

ANSWERS

1 Set Language

Exercise 1.1

1. (i) set (ii) not a set (iii) Set (iv) not a set
2. (i) {I, N, D, A} (ii) {P, A, R, L, E, O, G, M} (iii) {M, I, S, P}
(iv) {C, Z, E, H, O, S, L, V, A, K, I}
3. (a) (i) True (ii) True (iii) False (iv) True (v) False (vi) False
(b) (i) A (ii) C (iii) $\notin$ (iv) $\in$
4. (i) $A = \{2, 4, 6, 8, 10, 12, 14, 16, 18\}$ (ii) $B = \left\{\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \frac{1}{10}\right\}$
(iii) $C = \{64, 125\}$ (iv) $D = \{-4, -3, -2, -1, 0, 1, 2\}$
5. (i) $B = \{x : x \text{ is an Indian player who scored double centuries in One Day International}\}$
(ii) $C = \left\{x : x = \frac{n}{n+1}, n \in \mathbb{N}\right\}$ (iii) $D = \{x : x \text{ is a tamil month in a year}\}$
(iv) $E = \{x : x \text{ is an odd whole number less than 9}\}$
6. (i) $P =$ The set of English months starting with letter 'J'
(ii) $Q =$ The set of Prime numbers between 5 and 31
(iii) $R =$ The set of natural numbers less than 5
(iv) $S =$ The set of English consonants

Exercise 1.2

1. (i) $n(M) = 6$ (ii) $n(P) = 5$ (iii) $n(Q) = 3$ (iv) $n(R) = 10$ (v) $n(S) = 5$
2. (i) finite (ii) infinite (iii) infinite (iv) finite
3. (i) Equivalent sets (ii) Unequal sets (iii) Equal sets (iv) Equivalent sets



4. (i) null set (ii) null set (iii) singleton set (iv) null set
5. (i) overlapping (ii) disjoint (iii) overlapping
6. (i) {square, rhombus} (ii) {circle} (iii) {triangle} (iv) { }
7. { }, {a}, {a, b}, {a, {a, b}}
8. (i) { { }, {a}, {b}, {a, b} }
- (ii) { { }, {1}, {2}, {3}, {1, 2}, {1, 3}, {2, 3 }, {1, 2, 3} }
- (iii) { { }, {p}, {q} {r}, {s}, {p, q}, {p, r}, {p, s}, {q, r}, {q, s}, {r, s}, {p, q, r}, {p, q, s}, {p, r, s}, {q, r, s}, {p, q, r, s} } (iv) $P(E) = \{ \{ \}$
9. (i) 8, 7 (ii) 1024, 1023
10. (i) 16 (ii) 1 (iii) 8

Exercise 1.3

1. (i) {2, 4, 7, 8, 10} (ii) {3, 4, 6, 7, 9, 11} (iii) {2, 3, 4, 6, 7, 8, 9, 10, 11}
- (iv) {4, 7} (v) {2, 8, 10} (vi) {3, 6, 9, 11}
- (vii) {1, 3, 6, 9, 11, 12} (viii) {1, 2, 8, 10, 12}
- (ix) {1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12}
2. (i) {2, 5, 6, 10, 14, 16}, {2, 14}, {6, 10}, {5, 16}
- (ii) {a, b, c, e, i, o, u}, {a, e, u}, {b, c}, {i, o}
- (iii) {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, {1, 2, 3, 4, 5}, {6, 7, 8, 9, 10}, {0}
- (iv) {m, a, t, h, e, i, c, s, g, o, r, y}, {e, m, t}, {a, h, i, c, s}, {g, o, r, y}
3. (i) {a, c, e, g} (ii) {b, c, f, g} (iii) {a, b, c, e, f, g} (iv) {c, g} (v) {c, g}
- (vi) {a, b, c, e, f, g} (vii) {b, d, f, h} (viii) {a, d, e, h}

