x = 9$

(e) $x : 6 :: 55 : 11$

$x \times 11 = 6 \times 55$

$x = \frac{6 \times \cancel{55}^{5}}{\cancel{11}}$ $x = 6 \times 5 = 30$

(f) $21 : x :: 35 : 11$

$21 \times 11 = x \times 35$

$x = \frac{\cancel{21}^{3} \times 11}{\cancel{35}_{5}}$ $x = \frac{33}{5}$ $x = 6.5$

4. Shaw that the following numbers are in continued proportion:

(a) 9, 1, 16

Here $9 : 12 :: 12 : 6$

Product of means = Product of extremes

$12 \times 12 = 9 \times 16$

$144 = 144$ So, $y^2 = xz$

$(12)^2 = 144$ Hence proof

(b) 25, 20, 16

$x = 25, y = 20, z = 16$

$y^2 = xz$

$(20)^2 = 25 \times 16$

$400 = 400$ Hence proved

(c) 16, 84, 441

$x = 16, y = 84, z = 411$

$y^2 = xz$

$(84)^2 = 16 \times 441$

$7056 = 7056$ Hence proved

(d) 3, 6, 12

$x = 3, y = 6, z = 12$

$y^2 = xz$

$(6)^2 = 3 \times 12$

$36 = 36$ Hence proved

(e) 4, 10, 25

$x = 4, y = 10, z = 25$

$y^2 = xz$

$(10)^2 = 4 \times 25$

$100 = 100$ Hence proved

(f) 2, 14, 98

$x = 2, y = 14, z = 98$

$y^2 = xz$

$(14)^2 = 2 \times 98$

$196 = 196$ Hence proved

5. Find the x if following numbers

are in continued proportion:

