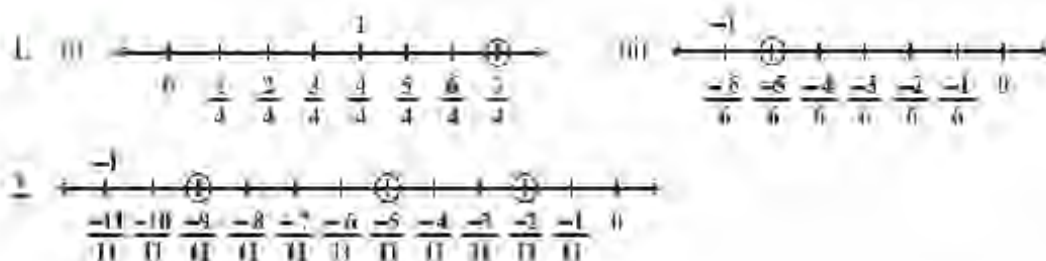


Answers

Exercise 1.1

- (i) 2 (ii) $\frac{-11}{28}$
- (i) $\frac{-2}{8}$ (ii) $\frac{5}{9}$ (iii) $\frac{-6}{5}$ (iv) $\frac{2}{9}$ (v) $\frac{19}{6}$
- (i) $\frac{-1}{13}$ (ii) $\frac{-19}{13}$ (iii) 5 (iv) $\frac{56}{15}$ (v) $\frac{5}{2}$ (vi) -1
- (i) 1 is the multiplicative identity (ii) Commutativity
(iii) Multiplicative inverse
- $\frac{-96}{91}$ 7. Associativity 8. No, because the product is not 1.
- Yes, because $0.3 \times 3\frac{1}{3} = \frac{3}{10} \times \frac{10}{3} = 1$
- (i) 0 (ii) 1 and (-1) (iii) 0
- (i) No (ii) 1, -1 (iii) $\frac{-1}{5}$ (iv) x (v) Rational number
(iv) positive

Exercise 1.2



- Some of these $1, \frac{1}{2}, 0, -1, \frac{-1}{2}$
- $\frac{-7}{20}, \frac{-6}{20}, \frac{-5}{20}, \frac{-4}{20}, \frac{-3}{20}, \frac{-2}{20}, \frac{-1}{20}, 0, \dots, \frac{1}{20}, \frac{2}{20}$ (There can be many more such rational numbers)
- (i) $\frac{41}{60}, \frac{42}{60}, \frac{43}{60}, \frac{44}{60}, \frac{45}{60}$ (ii) $\frac{-8}{6}, \frac{-7}{6}, 0, \frac{1}{6}, \frac{2}{6}$ (iii) $\frac{9}{32}, \frac{10}{32}, \frac{11}{32}, \frac{12}{32}, \frac{13}{32}$
(There can be many more such rational numbers)

6. $-\frac{3}{2}, -1, -\frac{1}{2}, 0, \frac{1}{2}$ (There can be many more such rational numbers)
7. $\frac{97}{160}, \frac{98}{160}, \frac{99}{160}, \frac{100}{160}, \frac{101}{160}, \frac{102}{160}, \frac{103}{160}, \frac{104}{160}, \frac{105}{160}, \frac{106}{160}$

MISCELLANEOUS EXERCISE 1:

1. (i) $\frac{-29}{30}; \frac{-29}{30}$ Yes (ii) $\frac{21}{30}; \frac{-29}{30}$ No
2. Zero 3. $\frac{31}{39}$ 4. $\frac{3}{19}$
5. 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9; 0.11, 0.12 etc.
6. $\frac{-9}{35}, \frac{-8}{35}, \frac{-7}{35}, \frac{-6}{35}, \frac{-5}{35}, \frac{1}{35}, \frac{2}{35}$ etc.
7. Ascending order is $\frac{-5}{6}; \frac{-2}{3}; \frac{-3}{7}; 0; \frac{3}{7}; \frac{7}{11}$
8. (i) Infinite (ii) Five (iii) Less

Exercise 2.1

1. $x = 9$ 2. $y = 7$ 3. $z = 4$ 4. $x = 2$ 5. $x = 2$ 6. $t = 50$
7. $x = 27$ 8. $y = 2.4$ 9. $x = \frac{25}{7}$ 10. $y = \frac{3}{2}$ 11. $p = -\frac{4}{3}$
12. $x = -\frac{8}{5}$

Exercise 2.2

1. $\frac{3}{4}$ 2. length = 52 m, breadth = 25 m 3. $1\frac{2}{5}$ cm 4. 40 and 55
5. 45, 27 6. 16, 17, 18 7. 288, 296 and 304 8. 7, 8, 9
9. Sahil's age: 20 years; Anwar's age: 28 years 10. 48 students
11. Basit's age: 17 years; Basit's father's age: 46 years;
Basit's grandfather's age = 72 years 12. 5 years 13. $-\frac{1}{2}$
14. Rs 100 \rightarrow 2000 notes; Rs 50 \rightarrow 3000 notes; Rs 10 \rightarrow 5000 notes
15. Number of Re 1 coins = 80; Number of Rs 2 coins = 60; Number of Rs 5 coins = 20
16. 19

Exercise 2.3

1. $x = 18$ 2. $t = -1$ 3. $x = -2$ 4. $z = \frac{3}{2}$ 5. $x = 5$ 6. $x = 0$
 7. $x = 40$ 8. $x = 10$ 9. $y = \frac{7}{3}$ 10. $m = \frac{4}{5}$

Exercise 2.4

1. 4 2. 7, 35 3. 36 4. 26 (or 62)
 5. Sahil's age: 5 years; Sahil's mother's age: 30 years
 6. Length = 275 m; breadth = 100 m 7. 200 m 8. 72
 9. Grand daughter's age: 6 years; Grandfather's age: 60 years
 10. Suhail's age: 60 years; Suhail's son's age: 20 years

Exercise 2.5

1. $x = \frac{27}{10}$ 2. $n = 36$ 3. $x = -5$ 4. $x = 8$ 5. $t = 2$
 6. $m = \frac{7}{5}$ 7. $t = -2$ 8. $y = \frac{2}{3}$ 9. $z = 2$ 10. $f = 0.6$

Exercise 2.6

1. $x = \frac{3}{2}$ 2. $x = \frac{35}{33}$ 3. $z = 12$ 4. $y = -8$ 5. $y = -\frac{4}{5}$
 6. Aatif's age = 20 years; Asif's age = 28 years 7. $\frac{13}{21}$

MISCELLANEOUS EXERCISE 2:

1. (i) Zero (ii) One
 2. (i) An algebraic expression involves variables and constants and terms are formed by product of factors.
 (ii) An equation involving only linear polynomials in one variable.
 (iii) A value of a variable, which when substituted for the variable in the equation makes the two sides equal.
 3. (i) Infinite solutions (ii) No solution
 4. 65 5. Zero
 6. (i) $\frac{-6}{7}$ (ii) No solution because $x = 0$ do not satisfy the given equation.
 7. -7, 0 and 7 8. 11 years and 22 years 9. 2, 4 and 9
 10. 54; 81 and 108 11. 4 guests and 3 chairs 12. 5 and 7

Exercise 3.1

1. (a) 1, 2, 5, 6, 7 (b) 1, 2, 5, 6, 7 (c) 1, 2, 4
 (d) 2 (e) 1, 4

2. (a) 2 (b) 9 (c) 0 3. 360° ; yes.
 4. (a) 900° (b) 1080° (c) 1440° (d) $(n-2)180^\circ$
 5. A polygon with equal sides and equal angles.
 (i) Equilateral triangle (ii) Square (iii) Regular hexagon
 6. (a) 60° (b) 140° (c) 140° (d) 108°
 7. (a) $x + y + z = 360^\circ$ (b) $x + y + z + w = 360^\circ$

Exercise 3.2

1. (a) $360^\circ - 250^\circ = 110^\circ$ (b) $360^\circ - 310^\circ = 50^\circ$
 2. (i) $\frac{360^\circ}{9} = 40^\circ$ (ii) $\frac{360^\circ}{15} = 24^\circ$
 3. $\frac{360}{24} = 15$ (sides) 4. Number of sides = 24
 5. (i) No; (Since 22 is not a divisor of 360)
 (ii) No; (because each exterior angle is $180^\circ - 22^\circ = 158^\circ$, which is not a divisor of 360°).
 6. (a) The equilateral triangle being a regular polygon of 3 sides has the least measure of an interior angle = 60° .
 (b) By (a), we can see that the greatest exterior angle is 120° .