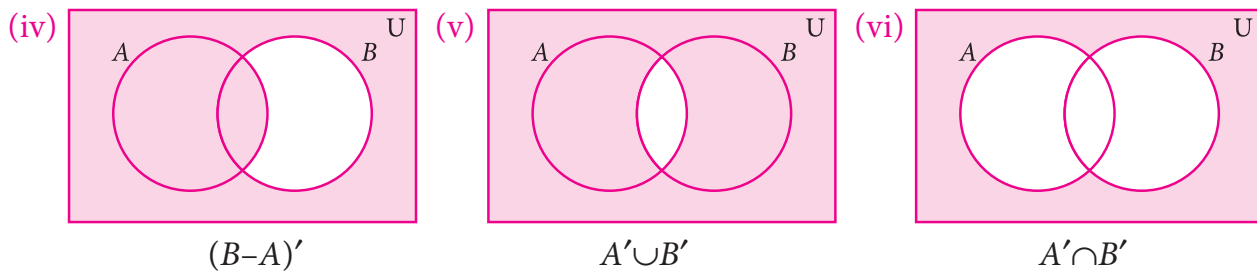
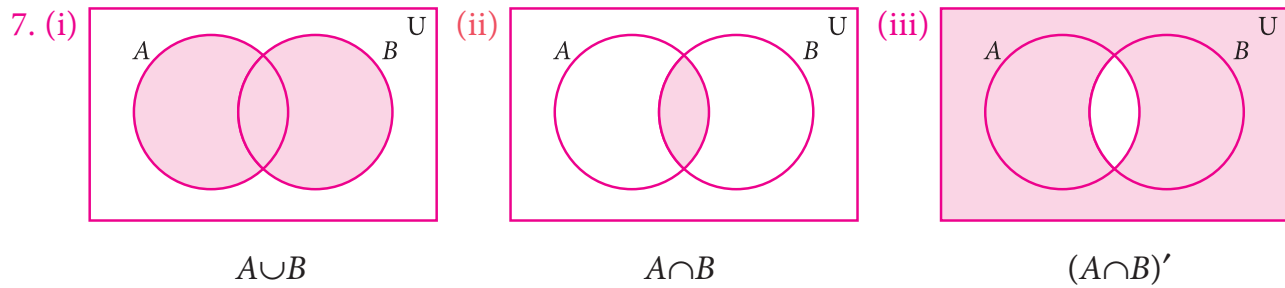


4. (i) $\{0, 2, 4, 6\}$ (ii) $\{1, 4, 6\}$ (iii) $\{0, 1, 2, 4, 6\}$ (iv) $\{4, 6\}$ (v) $\{4, 6\}$

(vi) $\{0, 1, 2, 4, 6\}$ (vii) $\{1, 3, 5, 7\}$ (viii) $\{0, 2, 3, 5, 7\}$

5. (i) $\{1, 2, 7\}$ (ii) $\{m, o, p, q, j\}$ (iii) $\{6, 9, 10\}$

6. (i) $Y - X$ (ii) $(X \cup Y)'$ (iii) $(X - Y) \cup (Y - X)$



(vii) $(A \cap B)' = A' \cup B'$

Exercise 1.4

1. (i) $\{1, 2, 3, 4, 5, 7, 9, 11\}$ (ii) $\{2, 5\}$ (iii) $\{3, 5\}$

Exercise 1.5

1. (i) $\{3, 4, 6\}$ (ii) $\{-1, 5, 7\}$ (iii) $\{-3, 0, 1, 2, 3, 4, 5, 6, 7, 8\}$

(iv) $\{-3, 0, 1, 2\}$ (v) $\{1, 2, 4, 6\}$ (vi) $\{4, 6\}$ (vii) $\{-1, 3, 4, 6\}$

2. (i) $\{a, b, c, d, e, f\}$ (ii) $\{a, b, d\}$ (iii) $\{a, b, c, d, e, f\}$ (iv) $\{a, b, d\}$