(a) 48, x, 75

$x^2 = 48 \times 75 \quad \therefore y^2 = xz$

$x^2 = 3600$

$x = \sqrt{3600} \quad = x = 60$

(b) 25, 35, x

$(35)^2 = 25 \times x \quad \therefore y^2 = xz$

$1225 = 25 \times x$

$\frac{1225}{25} = x \quad x = 49$

(c) x, 90, 225

$(90)^2 = x \times 225 \quad \therefore y^2 = xz$

$8100 = x \times 225$

$x = \frac{8100}{225} = \frac{1620}{45} = \frac{324}{9} = 36$

$x = 36$

(d) 4, x, 25

$x^2 = 4 \times 25 \quad \therefore y^2 = xz$

$x^2 = 100$

$x = \sqrt{100} \quad x = 10$

(e) 3, 6, x

$(6)^2 = 3 \times x \quad \therefore y^2 = xz$

$36 = 3 \times x$

$x = \frac{36}{3} \quad x = 12$

(f) x, 12, 16

$(12)^2 = 16 \times x \quad \therefore y^2 = xz$

$144 = 16 \times x$

$x = \frac{144}{16} \quad x = 9$

5. Find mean proportional each of the following:

(a) 16, 9

Let x be mean proportional between 16 and 9

Then 16 : x : : x : 9

$(x)^2 = 16 \times 9$

$x^2 = 144$

$(x)^2 = (12)^2$

$x = 12$

Thus, mean proportional between 16 and 9 is 12

(b) 4, 25

Let x be mean proportional between 4 and 25

Then 4 : x : : x : 25

$(x)^2 = 4 \times 25$

$x^2 = 100$

$(x)^2 = 100$

$(x)^2 = (10)^2$

$x = 10$

(c) 8, 32

Let x be mean proportional between 8 and 32

Then 8 : x : : x : 32

$(x)^2 = 8 \times 32$

$x^2 = 256$

$(x)^2 = (16)^2$

$x = 16$

(d) 3, 27

Let x be mean proportional between 3 and 27

Then, 3 : x : : x : 27

$(x)^2 = 3 \times 27$

$x^2 = 81$

$(x)^2 = (9)^2 \quad x = 9$

(e) 10, 40

Let x be mean proportional between 10 and 40

Then, 10 : x : : x : 40

$x^2 = 10 \times 40$

$(x)^2 = 400$

$(x)^2 = (20)^2 \quad x = 20$

(f) 20, 80

Let x be mean proportional between 20 and 80

Then, 20 : x : : x : 80

$(x)^2 = 20 \times 80$

$x^2 = 1600$

$(x)^2 = (40)^2 \quad x = 40$

10. Find x if:

(a) 9, x, 49

$(x)^2 = 9 \times 49$ $\quad \therefore y^2 = xz$

$x^2 = (3 \times 7)^2$ $\quad x = 21$

(b) 36, x, 16

$(x)^2 = 36 \times 16$ $\quad \therefore y^2 = xz$

$(x)^2 = (6 \times 4)^2$ $\quad x = 24$

Exercise-12.3

1. Cost of 1 bag = ₹258

∴ Cost of 175 bags = ₹258 × 175
= ₹45150

2. Cost of 1 chair = ₹235

∴ Cost of 18 bags = ₹235 × 18
= ₹4230

∴ Cost of 1 table = ₹282 × 12
= ₹7984

$$\begin{array}{r} 235 \\ \times 18 \\ \hline 1880 \\ 235\times \\ \hline 4230 \end{array} \qquad \begin{array}{r} 582 \\ \times 12 \\ \hline 2164 \\ 582\times \\ \hline 7984 \end{array}$$

He has to pay amount to the shop keeper = ₹4230 + ₹7984 = ₹12214

3. Total students in the class = 45 students

Total amount collected far a party = ₹15,750

Amount contributed by each = 15,750 ÷ 15 = ₹350

4. Amount earn by man in a year = ₹3,42,000

So, his 1 month salary = ₹3,42,000 ÷ 12 = ₹28,500

5. Distance cover by car in 15 hrs = 1650 km

Distance cover by car in 1 hrs = 1650 ÷ 15 = 110 km

Distance cover by car in 24 hrs = 110 km × 24 = 2640 km

6. The rent of 5 days of room = ₹4000

The rent of 1 day of room = ₹4000 ÷ 5 = ₹800

The rent of month of August = ₹800 × 31 = ₹24,800

7. In 4 litres of petrol distance cover by bike = 300 km

In 1 litre petrol distance cover by bike = 300 ÷ 4 = 45 km

In 132 litre petrol distance cover by bike = 132 × 45 = 5940 km

8. In 13 boxes can be packed books = 117 books

In 1 box can be packed books = 117 ÷ 13 = 9 books

In 264 boxes can be packed books = 264 × 9 = 2376 boxes

9. 25 buses can carry = 1000 passengers

1 bus can carry = 1000 ÷ 25 = 40 passenger

82 buses can carry = 40 × 82 = 3280 passenger

MCQs (Mental Ability)

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

NCERT CORNER

Fill in the blanks:

1. 2.39 **2.** 450 **3.** 14 **4.** ₹250 **5.** greater

True and False

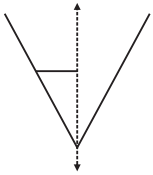
1. False **2.** False **3.** True **4.** False **5.** True

Exercise-13

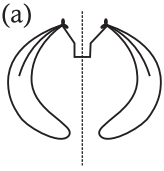
Chapter-13.1

1. Room, Cylinder, Mirror

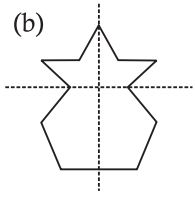
2.



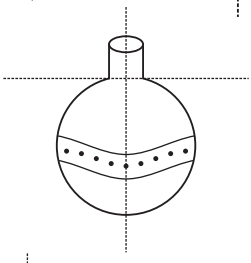
3. (a)



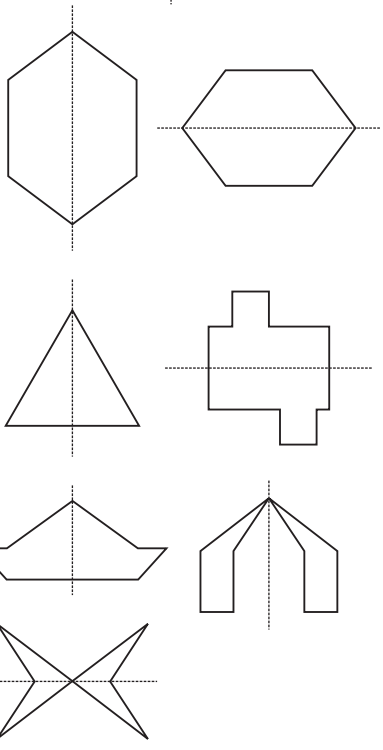
(b)