Exercise 3.3

1. (i) BC (Opposite sides are equal) (ii) $\angle DAB$ (Opposite angles are equal)
 (iii) OA (Diagonals bisect each other)
 (iv) 180° (Interior opposite angles, since $\overline{AB} \parallel \overline{DC}$)
 2. (i) $x = 80^\circ$; $y = 100^\circ$; $z = 80^\circ$ (ii) $x = 130^\circ$; $y = 130^\circ$; $z = 130^\circ$
 (iii) $x = 90^\circ$; $y = 60^\circ$; $z = 60^\circ$ (iv) $x = 100^\circ$; $y = 80^\circ$; $z = 80^\circ$
 (v) $y = 112^\circ$; $x = 28^\circ$; $z = 28^\circ$
 3. (i) Can be, but need not be.
 (ii) No; (in a parallelogram, opposite sides are equal; but here, $AD \neq BC$).
 (iii) No; (in a parallelogram, opposite angles are equal; but here, $\angle A \neq \angle C$).
 4. A kite, for example 5. 108° ; 72° ; 6. Each is a right angle.
 7. $x = 110^\circ$; $y = 40^\circ$; $z = 30^\circ$
 8. (i) $x = 6$; $y = 9$ (ii) $x = 3$; $y = 13$; 9. $x = 50^\circ$
 10. $\overline{NM} \parallel \overline{KL}$ (sum of interior opposite angles is 180°). So, KLMN is a trapezium.
 11. 60°
 12. $\angle P = 50^\circ$; $\angle S = 90^\circ$

Exercise 3.4

1. (b), (c), (f), (g), (h) are true; others are false.
2. (a) Rhombus; square. (b) Square; rectangle
3. (i) A square is 4 – sided; so it is a quadrilateral.
(ii) A square has its opposite sides parallel; so it is a parallelogram.
(iii) A square is a parallelogram with all the 4 sides equal; so it is a rhombus.
(iv) A square is a parallelogram with each angle a right angle; so it is a rectangle.
4. (i) Parallelogram; rhombus; square; rectangle.
(ii) Rhombus; square (iii) Square; rectangle
5. Both of its diagonals lie in its interior.
6. $\overline{AD} \parallel \overline{BC}$; $\overline{AB} \parallel \overline{DC}$. So, in parallelogram ABCD, the mid-point of diagonal \overline{AC} is O.

MISCELLANEOUS EXERCISE 3:

1. (i) A figure bounded by four sides such that no two sides intersect each other except at their end points.
(ii) A polygon whose all sides and angles are equal.
(iii) A figure bounded by three line segments (sides).
(iv) A polygon of 6 sides
(v) A polygon of 5 sides.
2. (i) 1620° (ii) $(n - 2) \times 180^\circ$
3. (i) 360° (ii) 150° and 30°
4. 20 sides 5. 90° 6. 30° , 90° , 110° and 130°
7. (i) Sides, angles (ii) 540° (iii) 360°
(iv) 60° (v) 120° (vi) Bisect
(vii) Perpendicular (viii) quadrilateral, rectangle, rhombus, trapezium

MISCELLANEOUS EXERCISE 4:

4. No; No
6. (i) Necessary, Almost sufficient (When 3 \angle s are given we cannot draw a Δ uniquely)
(ii) Necessary; not sufficient
(iii) 15°
(iv) Rough sketch
(v) 45° , 45° , 90° and 30° , 60° and 90°

Exercise 5.1

1. (b), (d). In all these cases data can be divided into class intervals.

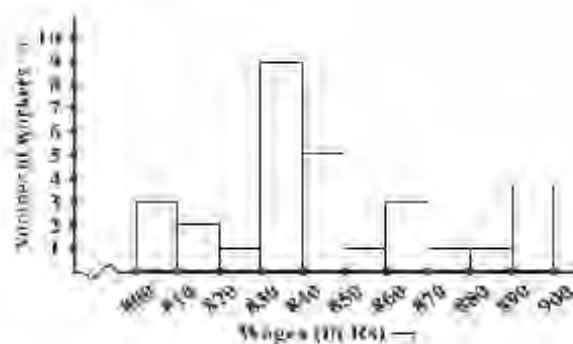
2.

Shopper	Tally marks	Number
W		25
V		15
H		5
T		10

3.

Interval	Tally marks	Frequency
800 - 810		3
810 - 820		2
820 - 830		1
830 - 840		5
840 - 850		4
850 - 860		1
860 - 870		3
870 - 880		1
880 - 890		1
890 - 900		4
	Total	30

4. (i) 830 - 840 (ii) 10
(iii) 20
5. (i) 4 - 5 hours (ii) 34
(iii) 14

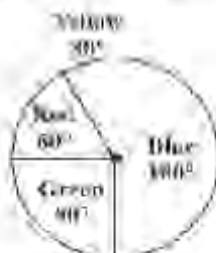


EXERCISE 5.2

1. (i) 200 (ii) Light music
(iii) Classical - 100, Semi classical - 200, Light - 400, Folk - 300

2. (i) Winter (ii) Winter - 150° , Rainy - 120° , Summer - 90° (iii)

3.



4. (i) Hindi (ii) 30 marks (iii) Yes

5.

**Exercise 5.1**

1. (a) Outcomes \rightarrow A, B, C, D
(b) HT, HH, TH, TT (Here HT means Head on first coin and Tail on the second coin and so on).
2. Outcomes of an event of getting
(i) (a) 2, 3, 5 (b) 1, 4, 6
(ii) (a) 6 (b) 1, 2, 3, 4, 5
3. (a) $\frac{1}{5}$ (b) $\frac{1}{13}$ (c) $\frac{4}{7}$
4. (i) $\frac{1}{10}$ (ii) $\frac{1}{2}$ (iii) $\frac{2}{5}$ (iv) $\frac{9}{10}$
5. Probability of getting a green sector = $\frac{3}{5}$; probability of getting a non-blue sector = $\frac{4}{5}$
6. Probability of getting a prime number = $\frac{1}{2}$; probability of getting a number which is not prime = $\frac{1}{2}$

Probability of getting a number greater than 5 = $\frac{1}{6}$

Probability of getting a number not greater than 5 = $\frac{5}{6}$

MISCELLANEOUS EXERCISE 5:

1. (i) Pictograph (ii) Bargraph (iii) frequency (iv) Size (v) Event
2. (i) Data in an unorganised form.
 (ii) Histogram is a bargraph where C.I. are along horizontal line and height of bars show the frequency of the C.I. Also there is no gap between bars (in continuous series).
 (iii) A circle graph shows the relationship between whole and its part.
 (iv)
$$\frac{\text{Number of outcomes that make an Event}}{\text{Total number of outcomes of the experiment}} = \frac{n(E)}{n(S)}$$

 (v) Whose outcome cannot be predicted exactly in advance.
5. $S = \{11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 31, 32, 33, 34, 35, 36, 41, 42, 43, 44, 45, 46, 51, 52, 53, 54, 55, 56, 61, 62, 63, 64, 65, 66\}$; 36
6. (i), (ii) are not equally likely.
 (iii), (iv) and (v) are equally likely.
7. $S = \{H1, H2, H3, H4, H5, H6, TH, TT\}$
 (i) $\frac{1}{8}$ (ii) $\frac{1}{8}$
8. (i) $\frac{5}{9}$ (ii) $\frac{4}{9}$