Exercise 1.6

1. (i) 15, 65 (ii) 250, 600 4. (i) 17 (ii) 22 (iii) 47

5. (i) 10 (ii) 10 (iii) 25 6. 1000 7. 8 8. Not correct

9. (i) 185 (ii) 141 (iii) 326 10. 70

11. $x = 20$, $y = 40$, $z = 30$ 12. (i) 5 (ii) 7 (iii) 8

13. 5



Exercise 1.7

1. (2) 2. (1) 3. (3) 4. (2) 5. (4) 6. (1) 7. (2) 8. (4) 9. (3) 10. (4)
11. (2) 12. (1) 13. (1) 14. (3) 15. (4) 16. (1) 17. (4) 18. (3) 19. (3) 20. (1)

2 Real Numbers

Exercise 2.1

1. D 2. $-\frac{6}{11}, -\frac{5}{11}, -\frac{4}{11}, \dots, \frac{1}{11}$

3. (i) $\frac{9}{40}, \frac{19}{80}, \frac{39}{160}, \frac{79}{320}, \frac{159}{640}$;

The given answer is one of the answers. There can be many more answers

(ii) 0.101, 0.102, ... 0.109

The given answer is one of the answers. There can be many more answers

(iii) $-\frac{3}{2}, -\frac{5}{4}, -\frac{9}{8}, -\frac{17}{16}, -\frac{33}{32}$

The given answer is one of the answers. There can be many more answers

Exercise 2.2

1. (i) 0.2857142..., Non terminating and recurring (ii) $-5.\overline{27}$, Non terminating and recurring

(iii) $7.\overline{3}$, Non terminating and recurring

(iv) 1.635, Terminating

2. $0.\overline{076293}$, 6 3. $0.03\overline{03}$, $2.\overline{15}$

4. (i) $\frac{24}{99}$ (ii) $\frac{2325}{999}$ (iii) $-\frac{1283}{250}$ (iv) $\frac{143}{45}$ (v) $\frac{5681}{330}$ (vi) $-\frac{190924}{9000}$

5. (i) Terminating (ii) Terminating (iii) Non terminating (iv) Non terminating

Exercise 2.3

2. (i) 0.301202200222..., 0.301303300333... (ii) 0.8616611666111 ..., 0.8717711777111 ...
(iii) 1.515511555..., 1.616611666...