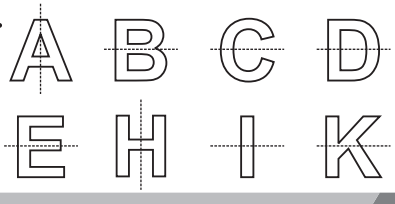
(c)

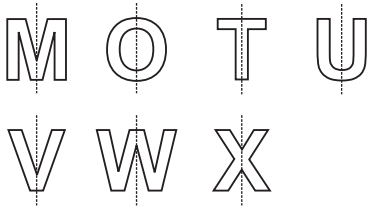


4.



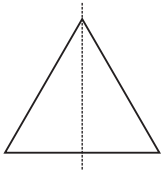
5.



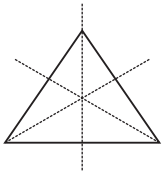


6. F, G, J, L, P, Q, R, S, Z

7. (a) only one line symmetry

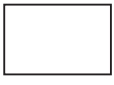
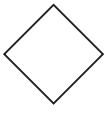
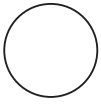
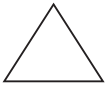


(b) three lines symmetry

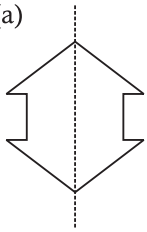


8. F, G, J, L, P

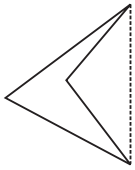
9.

Shape	Figure	No. of lines
Square		2
Rectangle		2
Rhombus		1
Circle		infinte
Equilateral triangle		3

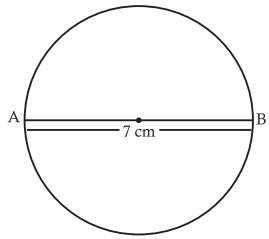
10. (a)



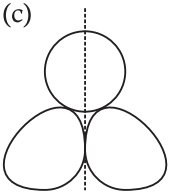
(b)



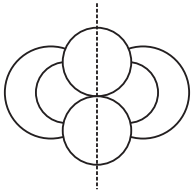
(c)



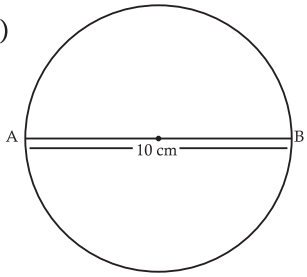
(c)



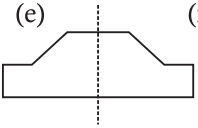
(d)



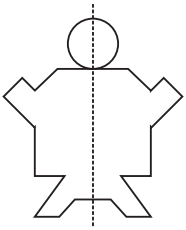
(d)



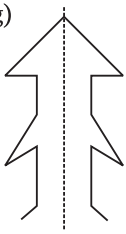
(e)



(f)



(g)



MCQs (Mental Ability)

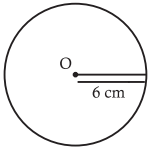
1. (c) **2.** (a) **3.** (c) **4.** (c) **5.** (a) **6.** (a) **7.** (b)

Chapter-14

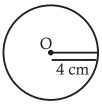
Exercise-14.1

1. Draw a circle of

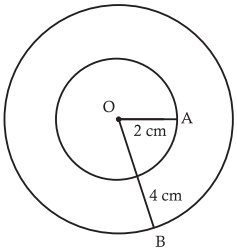
(a)



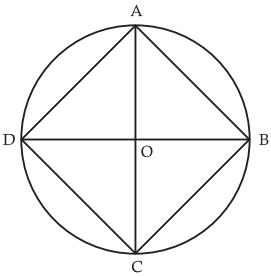
(b)



2.