Exercise 6.1

1. (i) 1 (ii) 4 (iii) 1 (iv) 9 (v) 6 (vi) 9
 (vii) 4 (viii) 0 (ix) 6 (x) 5
2. These numbers end with
 (i) 7 (ii) 3 (iii) 8 (iv) 2 (v) 0 (vi) 2
 (vii) 0 (viii) 0
3. (i), (iii) 4. 10000200001, 100000020000001
5. 1020304030201, 101010101² 6. 20, 6, 42, 43
7. (i) 25 (ii) 100 (iii) 144
8. (i) $1 + 3 + 5 + 7 + 9 + 11 + 13$
 (ii) $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21$
9. (i) 24 (ii) 50 (iii) 198

EXERCISE 6.2

1. (i) 1024 (ii) 1225 (iii) 7396 (iv) 8649 (v) 5041 (vi) 2116
2. (i) 6,8,10 (ii) 14,48,50 (iii) 16,63,65 (iv) 18,80,82

EXERCISE 6.3

1. (i) 1, 9 (ii) 4, 6 (iii) 1, 9 (iv) 5
2. (i), (ii), (iii) 3. 10, 13
4. (i) 27 (ii) 20 (iii) 42 (iv) 64 (v) 88 (vi) 98
(vii) 77 (viii) 96 (ix) 23 (x) 90
5. (i) 7; 42 (ii) 5; 30 (iii) 7, 84 (iv) 3; 78 (v) 2; 54 (vi) 3; 48
6. (i) 7; 6 (ii) 13; 15 (iii) 11; 6 (vi) 5; 23 (v) 7; 20 (vi) 5; 18
7. 49 8. 45 rows; 45 plants in each row 9. 900 10. 3600

EXERCISE 6.4

1. (i) 48 (ii) 67 (iii) 59 (iv) 23 (v) 57 (vi) 37
(vii) 76 (viii) 89 (ix) 24 (x) 32 (xi) 56 (xii) 30
2. (i) 1 (ii) 2 (iii) 2 (iv) 3 (v) 3
3. (i) 1.6 (ii) 2.7 (iii) 7.2 (iv) 6.5 (v) 5.6
4. (i) 2; 20 (ii) 53; 44 (iii) 1; 57 (iv) 41; 28 (v) 31; 63
5. (i) 4; 23 (ii) 14; 42 (iii) 4; 16 (iv) 24; 43 (v) 149; 81
6. 21 m 7. (a) 10 cm (b) 12 cm
8. 24 plants 9. 16 children

MISCELLANEOUS EXERCISE 6

1. (i) $8^2 - 3^2$ (ii) $13^2 - 4^2$ (iii) $6^2 - 2^2$ (iv) $9^2 - 5^2$
2. (i) $6^2 - 1^2$; $18^2 - 17^2$ (ii) $7^2 - 2^2$; $9^2 - 6^2$ (iii) $9^2 - 4^2$ and $33^2 - 32^2$
3. (i) $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 = 9 \times 9 = 9^2$
(ii) $1 + 3 + 5 + 9 + 11 + 13 + 15 + 17 + 19 + 21 = 11 \times 11 = 11^2$
4. $11 = (1 + 3 + 5 + 7 + 9) + 11 - (1 + 3 + 5 + 7 + 9) = 6^2 - 5^2$
 $13 = (1 + 3 + 5 + 7 + 9) + 13 - (1 + 3 + 5 + 7 + 9 + 11) = 7^2 - 6^2$
 $17 = 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 - (1 + 3 + 5 + 7 + 9 + 11 + 13 + 15) = 9^2 - 8^2$
 $19 = 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 - (1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17) = 10^2 - 9^2$
5. (i) $24^2 = 2^2 (2 \times 2 \times 4) 4^2 = 576$
(ii) $25^2 = 2^2 (2 \times 2 \times 5) 5^2 = 625$ {Carry on should be added to next terms}
(iii) $26^2 = 2^2 (2 \times 2 \times 6) 6^2 = 676$
6. (i) $\sqrt{729} = \sqrt{3 \times 3 \times 3 \times 3 \times 3 \times 3} = 3 \times 3 \times 3 = 27$
(ii) 21 (iii) 17 (iv) 23
7. (i) 391 (ii) 221 (iii) 323 (iv) 0.09 (v) 0.018
8. 3 ; 273
9. 123 and square root = 101
10. 123
11. 1024 and 9801
12. 31

EXERCISE 7.1

1. (ii) and (iv)
2. (i) 3 (ii) 2 (iii) 3 (iv) 5 (v) 10
3. (i) 3 (ii) 2 (iii) 5 (iv) 3 (v) 11
4. 20 cuboids

EXERCISE 7.2

1. (i) 4 (ii) 8 (iii) 22 (iv) 30 (v) 25 (vi) 24
(vii) 48 (viii) 36 (ix) 56
2. (i) False (ii) True (iii) False (iv) False (v) False (vi) False
(vii) True
3. 11, 17, 23, 32

Miscellaneous Exercise 7:

1. $4^3 + 32^3$ and $18^3 + 30^3$ 2. $27 = 3^3$ 3. 450 4. 10648
5. (i) 9 (ii) 8 (iii) 22 (iv) 43 (v) 57
6. (i) Not a perfect cube (ii) Perfect cube of 11
(iii) Not a perfect cube (iv) Perfect cube of 21
(v) Perfect cube of 27
7. (i) True (ii) False (iii) True (iv) True (v) False
8. Yes; $(-1)^3 = -1$ and $(-1) = 1 \neq -1$

EXERCISE 8.1

1. (a) 1 : 2 (b) 1 : 2000 (c) 1 : 10
2. (a) 75% (b) $66\frac{2}{3}\%$ 3. 28% students 4. 25 matches 5. Rs 2400
6. 10%, cricket \rightarrow 30 lakh; football \rightarrow 15 lakh; other games \rightarrow 5 lakh

EXERCISE 8.2

1. Rs 1,40,000 2. 80% 3. Rs 34.80 4. Rs 18,342.50
5. Gain of 2% 6. Rs 2,835 7. Loss of Rs 1,269.84
8. Rs 14,560 9. Rs 2,000 10. Rs 5,000

EXERCISE 8.3

- Amount = Rs 15,377.34; Compound interest = Rs 4,577.34
 - Amount = Rs 22,869; Interest = Rs 4869 (c) Amount = Rs 70,304, Interest = Rs 7,804
 - Amount = Rs 8,736.20, Interest = Rs 736.20
 - Amount = Rs 10,816, Interest = Rs 816
- Rs 36,659.70
- Sabina pays Rs 362.50 more
- Rs 43.20
- (i) Rs 63,600 (ii) Rs 67,416
- (i) Rs 92,400 (ii) Rs 92,610
- (i) Rs 8,820 (ii) Rs 441
- Amount = Rs 11,576.25, Interest = Rs 1,576.25 Yes.
- Rs 4,913
- (i) About 48,980 (ii) 59,535
- 5, 31,616 (approx)
- Rs 38,640

Miscellaneous Exercise 8:

- 0 or 100
- $16\frac{2}{3}\%$
- 150
- Baharat = Rs. 7 Saima = Re. 1
- Loss Rs. 20
- 129235
- 61%
- Compound interest = Rs. 331; Simple interest = Rs. 300; Difference = Rs. 31
- Rs. 1000
- Total pages = 120; Sadaf = 30; Iqra = 48; Biama = 40; unread = 2.