3. $2.23\overline{62}$, $2.23\overline{63}$

Exercise 2.5

1. (i) 5^4 (ii) 5^{-1} (iii) $5^{\frac{1}{2}}$ (iv) $5^{\frac{3}{2}}$

2. (i) 4^2 (ii) $4^{\frac{3}{2}}$ (iii) $4^{\frac{5}{2}}$



3.(i) 7

(ii) 9

(iii) $\frac{1}{27}$

(iv) $\frac{25}{16}$

4.(i) $5^{\frac{1}{2}}$

(ii) $7^{\frac{1}{2}}$

(iii) $7^{\frac{10}{3}}$

(iv) $10^{\frac{-14}{3}}$

5.(i) 2

(ii) 3

(iii) 10

(iv) $\frac{4}{5}$

Exercise 2.6

1.(i) $21\sqrt{3}$

(ii) $3\sqrt[3]{5}$

(iii) $26\sqrt{3}$

(iv) $8\sqrt[3]{5}$

2. (i) $\sqrt{30}$

(ii) $\sqrt{5}$

(iii) 30

(iv) $49a - 25b$

(v) $\frac{5}{16}$

3.(i) 1.852

(ii) 23.978

4. (i) $\sqrt[3]{5} > \sqrt[6]{3} > \sqrt[9]{4}$

(ii) $\sqrt{\sqrt{3}} > \sqrt[2]{\sqrt[3]{5}} > \sqrt[3]{\sqrt[4]{7}}$

5. (i) yes

(ii) yes

(iii) yes

(iv) yes

6. (i) yes

(ii) yes

(iii) yes

(iv) yes

Exercise 2.7

1.(i) $\frac{\sqrt{2}}{10}$

(ii) $\frac{\sqrt{5}}{3}$

(iii) $\frac{5\sqrt{6}}{6}$

(iv) $\frac{\sqrt{30}}{2}$

2. (i) $\frac{4}{3}(5 + 2\sqrt{6})$

(ii) $13 - 4\sqrt{6}$

(iii) $\frac{9 + 4\sqrt{30}}{21}$

(iv) $-2\sqrt{5}$

3. $a = \frac{-4}{3}, b = \frac{11}{3}$

4. $x^2 + \frac{1}{x^2} = 18$

5. 5.414

Exercise 2.8

1. (i) 5.6943×10^{11}

(ii) 2.00057×10^3

(iii) 6.0×10^{-7}

(iv) 9.000002×10^{-4}

2. (i) 3459000

(ii) 56780

(iii) 0.0000100005

(iv) 0.0000002530009

3. (i) 1.44×10^{28}

(ii) 8.0×10^{-60}

(iii) 2.5×10^{-36}

4.(i) 7.0×10^9

(ii) 9.4605284×10^{15} km

(iii) $9.1093822 \times 10^{-31}$ kg

5. (i) 1.505×10^8

(ii) 1.5522×10^{17}

(iii) 1.224×10^7

(iv) 1.9558×10^{-1}

Exercise 2.9

1. (4) 2. (3) 3. (2) 4. (1) 5. (4) 6. (2) 7. (2) 8. (2) 9. (4) 10. (1)

11. (4) 12. (4) 13. (4) 14. (2) 15. (2) 16. (3) 17. (2) 18. (4) 19. (2) 20. (3)

3 Algebra

Exercise 3.1

1. (i) not a polynomial (ii) polynomial (iii) not a polynomial
(iv) polynomial (v) polynomial (vi) not a polynomial
2. Coefficient of x^2 Coefficient of x
 - (i) $\frac{2}{5}$ -3
 - (ii) -2 $-\sqrt{7}$
 - (iii) π -1
 - (iv) $\sqrt{3}$ $\sqrt{2}$
 - (v) 1 $-\frac{7}{2}$
3. (i) 7 (ii) 4 (iii) 5 (iv) 6 (v) 4
4. Descending order Ascending order
 - (i) $\sqrt{7}x^3 + 6x^2 + x - 9$ $-9 + x + 6x^2 + \sqrt{7}x^3$
 - (ii) $-\frac{7}{2}x^4 - 5x^3 + \sqrt{2}x^2 + x$ $x + \sqrt{2}x^2 - 5x^3 - \frac{7}{2}x^4$
 - (iii) $7x^3 - \frac{6}{5}x^2 + 4x - 1$ $-1 + 4x - \frac{6}{5}x^2 + 7x^3$
 - (iv) $9y^4 + \sqrt{5}y^3 + y^2 - \frac{7}{3}y - 11$ $-11 - \frac{7}{3}y + y^2 + \sqrt{5}y^3 + 9y^4$
5. (i) $6x^3 + 6x^2 - 14x + 17, 3$ (ii) $7x^3 + 7x^2 + 11x - 8, 3$ (iii) $16x^4 - 6x^3 - 5x^2 + 7x - 6, 4$
6. (i) $7x^2 + 8, 2$ (ii) $-y^3 + 6y^2 - 14y + 2, 3$ (iii) $z^5 - 6z^4 - 6z^2 - 9z + 7, 5$
7. $x^3 - 8x^2 + 11x + 7$ 8. $2x^4 - 3x^3 + 5x^2 - 5x + 6$
9. (i) $6x^4 + 7x^3 - 56x^2 - 63x + 18, 4$ (ii) $105x^2 - 33x - 18, 2$ (iii) $30x^3 - 77x^2 + 54x - 7, 3$
10. $x^2 + y^2 + 2xy, ₹ 225$ 11. $9x^2 - 4, 3596$ sq. units
12. cubic polynomial or polynomial of degree 3