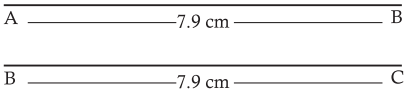


Yes, ABCD is a square

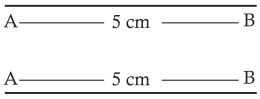


Exercise-14.2

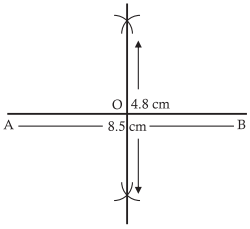
1.

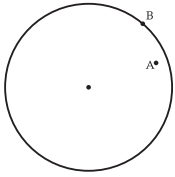


2.



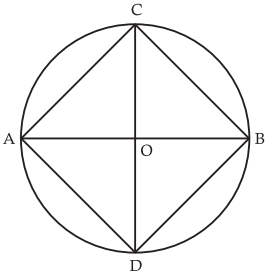
3.





(a) OA (b) OB (c) OC

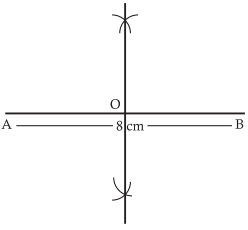
4.



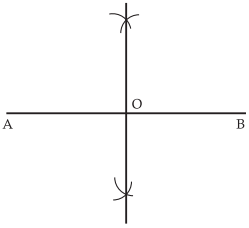
Yes, ABCD is a square.

Exercise-14.3

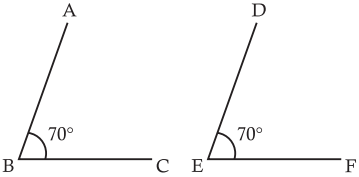
1.



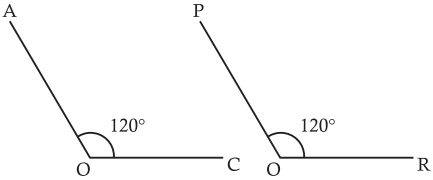
2.



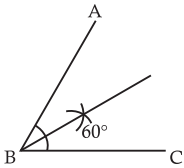
3.



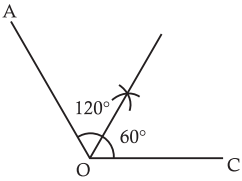
4.



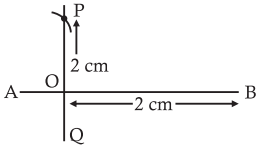
5.



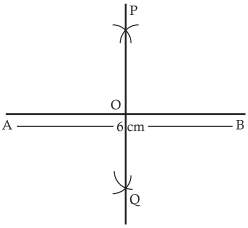
6.



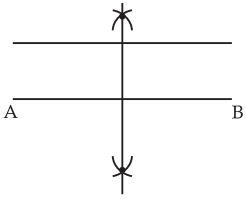
7.



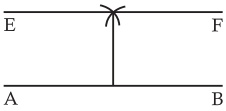
8.



9.



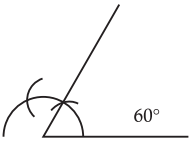
10.



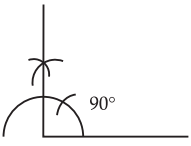
Exercise-14.4

1. Draw the following angles by using compass:

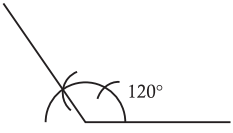
(a)



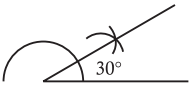
(b)



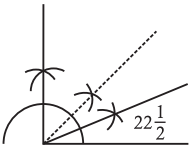
(c)



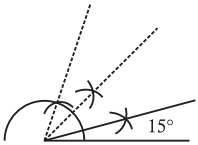
(d)



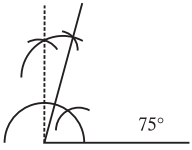
(e)



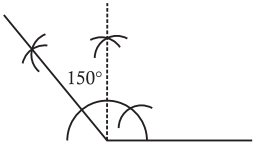
(f)



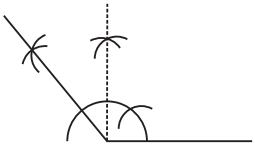
(g)



(h)



(i)



(j)