EXERCISE 9.1**1.**

	Term	Coefficient
(i)	$5xy^2$ $-3z^3$	5 -3
(ii)	1 2 xy^2	1 2 1
(iii)	$10x^2y^3$ $-4x^2y^3z^2$ z	10 -4 1

(iv)	1 xy xy^2 xy^3	1 1 1 1
(v)	3 1 1 1 1 $-3V$	1 1 1 1 1 -1
(vi)	$0.3a$ $0.6ab$ $0.5b$	0.3 0.6 0.5

- Monomials:** 1000, pqr

Binomials: $x + y$, $2y - 3y^2$, $4z - 15z^2$, $p^2q + pq^2$, $2p + 2q$

Trinomials: $7 + y + 5x$, $2y - 3y^2 + 4y^3$, $5x - 4y + 3xy$

Polynomials that do not fit in these categories: $x + x^2 + x^3 + x^4$, $ab + bc + cd + da$

3. (i) 0 (ii) $ab + bc + ac$ (iii) $-p^2q^2 + 4pq + 9$
 (iv) $2(l^2 + m^2 + n^2 + lm + mn + nl)$
 4. (a) $8a - 2ab + 2b - 15$ (b) $2xy - 7yz + 5zx + 10xyz$
 (c) $p^2q - 7pq^2 + 8pq - 18q + 5p + 28$

EXERCISE 9.2

1. (i) $28p$ (ii) $-28p^2$ (iii) $-28p^2q$ (iv) $-12p^4$ (v) 0
 2. $pq; 50mn; 100x^2y^2; 12x^3; 12mn^2p$
 3.

First monomial \rightarrow Second monomial \downarrow	$2x$	$-5y$	$3x^2$	$-4xy$	$7x^2y$	$-6x^2y^2$
$2x$	$4x^2$	$-10xy$	$6x^3$	$-8x^2y$	$14x^3y$	$-18x^3y^2$
$-5y$	$-10xy$	$25y^2$	$-15x^2y$	$20xy^2$	$-35x^2y^2$	$45x^2y^3$
$3x^2$	$6x^3$	$-15x^2y$	$9x^4$	$-12x^3y$	$21x^4y$	$-27x^4y^2$
$-4xy$	$-8x^2y$	$20xy^2$	$-12x^3y$	$16x^2y^2$	$-28x^3y^2$	$36x^3y^3$
$7x^2y$	$14x^3y$	$-35x^2y^2$	$21x^4y$	$-28x^3y^2$	$49x^4y^2$	$-63x^4y^3$
$-6x^2y^2$	$-18x^3y^2$	$45x^2y^3$	$-37x^4y^2$	$36x^3y^3$	$-63x^4y^3$	$81x^4y^4$

4. (i) $105a^7$ (ii) $64pqr$ (iii) $4x^4y^4$ (iv) $6abc$
 5. (i) $x^2y^2z^2$ (ii) $-a^6$ (iii) $1024y^6$
 (iv) $36a^2b^2c^2$ (v) $-m^2n^2p$

EXERCISE 9.3

1. (i) $4pq + 4pr$ (ii) $a^2b - ab^2$ (iii) $7a^2b^2 + 7a^2b^3$
 (iv) $4a^3 - 36a$ (v) 0
 2. (i) $ab + ac + ad$ (ii) $5x^2y + 5xy^2 - 25xy$
 (iii) $6p^3 - 7p^2 + 5p$ (iv) $4p^4q^2 - 4p^2q^4$
 (v) $a^2bc + ab^2c + abc^2$
 3. (i) $8a^{50}$ (ii) $-\frac{3}{5}x^3y^3$ (iii) $-4p^4q^4$ (iv) x^{10}
 4. (a) $12x^2 - 15x + 3$; (i) 66 (ii) $-\frac{3}{2}$
 (b) $a^3 + a^2 + a + 5$; (i) 5 (ii) 8 (iii) 4

5. (a) $p^2 + q^2 + r^2 - pq - qr - pr$ (b) $-2x^2 - 2y^2 - 4xy + 2yz + 2zx$
 (c) $5l^2 + 25ln$ (d) $-3a^2 - 2b^2 + 4c^2 - ab + 6bc - 7ac$

Exercise 9.4

1. (i) $8x^2 + 14x - 15$ (ii) $3y^2 - 28y + 32$ (iii) $6.25l^2 - 0.25m^2$
 (iv) $ax + 5a + 3bx + 15b$ (v) $6p^2q^2 + 5pq^3 - 6q^4$ (vi) $3a^4 + 10a^2b^2 - 8b^4$
 2. (i) $15 - x - 2x^2$ (ii) $7x^2 + 48xy - 7y^2$ (iii) $a^3 + a^2b^2 + ab + b^3$
 (iv) $2p^3 + p^2q - 2pq^2 - q^3$
 3. (i) $x^3 + 5x^2 - 5x$ (ii) $a^2b^3 + 3a^2 + 5b^3 + 20$ (iii) $t^3 - st + s^2t^2 - s^3$
 (iv) $4ac$ (v) $3x^2 + 4xy - y^2$ (vi) $x^3 + y^3$
 (vii) $2.25x^2 - 16y^2$ (viii) $a^2 + b^2 - c^2 + 2ab$

Exercise 9.5

1. (i) $x^2 + 6x + 9$ (ii) $4y^2 + 20y + 25$ (iii) $4a^2 - 28a + 49$
 (iv) $9a^2 - 3a + \frac{1}{4}$ (v) $1.21m^2 - 0.16$ (vi) $b^4 - a^4$
 (vii) $36x^2 - 49$ (viii) $a^2 - 2ac + c^2$ (ix) $\frac{x^2}{4} + \frac{3xy}{4} + \frac{9y^2}{16}$
 (x) $49a^2 - 126ab + 81b^2$
 2. (i) $x^2 + 10x + 21$ (ii) $16x^2 + 24x + 5$ (iii) $16x^2 - 24x + 5$
 (iv) $16x^2 + 16x - 5$ (v) $4x^2 + 16xy + 15y^2$ (vi) $4a^4 + 28a^2 + 45$
 (vii) $x^2y^2z^2 - 6xyz + 8$
 3. (i) $b^2 - 14b + 49$ (ii) $x^2y^2 + 6xyz + 9z^2$ (iii) $36x^4 - 60x^2y + 25y^2$
 (iv) $\frac{4}{9}m^2 + 2mn + \frac{9}{4}n^2$ (v) $0.16p^2 + 0.04pq + 0.25q^2$ (vi) $4x^2y^2 + 20xy^2 + 25y^2$
 4. (i) $a^4 - 2a^2b^2 + b^4$ (ii) $40x$ (iii) $98m^2 + 128n^2$
 (iv) $41m^2 + 80mn + 41n^2$ (v) $4p^2 - 4q^2$ (vi) $a^2b^2 + b^2c^2$
 (vii) $m^4 + n^4m^2$
 6. (i) 5041 (ii) 9801 (iii) 10404
 (iv) 996004 (v) 27.04 (vi) 89991
 (vii) 6396 (viii) 79.21 (ix) 9.975
 7. (i) 200 (ii) 0.08 (iii) 1800
 (iv) 84
 8. (i) 10712 (ii) 26.52 (iii) 10094
 (iv) 95.06

Miscellaneous Exercise 9:

1. $8x^3 - 27y^3$
2. Zero
3. 13
5. (i) $(x + 2)(x + 3)$
- (ii) $\left(\frac{2x}{3} + \frac{y}{4}\right)\left(\frac{2x}{3} - \frac{y}{4}\right)$
- (iii) $(x - K)(x + 3K)$
6. (i) 2464
- (ii) 11021
- (iii) 99.75
- (iv) 98.01
7. $x^2y + 4xy - y^2$
8. $3x - 4y + 3$
9. $2z^2y + 2xy^2$
10. One
11. An equation for only certain values of the variable.
An identity is true for almost all the values of the variable.
12. All (i) to (iv) True

Exercise 10.1

1. (a)
2. Rs 17,875
3. Area = 129.5 m^2 ; Perimeter = 48 m
4. 45000 tiles
5. (b)

Exercise 10.2

1. 0.88 m^2
2. 7 cm
3. 660 m^2
4. 252 m^2
5. 45 cm^2
6. 24 cm^2 , 6 cm
7. Rs 810
8. 140 m
9. 119 m^2
10. Area using Arifa's way = $2 \times \frac{1}{2} \times \frac{15}{2} \times (30 + 15) \text{ m}^2 = 337.5 \text{ m}^2$
Area using Samina's way = $\frac{1}{2} \times 15 \times 15 + 15 \times 15 = 337.5 \text{ m}^2$
11. 80 cm^2 , 96 cm^2 , 80 cm^2 , 96 cm^2