Exercise 3.2

1. (i) 6 (ii) -6 (iii) 3 2. 1 3. (i) 3 (ii) $-\frac{5}{2}$ (iii) $\frac{3}{2}$ (iv) 0 (v) 0 (vi) $-\frac{b}{a}$
4. (i) $\frac{6}{5}$ (ii) -3 (iii) $-\frac{9}{10}$ (iv) $\frac{4}{9}$
6. (i) 2 (ii) 3 (iii) 0 (iv) 1 (v) 1

Exercise 3.3

1. $p(x)$ is not a multiple of $g(x)$
2. (i) Remainder : 0 (ii) Remainder : $\frac{3}{2}$ (iii) Remainder : 62
3. Remainder : -143 4. Remainder : 2019 5. $K = 8$



6. $a = -3$, Remainder : 27 7. (i) $(x - 1)$ is a factor (ii) $(x - 1)$ is not a factor
8. $(x - 5)$ is a factor of $p(x)$ 9. $m = 10$ 11. $k = 3$ 12. Yes

Exercise 3.4

1. (i) $x^2 + 4y^2 + 9z^2 + 4xy + 12yz + 6xz$ (ii) $p^2 + 4q^2 + 9r^2 - 4pq + 12qr - 6pr$
(iii) $8p^3 - 24p^2 - 14p + 60$ (iv) $27a^3 + 27a^2 - 18a - 8$
2. (i) 18,107,210 (ii) -32, -6, +90
3. (i) 14 (ii) $\frac{59}{70}$ (iii) 78 (iv) $\frac{78}{70}$
4. (i) $27a^3 - 64b^3 - 108a^2b + 144ab^2$ (ii) $x^3 + \frac{1}{y^3} + \frac{3x^2}{y} + \frac{3x}{y^2}$
5. (i) 941192 (ii) 1003003001
6. 29 7. 280 8. 335 9. 198 10. $\pm 5, \pm 110$
11. 36 12. (i) $8a^3 + 27b^3 + 64c^3 - 72abc$ (ii) $x^3 - 8y^3 + 27z^3 + 18xyz$
13. (i) -630 (ii) $\frac{-9}{4}$
14. $72xyz$

Exercise 3.5

1. (i) $2a^2(1 + 2b + 4c)$ (ii) $(a - m)(b - c)$
2. (i) $(x + 2)^2$ (ii) $3(a - 4b)^2$
(iii) $x(x + 2)(x - 2)(x^2 + 4)$ (iv) $\left(m + \frac{1}{m} + 5\right)\left(m + \frac{1}{m} - 5\right)$
(v) $6(1 + 6x)(1 - 6x)$ (vi) $\left(a - \frac{1}{a} + 4\right)\left(a - \frac{1}{a} - 4\right)$
3. (i) $(2x + 3y + 5z)^2$
- (ii) $(-5x + 2y + 3z)^2$ (or) $(5x - 2y - 3z)^2$
4. (i) $(2x + 5y)(4x^2 - 10xy + 25y^2)$
- (ii) $(3x - 2y)(9x^2 + 6xy + 4y^2)$
- (iii) $(a + 2)(a - 2)(a^2 + 4 - 2a)(a^2 + 4 + 2a)$
5. (i) $(x + 2y - 1)(x^2 + 4y^2 + 1 - 2xy + 2y + x)$
- (ii) $(l - 2m - 3n)(l^2 + 4m^2 + 9n^2 + 2lm - 6mn + 3ln)$

Exercise 3.6

- 1.(i) $(x + 6)(x + 4)$
(ii) $(z + 6)(z - 2)$
(iii) $(p - 8)(p + 2)$
(iv) $(t - 9)(t - 8)$
(v) $(y - 20)(y + 4)$
(vi) $(a + 30)(a - 20)$
2. (i) $(2a + 5)(a + 2)$
(ii) $(x - 7y)(5x + 6y)$ (iii) $(2x - 3)(4x - 3)$ (iv) $2(3x + 2y)(x + 2y)$
(v) $3x^2(3y + 2)^2$ (vi) $(a + b + 6)(a + b + 3)$
3. (i) $(p - q - 8)(p - q + 2)$
(ii) $(m + 6n)(m - 4n)$ (iii) $(a + \sqrt{5})(\sqrt{5}a - 3)$ (iv) $(a + 1)(a - 1)(a^2 - 2)$
(v) $m(4m + 5n)(2m - 3n)$
(vi) $\left(\frac{1}{x} + \frac{1}{y}\right)^2$