Exercise 10.3

1. (a)
2. 144 m
3. 10 cm
4. 11 m^2
5. 5 cans
6. Similarity \rightarrow Both have same heights. Difference \rightarrow one is a cylinder, the other is a cube.
The cube has larger lateral surface area
7. 440 m^2
8. 322 cm
9. 1980 m^2
10. 704 cm^2

Exercise 10.4

1. (a) Volume
- (b) Surface area
- (c) Volume
2. Volume of cylinder B is greater; Surface area of cylinder B is greater.
3. 5 cm
4. 450
5. 1 m
6. 49500 L
7. (i) 4 times
- (ii) 8 times
8. 30 hours

Miscellaneous Exercise 10:

1. (i) Perimeter is the length of distance around the plane figure.
 (ii) Area is the region covered by the plane figure.
 (iii) Surface area of a solid figure is the sum of areas of its faces.
 (iv) Amount of region (space) occupied by a solid is called its volume.
2. (i) $2(l + b)$ (ii) $2(l + b)h$ (iii) Base \times corresponding altitude
 (iv) $\frac{1}{2}\pi r^2$ (v) $\frac{(\text{Sum of } \parallel \text{ sides}) \times \text{height}}{2}$ (vi) $\frac{d_1 \cdot d_2}{2}$
3. (i) $2\pi r^2(h + r)$ (ii) $6l^2$ and $2(lb + bh + hl)$ (iii) 8
 (iv) $\pi r^2 h$ (v) $l \times b \times h$ (vi) 1000 litres
4. 375 m^2 ; 47.14 m^2
5. 28.11 cm^2 6. 4 cm 7. 6 cm 8. 5760 cm^2
9. 54 cm^2 10. 9; Surface area = 216 cm^2 Volume = 261 cm^3
11. 38.4 cm^2 12. 9 13. 60 cm^3 ; 864 cm^3
14. 1: 1 and 1: 2

Exercise 11.1

1. (i) $\frac{1}{9}$ (ii) $\frac{1}{16}$ (iii) 32
2. (i) $\frac{1}{(-4)^3}$ (ii) $\frac{1}{2^6}$ (iii) $(5)^4$ (iv) $\frac{1}{(3)^2}$ (v) $\frac{1}{(-14)^3}$
3. (i) 5 (ii) $\frac{1}{2}$ (iii) 29 (iv) 1 (v) $\frac{81}{16}$
4. (i) 250 (ii) $\frac{1}{60}$ 5. $m = 2$ 6. (i) -1 (ii) $\frac{512}{125}$
7. (i) $\frac{625t^4}{2}$ (ii) 5^5

Exercise 11.2

1. (i) 8.5×10^{-12} (ii) 9.42×10^{-12} (iii) 6.02×10^{15}
 (iv) 8.37×10^{-9} (v) 3.186×10^{10}
2. (i) 0.00000302 (ii) 45000 (iii) 0.00000003
 (iv) 1000100000 (v) 5800000000000 (vi) 3614920
3. (i) 1×10^{-6} (ii) 1.6×10^{-19} (iii) 5×10^{-7}
 (iv) 1.275×10^{-5} (v) 7×10^{-2}
4. 1.0008×10^2

Miscellaneous Exercise 11:

1. (i) $2 \times 10^2 + 3 \times 10 + 2 \times 10^{-1} + 1 \times 10^{-2}$ (ii) $1 \times 10^3 + 2 \times 10^0 + 1 \times 10^{-2} + 2 \times 10^{-3}$
 2. $m = 2$ 3. $\frac{-145}{108}$ 4. (i) 7×10^{-7} (ii) 4.235678×10^3
 5. Ratio = 15: 1; Diameter of first sphere is 150 times greater than diameter of second sphere.
 6. 2206.312×10^{24} 7. 97.86×10^7 8. $\frac{6}{10}$
 9. (i) a^{-m-n} (ii) a^{-mn} (iii) 2 (iv) 95 (v) 4.23×10^{-3}
 10. (i) Zero (ii) 1 (iii) 12 (iv) $\frac{29}{18}$ (v) 22

Exercise 12.1

1. No 2.

Parts of red pigment	1	4	7	12	20
Parts of base	8	32	56	96	160

3. 24 parts 4. 700 bottles 5. 10^{-4} cm; 2 cm 6. 21 m
 7. (i) 2.25×10^7 crystals (ii) 5.4×10^6 crystals 8. 4 cm
 9. (i) 6 m (ii) 8 m 75 cm 10. 168 km

Exercise 12.2

1. (i), (iv), (v)
 2. $4 \rightarrow 25,000$; $5 \rightarrow 20,000$; $8 \rightarrow 12,500$; $10 \rightarrow 10,000$; $20 \rightarrow 5,000$
 Amount given to a winner is inversely proportional to the number of winners.
 3. $8 \rightarrow 45^\circ$ $10 \rightarrow 36^\circ$ $12 \rightarrow 30^\circ$ (i) Yes (ii) 24° (iii) 9
 4. 6 5. 4 6. 3 days 7. 15 boxes
 8. 49 machines 9. $1\frac{1}{2}$ hours
 10. (i) 6 days (ii) 6 persons 11. 40 minutes

Miscellaneous Exercise 12:

1. (i) Direct proportion (ii) Inverse proportion (iii) None
 2.

x	60	55	40	35	20	10	5	0.1
y	600	550	400	350	200	100	500	0.1

3.

x	231	210	110	77	66	55	33	
y	10	11	21	30	35	42	70	

4.							
Time in minutes	30	60	90	120			
Distance in metres	400	800	1200	1600			
5.							
x	8	12	16	20	24	; No	
y	6	12	18	24	30		
6.							
Number of pipes	6	5	4	3	2	1	
Time taken in hours	30	36	45	60	90	180	
7.							
Number of labours	24	18	16	10	; Inversely proportional		
Time taken in hours	60	80	90	144			

Exercise 13.1

- (i) 12 (ii) $2y$ (iii) $14pq$ (iv) 1 (v) $6ab$ (vi) $4x$
 (vii) 10 (viii) x^2y^2
- (i) $7(x-6)$ (ii) $6(p-2q)$ (iii) $7a(a+2)$ (iv) $4z(-4+5z^2)$
 (v) $10lm(2l+3a)$ (vi) $5xy(x-3y)$ (vii) $5(2a^2-3b^2+4c^2)$
 (viii) $4a(-a+b-c)$ (ix) $xyz(x+y+z)$ (x) $xy(ax+by+cz)$
- (i) $(x+8)(x+y)$ (ii) $(3x+1)(5y-2)$ (iii) $(a+b)(x-y)$
 (iv) $(5p+3)(3q+5)$ (v) $(z-7)(1-xy)$

Exercise 13.2

- (i) $(a+4)^2$ (ii) $(p-5)^2$ (iii) $(5m+3)^2$ (iv) $(7y+6z)^2$
 (v) $4(x-1)^2$ (vi) $(11b-4c)^2$ (vii) $(l-m)^2$ (viii) $(a^2+b^2)^2$
- (i) $(2p-3q)(2p+3q)$ (ii) $7(3a-4b)(3a+4b)$ (iii) $(7x-6)(7x+6)$
 (iv) $16x^3(x-3)(x+3)$ (v) $4lm$ (vi) $(3xy-4)(3xy+4)$
 (vii) $(x-y-z)(x-y+z)$ (viii) $(5a-2b+7c)(5a+2b-7c)$
- (i) $x(ax+b)$ (ii) $7(p^2+3q^2)$ (iii) $2x(x^2+y^2+z^2)$
 (iv) $(m^2+n^2)(a+b)$ (v) $(l+1)(m+1)$ (vi) $(y+9)(y+z)$
 (vii) $(5y+2z)(y-4)$ (viii) $(2a+1)(5b+2)$ (ix) $(3x-2)(2y-3)$
- (i) $(a-b)(a+b)(a^2+b^2)$ (ii) $(p-3)(p+3)(p^2+9)$
 (iii) $(x-y-z)(x+y+z)[x^2+(y+z)^2]$ (iv) $z(2x-z)(2x^2-2xz+z^2)$
 (v) $(a-b)^2(a+b)^2$
- (i) $(p+2)(p+4)$ (ii) $(q-3)(q-7)$ (iii) $(p+8)(p-2)$

Exercise 13.3

1. (i) $\frac{x^3}{2}$ (ii) $-4y$ (iii) $6pqr$ (iv) $\frac{2}{3}x^2y$ (v) $-2a^2b^4$
2. (i) $\frac{1}{3}(5x-6)$ (ii) $3y^4 - 4y^2 + 5$ (iii) $2(x+y+z)$
- (iv) $\frac{1}{2}(x^2 + 2x + 3)$ (v) $q^3 - p^3$
3. (i) $2x - 5$ (ii) 5 (iii) $6y$ (iv) xy
- (v) $10abc$
4. (i) $5(3x + 5)$ (ii) $2y(x + 5)$ (iii) $\frac{1}{2}r(p + q)$ (iv)
- $4(y^2 + 5y + 3)$
- (v) $(x + 2)(x + 3)$
5. (i) $y + 2$ (ii) $m - 16$ (iii) $5(p - 4)$ (iv)
- $2z(z - 2)$ (v) $\frac{5}{2}q(p - q)$
- (vi) $3(3x - 4y)$ (vii) $3y(5y - 7)$

Exercise 13.4

1. $4(x - 5) = 4x - 20$ 2. $x(3x + 2) = 3x^2 + 2x$ 3. $2x + 3y = 2x + 3y$
4. $x + 2x + 3x = 6x$ 5. $5y + 2y + y - 7y = y$ 6. $3x + 2x = 5x$
7. $(2x)^2 + 4(2x) + 7 = 4x^2 + 8x + 7$ 8. $(2x)^2 + 5x = 4x^2 + 5x$
9. $(3x + 2)^2 = 9x^2 + 12x + 4$
10. (a) $(-3)^2 + 5(-3) + 4 = 9 - 15 + 4 = -2$ (b) $(-3)^2 - 5(-3) + 4 = 9 + 15 + 4 = 28$
- (c) $(-3)^2 + 5(-3) = 9 - 15 = -6$
11. $(y - 3)^2 = y^2 - 6y + 9$ 12. $(z + 5)^2 = z^2 + 10z + 25$
13. $(2a + 3b)(a - b) = 2a^2 + ab - 3b^2$ 14. $(a + 4)(a + 2) = a^2 + 6a + 8$
15. $(a - 4)(a - 2) = a^2 - 6a + 8$ 16. $\frac{3x^2}{3x^2} = 1$
17. $\frac{3x^2 + 1}{3x^2} = \frac{3x^2}{3x^2} + \frac{1}{3x^2} = 1 + \frac{1}{3x^2}$ 18. $\frac{3x}{3x + 2} = \frac{3x}{3x + 2}$
19. $\frac{3}{4x + 3} = \frac{3}{4x + 3}$ 20. $\frac{4x + 5}{4x} = \frac{4x}{4x} + \frac{5}{4x} = 1 + \frac{5}{4x}$
21. $\frac{7x + 5}{5} = \frac{7x}{5} + \frac{5}{5} = \frac{7x}{5} + 1$

Miscellaneous Exercise 13:

- | | |
|--------------------------------------|---|
| 1. (i) $xyz(xy + xz + yz)$ | (ii) $7xy(x - 3y + 4)$ |
| 2. (i) $z(3x - 1)(3y + 2)$ | (ii) $(z + 3)(2xy + 3)$ |
| 3. (i) $(x - 4)^2$ | (ii) $(2x - 2y - 3)(2x + 2y - 3)$ |
| (iii) $(5a - 2b - 4c)(5a - 2b + 4c)$ | |
| 4. (i) $(3x - 1)(4y - 3z)$ | (ii) $(a^2 - b^2 - c^2)(a^2 - b^2 - c^2)$ |
| (iii) $x(3y - 4z)(3y + 4z)$ | |
| 5. (i) $(x + 2)(x + 3)$ | (ii) $(x - 2)(x - 3)$ |
| 6. (i) $(x^2 + x + 1)(x^2 - x + 1)$ | (ii) $(x^2 - 2x + 2)(x^2 + 2x + 2)$ |
| (iii) $(x + 2)^2(x - 2)^2$ | |
| 7. (i) $7x^2z$ | (ii) $-4y^2 - \frac{13}{3}xy + \frac{8}{3}x^2$ |
| 8. $13xy(y - 8)$ | (ii) $3(x + 3)$ |
| 9. (i) $x^2 + 4x - 21$ | (ii) $x^2 + (a + b)x + ab$ |
| (iii) $xy(3x + y)$ | (iv) 2 |
| (v) $x + y$ | (vi) Dividend = Divisor \times Quotient + Remainder |

Exercise 14.1

- 36.5° C
 - 12 noon
 - 1 p.m, 2 p.m.
 - 36.5° C; The point between 1 p.m. and 2 p.m. on the x -axis is equidistant from the two points showing 1 p.m. and 2 p.m., so it will represent 1.30 p.m. Similarly, the point on the y -axis, between 36° C and 37° C will represent 36.5° C.
 - 9 a.m. to 10 a.m., 10 a.m. to 11 a.m., 2 p.m. to 3 p.m.
- (i) Rs 4 crore
 - (ii) Rs 8 crore
 - (i) Rs 7 crore
 - (ii) Rs 8.5 crore (approx.)
 - Rs 4 crore
 - 2005
- (i) 7 cm
 - (ii) 9 cm
 - (i) 7 cm
 - (ii) 10 cm
 - 2 cm
 - 3 cm
 - Second week
 - First week
 - At the end of the 2nd week
- Tue, Fri, Sun
 - 35° C
 - 15° C
 - Thurs
- 4 units = 1 hour
 - $3\frac{1}{2}$ hours
 - 22 km
 - Yes; This is indicated by the horizontal part of the graph (10 a.m. - 10.30 a.m.)
 - Between 8 a.m. and 9 a.m.
- is not possible

EXERCISE 14.2

- Points in (a) and (b) lie on a line; Points in (c) do not lie on a line.
- The line will cut x -axis at (5, 0) and y -axis at (0, 5)
- O(0, 0), A(2, 0), B(2, 3), C(0, 3), P(4, 3), Q(6, 1), R(6, 5), S(4, 7), K(10, 5), L(7, 7), M(10, 8)
- (i) True (ii) False (iii) True

EXERCISE 14.3

- (b) (i) 20 km (ii) 7.30 a.m. (c) (i) Yes (ii) Rs 200 (iii) Rs 3500
- (a) Yes (b) No

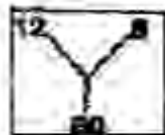
MATHEMATICA

Mathematica has been incorporated in the textbook to check the aptitude of the students in mathematics. Besides, it has been incorporated primarily to prepare the students for NTSE/NMMS.