Exercise 3.7

1. (i) Quotient : $4x^2 - 6x - 5$, Remainder : 33 (ii) Quotient : $4y^2 - 6y + 5$, Remainder : -10
(iii) Quotient : $4x^2 + 2x + 1$, Remainder : 0 (iv) Quotient : $8z^2 - 6z + 2$, Remainder : 10
2. Length : $x + 4$ 3. Height : $5x - 4$ 4. Mean : $x^2 - 5x + 25$
5. (i) $x^2 + 4x + 5$, 12 (ii) $(x^2 - 1)$, -2
(iii) $3x^2 - 11x + 40$, -125 (iv) $2x^3 - \frac{x^2}{2} - \frac{3x}{8} + \frac{51}{32}, \frac{109}{32}$
6. $4x^3 - 2x^2 + 3$, $p = -2$, $q = 0$, remainder = -10
7. $a = 20$, $b = 94$ & remainder = 388

Exercise 3.8

- 1.(i) $(x - 2)(x + 3)(x - 4)$ (ii) $(x + 1)(x - 2)(2x - 1)$
(iii) $(x - 1)(2x - 1)(2x + 3)$ (iv) $(x + 2)(x + 3)(x - 4)$
(v) $(x - 1)(x - 2)(x + 3)$ (vi) $(x - 1)(x - 10)(x + 1)$

Exercise 3.9

- | | | | |
|----------------------|-----------------|--------------------|--------------|
| 1. (i) p^5 | (ii) 1 | (iii) $3a^2b^2c^3$ | (iv) $16x^6$ |
| (v) abc | (vi) $7xyz^2$ | (vii) 25ab | (viii) 1 |
| 2. (i) 1 | (ii) a^{m+1} | (iii) $(2a + 1)$ | (iv) 1 |
| (v) $(x + 1)(x - 1)$ | (vi) $(a - 3x)$ | | |

Exercise 3.10

- | | | |
|---------------------|-----------------------------------|-------------------|
| 2. (i) (5,2) | (ii) Infinite number of solutions | (iii) no solution |
| (iv) $(-3, -3)$ | (v) (1,3) | (vi) $(-3, 3)$ |
| 3. 75km/hr, 25km/hr | | |

Exercise 3.11

- | | | | |
|---------------|------------|----------------|-----------------------------|
| 1.(i) (2, -1) | (ii) (4,2) | (iii) (40,100) | (iv) $(\sqrt{8}, \sqrt{3})$ |
| (2) 45 | (3) 409 | | |

Exercise 3.12

- | | | | |
|------------------------------------|------------|--------------------|------------------------------------|
| 1.(i) (2,1) | (ii) (7,2) | (iii) (80,30) | (iv) $\left(1, \frac{3}{2}\right)$ |
| (v) $\left(\frac{1}{3}, -1\right)$ | (vi) (2,4) | (2) ₹30000, ₹40000 | (3) 75, 15 |

Exercise 3.13

- | | | |
|--|--------------|--|
| 1.(i) (3,4) | (ii) (3, -1) | (iii) $\left(-\frac{1}{2}, \frac{1}{3}\right)$ |
| (2) Number of 2 rupee coins 60; Number of 5 rupee coins 20 | | |
| (3) Larger pipe 40 hours; Smaller pipe 60 hours | | |

Exercise 3.14

- 64
- $\frac{5}{7}$
- $\angle A = 120^\circ$, $\angle B = 70^\circ$, $\angle C = 60^\circ$, $\angle D = 110^\circ$
- Price of TV = ₹20000; Price of fridge = ₹10000
- 40, 48
- 1 Indian – 18 days; 1 Chinese – 36 days



Exercise 3.15

1. (4) 2. (3) 3. (4) 4. (4) 5. (2) 6. (1) 7. (4) 8. (4) 9. (4) 10. (3)
11. (2) 12. (3) 13. (3) 14. (2) 15. (3) 16. (3) 17. (4) 18. (2) 19. (3) 20. (2)
21. (4) 22. (3) 23. (2) 24. (1) 25. (2) 26. (3) 27. (1) 28. (3) 29. (2)

4 Geometry

Exercise 4.1

1. (i) 70° (ii) 288° (iii) 89° 2. $30^\circ, 60^\circ, 90^\circ$ 5. $80^\circ, 85^\circ, 15^\circ$

Exercise 4.2

1. (i) $40^\circ, 80^\circ, 100^\circ, 140^\circ$ 2. $62^\circ, 114^\circ, 66^\circ$ 3. 44° 4. 10cm
7. (i) 30° (ii) 105° (iii) 75° (iv) 105° 8. $122^\circ, 29^\circ$
9. Ratios are equal 10. $d = 7.6$

Exercise 4.3

1. 24cm 2. 17cm 3. 8cm, $45^\circ, 45^\circ$
4. 18cm 5. 14 cm 6. 6 cm
7. (i) 45° (ii) 10° (iii) 55° (iv) 120° (v) 60°
8. $\angle BDC = 25^\circ, \angle DBA = 65^\circ, \angle COB = 50^\circ$

Exercise 4.4

1. 30° 2. (i) $\angle ACD = 55^\circ$ (ii) $\angle ACB = 50^\circ$ (iii) $\angle DAE = 25^\circ$
3. $\angle A = 64^\circ; \angle B = 80^\circ; \angle C = 116^\circ; \angle D = 100^\circ$
4. (i) $\angle CAD = 40^\circ$ (ii) $\angle BCD = 80^\circ$ 5. Radius = 5cm 6. 3.25m
7. $\angle OAC = 30^\circ$ 8. 5.6m 9. $\angle RPO = 60^\circ$

Exercise 4.7

1. (2) 2. (3) 3. (1) 4. (4) 5. (4) 6. (3) 7. (2) 8. (2) 9. (4) 10. (2)
11. (3) 12. (3) 13. (1) 14. (1) 15. (4) 16. (2) 17. (2) 18. (3) 19. (2) 20. (4)

5 Coordinate Geometry

Exercise 5.1

1. $P(-7,6)$ = II Quadrant; $Q(7,-2)$ = IV Quadrant; $R(-6,-7)$ = III Quadrant;
 $S(3,5)$ = I Quadrant; and $T(3,9)$ = I Quadrant
2. (i) $P = (-4,4)$ (ii) $Q = (3,3)$ (iii) $R = (4,-2)$ (iv) $S = (-5,-3)$
3. (i) Straight line parallel to x -axis (ii) Straight line which lie on y -axis.
4. (i) Square (ii) Trapezium

Exercise 5.2

1. (i) $\sqrt{10}$ units (ii) $2\sqrt{26}$ units (iii) $c-a$ (iv) 13 units
2. (i) Collinear (ii) Collinear 7. 5 or 1
8. Coordinates of A (9, 9) or $(-5,-5)$ 9. $y = 4x+9$ 10. Coordinates of $P(2,0)$
12. $30\sqrt{2}$

Exercise 5.3

1. (i) $(-4,-1)$ (ii) $(0,-1)$ (iii) $(a+b,a)$ (iv) $(1,-1)$
2. $(-5,-3)$ 3. $P = -15$ 4. $(9,3)(-5,5)$ and $(1,1)$
5. $\left(\frac{9}{2}, \frac{3}{2}\right)$ 6. $(1,8)$

Exercise 5.4

1. $(7,3)$ 2. 5:2 3. $(3,4)$
4. $(-2,3), (1,0)$ 5. $\left(\frac{19}{2}, \frac{13}{2}\right), \left(\frac{-9}{2}, \frac{-15}{2}\right)$ 7. $(3,2)$