- What is the H.C.F of any two consecutive numbers
a. 0 b. 1 c. 2 d. 3
- The product of H.C.F and L.C.M. of two numbers equals their
a. Addition b. Subtraction c. Product d. Division
- The value of $4x + x + 2x^2 + x - 1$, if $x = -1$ is
a. -5 b. -9 c. -11 d. 13
- The distance between two intersecting lines is
a. Equal b. One half c. Zero d. infinite
- Pick out the positive rational number from amongst the following
a. $\frac{-2}{3}$ b. $\frac{2}{-3}$ c. $\frac{-2}{-3}$ d. $\frac{-3}{2}$
- A cyclist covers a distance of 35km in 5 hours. What is his average speed?
a. 5 km/hr b. 7 km/hr c. 90 km/hr d. 175 km/hr
- Which among the following numbers are perfect squares 11, 12, 16, 32, 36
a. 11, 16 b. 16, 36 c. 12, 32 d. 16, 32
- The value of $8^{1/3}$ is
a. 2 b. 4 c. 8 d. 16
- The missing number is $5^2 + ______^2 + 30^2 = 31^2$
a. 6 b. 8 c. 10 d. 12
- The common factor of $-3x^2y^3$ and xyz
a. xy b. xyz c. x^2y^2 d. x^2y^3z
- The base of a parallelogram is 6cm and the corresponding altitude is 4cm. Find its area

- a. $\frac{3}{2} \text{ cm}^2$ b. 36 cm^2 c. 84 cm^2 d. 24 cm^2
12. The cube of 0.08 is
a. 0.02 b. 0.04 c. 0.000512 d. 0.0008
13. What should be taken away from $3x^2 - 4y^2 + 5xy + 20$ to obtain $-x^2 - y^2 + 6xy + 20$
a. $3x^2 - 3y^2 + 2xy$ b. $2x^2 + 4y^2 - 3xy$ c. $x^2 - y^2 + 3xy$
d. $4x^2 + 3y^2 - xy$
14. The value of $16^{-\frac{3}{4}}$
a. $\frac{1}{8}$ b. $\frac{1}{36}$ c. $\frac{1}{64}$ d. $\frac{1}{6}$
15. If 4 cows produce 4 cans of milk in 4 days how many days it takes 8 cows to produce 8 cans of milk?
a. 16 b. 2 c. 4 d. 8
16. The product of 8754896 and 48932
a. 428394571071 b. 328394571072 c. 428394571083
d. 428394571074
17. Ten men can finish a job in 8 days. How many men are needed to finish the work in half a day
a. 80 b. 100 c. 120 d. 160
18. A class of 100 students were admitted. 90% of them appeared in the final exam and passed. $\frac{1}{5}$ passes in first division and $\frac{1}{5}$ passed in second division. How many passed in 3rd Division.
a. 36 b. 54 c. 60 d. 20
19. What follows next in the series 11, 121, 1331, _____?
a. 1441 b. 14411 c. 14441 d. 14641
20. The degree of the polynomial 6
a. 0 b. 1 c. 2 d. 3
21. Find the wrong number in the series 445, 221, 109, 46, 25, 11, 4
a. 221 b. 46 c. 11 d. 109
22. Find the wrong number in the following series 105, 85, 60, 30, 0, -45, -90
a. 85 b. -45 c. 105 d. 0
23. Find the missing number in the series 11.2.6.26.?
a. 90 b. 120 c. 84 d. 64
24. Fill in the next number in the series 81, 64, 49, 36, 25, _____
a. 16 b. 20 c. 35 d. 18
25. Which number will complete the following number series 2, 4, 8, 16, 32, ?
a. 48 b. 56 c. 64 d. 72

26. Fill in?



a. 425
27. Fill in?

b. 241

c. 210

d. 184

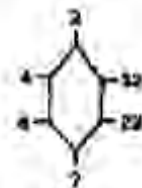
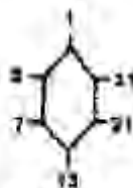


a. 40
28. Fill in?

b. 25

c. 29

d. 35



a. 16
29. Fill in?

b. 12

c. 41

d. 14

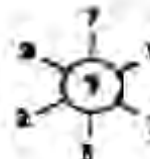
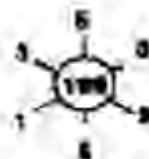


a. 639
30. Fill in?

b. 542

c. 529

d. 641



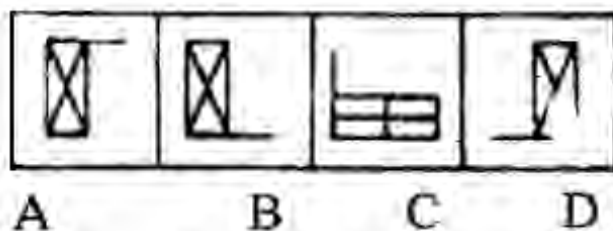
a. 80

b. 441

c. 653

d. 714

31.



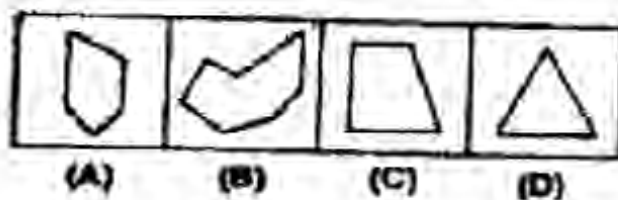
a. A

b. B

c. C

d. D

32.



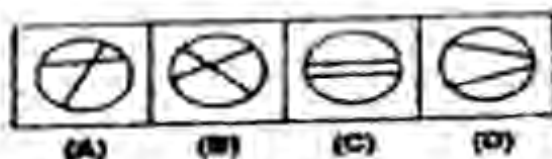
a. A

b. B

c. C

d. D

33.



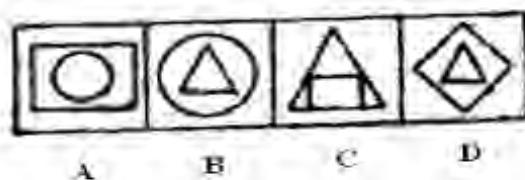
a. A

b. B

c. C

d. D

34.



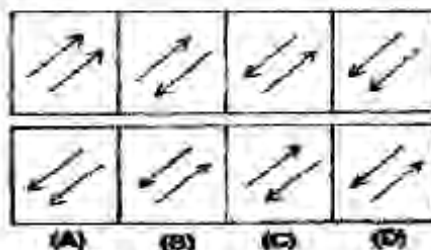
a. A

b. B

c. C

d. D

35.



a. A

b. B

c. C

d. D

36.



- a. A b. B c. C d. D
37. How many rectangles are there in the given figure?



- a. 7 b. 6 c. 8 d. 9
38. Insert the missing number in the trend

72 24 6
96 16 12
108 ? 18

- a. 12 b. 16 c. 18 d. 20
39. Ali ranks 16th from top in a class of 49 students. What is his rank from the bottom
- a. 33rd b. 24th c. 36th d. 35th

40. Which number does not belong?

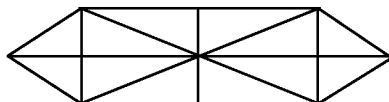
4	32	144
15	28	122
18	64	188
322	18	204

- a. 15 b. 64 c. 204 d. 36
41. How Many 4's are there in the series which are preceded by 8 and followed by 0;
84048048048084080804804840804
- a. 1 b. 2 c. 3 d. 4
42. How many 7's are there which has a 7 preceded by it and 7 following by it
77877787777776777977877778
- a. 2 b. 4 c. 6 d. 8
43. 3. How many even numbers are 7 immediately placed by 6 as well as immediately followed by 3
6656839436736432864682663
- a. 1 b. 2 c. 3 d. 4
44. A chain consists of 11 rings. To separate each how many rings will you have to cut?
- a. 5 b. 6 c. 7 d. 9
45. If 5.4 2025, 6.5 3036 then the value of 3.4 is
- a. 129 b. 4249 c. 3639 d. 4942

46. If $5.4 = 2025$, $6.5 = 3036$ of 2.1 is
 a. 42 b. 12 c. 21 d. 24
47. If L denotes \div , M denotes \times , P denotes $+$ and Q denotes $-$, then which of the following response is true
 a. $32P8L16Q4 = 3/2$ b. $6M18Q26L13P7 = 173/13$
 c. $11M34L17Q8L3 = 38/3$ d. $9P9L9Q9M9 = 71$
48. If \times means addition, $-$ means division, \div means subtraction and $+$ means division, then which of the following is correct?
 a. $16 + 5 - 10 \times 4 \div 3 = 9$ b. $16 - 5 \div 10 \times 4 + 3 = 12$
 c. $16 + 5 \div 10 \times 4 - 3 = 9$ d. $16 \times 5 \div 10 + 4 - 3 = 19$
49. If \div means $+$, $-$ means \div , \times means $-$ and $+$ means \times , then $\frac{(36 \times 4) - 8 \times 4}{4 + 8 \times 2 + 16 \div 1} = ?$
 a. 0 b. 8 c. 12 d. 16
50. If $+$ means \div , $-$ means \times , \div means $+$ and \times means $-$, then $36 \times 12 + 4 \div 6 + 2 - 3 = ?$
 a. 42 b. 18 c. 2 d. 45
51. If \times means \div , $-$ means \times , \div means $+$ and $+$ means $-$, then
 a. -8 b. 4 c. 2 d. -1
52. If A = 1, B = 2, E = 5 and OFTEN = 60, then ALWAYS is
 a. 91 b. 81 c. 72 d. 71
53. If A = 1, B = 2, C = 3 and so on, COVER = 63, then BASIS = ?
 a. 50 b. 49 c. 54 d. 55
54. If in a certain language A, is codes 1, b is codes as 2 and so on, how is BIDDIC coded in that code?
 a. 294493 b. 284563 c. 375582 d. 294492
55. If PAINT is coded as 74128 and EXCEL is coded as 93596, then how would you encode ACCEPT?
 a. 455978 b. 547978 c. 554978 d. 735961
56. Which number will complete the following series 2, 3, 6, 18, 108, ?
 a. 1568 b. 1006 c. 513 d. 1944
57. 45, 563, 647, 479, 815, ?
 a. 143 b. 279 c. 384 d. 672
58. 46, 140, 134, 245, 356, 467, _ _ _
 a. 568 b. 578 c. 579 d. 478
59. BCD, FGHI, LMNOP?
 a. TUVWXY b. TUVWX c. STUVWX d. STUVW
60. How is $\frac{3}{4}$ expressed as percentage?
 a. 0.75% b. 60% c. 75% d. 7.5%
61. What term will fill the blank spaces Z, X, V, T, R, _ _ _ , _ _ _ ?
 a. O, K b. N, M c. P, N d. M, N
62. Fill in the?
 a. 29 b. 28 c. 22 d. 26
63. X and Y are children of A. A is father of X, but Y is not his son. How is Y related to A.
 a. Sister b. Brother c. Son d. Daughter
64. Insert the missing number in the given trend

2	10	4
3	17	5
3	?	4

- a. 16 b. 15 c. 12 d. 14
65. How many triangles are there in the given figure?
- a. 15 b. 14 c. 12 d. 13



66. Twice a number added with one give 5. the number is
- a. 1 b. 2 c. $\sqrt{3}$ d. 4
67. The sum of two numbers is 45, the two numbers are in the ratio 7: 8, the greater number is
- a. 21 b. 24 c. 35 d. 30
68. Two circles with centres O_1 and O_2 touch externally at point P, then the points O_1 , and O_2 are
- a. Collinear b. Semicircular c. Circular d. triangular
69. The sum of two numbers is 49. The difference between the larger and twice the smaller is 22. Then the numbers are
- a. 40, 9 b. 30, 9 c. 9, 40 d. 20, 9
70. Father is twice as old as his son. Ten years ago father was thrice as old as his son. The son's present age is
- a. 20 years b. 30 years c. 25 years d. 18 years
71. The average of 6 numbers is 8. If one more number is added, then average becomes 10, the number is
- a. 12 b. 22 c. 21 d. 48
72. Side of equilateral triangle is 10 cm, then its height is approx.
- a. 25 cm b. 1.732 cm c. 8.7 cm d. 7.8 cm
73. A boy has spent Rs. 15, Rs 12, Rs. 13, Rs. 20, Rs. 14 and Rs. 16 from Monday to Saturday for his books. The average expenditure per day is
- a. Rs. 14 b. Rs. 15 c. Rs. 16 d. Rs. 18
74. Area of rectangle and area of square are equal. Length of the rectangle is 9 cm and breadth is 4 cm. Side of the square is
- a. 36 cm b. 30 cm c. 24 cm d. 6 cm
75. What follows next in the series 11, 121, 1331, _ _ _ _?
- a. 1441 b. 14411 c. 14441 d. 14641
76. A book was advertised for Rs. 360/- a discount of 15% is offered to school children. 10% discount is offered to others. If you buy that book, the cost of the book would be
- a. 32 b. 204 c. 306 d. 300
77. If a person can do $\frac{1}{4}$ of a job in 1 day. The job he can complete in x days will be
- a. $\frac{4}{x}$ b. $\frac{x}{4}$ c. $x + 4$ d. $x - y$
78. In an isosceles triangle XYZ, the vertex angle is half of each of the equal base angles. Then the vertex angle is

- a. 36° b. 72° c. 108° d. 120°
79. In an examination, 35% of the total students failed in Hindi, 45% failed in English and 20% in both, the percentage of students passes in both subjects is
a. 10 b. 20 c. 40 d. 50
80. A can complete a piece of work in 8 days. If A and B work together the same work can be completed in 6 days, in how many days can B alone complete that work?
a. 24 b. 16 c. 12 d. 18
81. Value of ? is

33	75	39
57	27	69
?	63	65

82. What is the number whose 10% is 10
a. 30 b. 50 c. 70 d. 40
83. The perimeter of a rectangle, whose diagonal is 13 cm is
a. 26 b. 17 c. 52 d. Data inadequate
84. Which is correct statement
a. Two squares are always equal
b. Two triangles are always similar
c. Two rectangles are always similar
d. Both a and b
85. If two medians of a triangle are equal, then the triangle must be
a. Right angled but isosceles
b. Right angled but not isosceles
c. Equilateral
d. Isosceles but not right angled
86. How many 2's are there which are followed by 3 and preceded by 1?
123321123212121123321123123123321
a. 9 b. 6 c. 8 d. 10
87. How many 7's are there which has a 7 preceded by it and 7 following it:
77877787777776777977877778
a. 2 b. 4 c. 6 d. 8
88. How many 0's are there in the given series:
70806000809060800090080090001

- a. 18 b. 17 c. 16 d. 15

89. How many 9's are followed by 9?

9879902999031992796569781967899290?

- a. 2 b. 3 c. 4 d. 5

90. How many 6's are there which are preceded by 3 and multiplies of 3:

36663676367656268696366636768696

- a. 14 b. 15 c. 13 d. 11

91. How many A's are there in the following series which are immediately followed by Z as well as immediately preceded by B?

AMBAAZAANAABZABAZBAPZBA

- a. 0 b. 1 c. 2 d. 3

92. A chain consists of 13 rings. To separate each how many rings will you have to cut?

- a. 5 b. 7 c. 6 d. 8

93. Three measuring tapes are 64 cm, 72 cm and 96 cm, the shortest length that can be measured by any one of the tapes is exactly.

- a. 567 b. 120 c. 8 d. 10

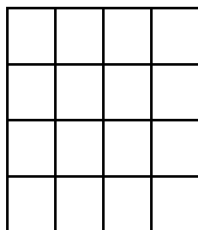
94. $\sqrt{2\sqrt{2\sqrt{2\sqrt{2\sqrt{2}}}}}$ is equal to

- a. 0 b. 2 c. 1 d. $2^{\frac{31}{32}}$

95. In the position of the letters in the word ADMINISTRATIVE are interchanged as 1st with 2nd, 3rd with 4th and so on, which will be the mid point between the 3rd letter from right and 4th from left?

- a. A b. N c. T d. S

96. How many squares there in the following figure?



- a. 30 b. 32 c. 34 d. 36

97. Find the missing numbers in the following set of figures $\frac{17}{14} \frac{18}{13} \frac{16}{15} \frac{19}{12} \frac{?}{?}$

- a. $\frac{15}{16}$ b. $\frac{15}{20}$ c. $\frac{18}{10}$ d. $\frac{14}{10}$

98. There are five different houses, A to E, in a row. A is to the right of B and E is left of C and right of A. B is to the right of D, which of the house is in the middle?

- a. A b. B c. C d. E

99. Arrange the given words in alphabetical order and tick the one in the middle

- a. Plane b. Place c. Plenty d. Player e. Plain

100. How many times in 12 hours the hands of a clock will be at right angles?

- a. 16 b. 18 c. 12 d. 24