Exercise 5.5

1. (i) $(2,-3)$ (ii) $\left(\frac{-8}{3}, \frac{-11}{3}\right)$ 2. $(4,-6)$ 3. 5 units
4. 20 5. $3\sqrt{\frac{5}{2}}$ units 6. $(1,0)$ 7. $(5,-2)$

Exercise 5.6

1. (3) 2. (3) 3. (3) 4. (2) 5. (2) 6. (4) 7. (3) 8. (3) 9. (3) 10. (3)
11. (4) 12. (1) 13. (3) 14. (4) 15. (2) 16. (3) 17. (2) 18. (2) 19. (4) 20. (2)

6 Trigonometry

Exercise 6.1

1. $\sin B = \frac{9}{41}$; $\cos B = \frac{40}{41}$; $\tan B = \frac{9}{40}$; $\operatorname{cosec} B = \frac{41}{9}$; $\sec B = \frac{41}{40}$; $\cot B = \frac{40}{9}$
2. (i) $\sin B = \frac{12}{13}$ (ii) $\sec B = \frac{13}{5}$ (iii) $\cot B = \frac{5}{12}$ (iv) $\cos C = \frac{4}{5}$
- (v) $\tan C = \frac{3}{4}$ (vi) $\operatorname{cosec} C = \frac{5}{3}$
3. $\sin \theta = \frac{1}{2}$; $\cos \theta = \frac{\sqrt{3}}{2}$; $\tan \theta = \frac{1}{\sqrt{3}}$; $\operatorname{cosec} \theta = \frac{2}{1}$; $\sec \theta = \frac{2}{\sqrt{3}}$; $\cot \theta = \sqrt{3}$
4. $\frac{3}{40}$ 5. $\sin A = \frac{1-x^2}{1+x^2}$; $\tan A = \frac{1-x^2}{2x}$ 7. $\frac{1}{2}$
8. $\frac{1}{2}$ 9. $\sin \alpha = \frac{4}{5}$; $\cos \beta = \frac{4}{5}$; $\tan \phi = \frac{4}{3}$ 10. 7m

Exercise 6.2

- 2.(i) 0 (ii) $\frac{7}{4}$ (iii) 3 4. 2

Exercise 6.3

- 1.(i) 1 (ii) 1 (iii) 1 (iv) 2

Exercise 6.4

- 1.(i) 0.7547 (ii) 0.2648 (iii) 1.3985 (iv) 0.3641
- (v) 0.8302 (vi) 2.7907 2.(i) $85^\circ 57'$ (or) $85^\circ 58'$ (or) $85^\circ 59'$
- (ii) $47^\circ 27'$ (iii) $4^\circ 7'$ (iv) $87^\circ 39'$ (v) $82^\circ 30'$
- 3.(i) 1.9970 (ii) 2.8659 4. 18.81 cm^2 5. $36^\circ 52'$
6. 54.02 m

Exercise 6.5

1. (1) 2. (2) 3. (2) 4. (3) 5. (2) 6. (3) 7. (3) 8. (1) 9. (2) 10. (2)

7 Mensuration

Exercise 7.1

- 1.(i) 120 cm^2 (ii) 7.2 m^2 2. 1320 m^2 , ₹26400 3. 12000 m^2
4. 1558.8 cm^2 5. ₹ 1050 6. 240 cm^2 7. 138 cm^2
8. 354 m^2 9. 1536 m^2 10. 672 m^2



Exercise 7.2

1. 1160cm^2 , 560cm^2
2. ₹1716
3. ₹3349
- 4.(i) 384 m^2 , 256 m^2
- (ii) 2646 cm^2 , 1764 cm^2
- (iii) 337.5 cm^2 , 225 cm^2
5. 1600 cm^2
6. 253.50m^2 , ₹6084
7. 224cm^2 , 128cm^2

Exercise 7.3

- 1.(i) 576 cm^3
- (ii) 2250 m^3
2. 630 cm^3
3. 25 cm , 20 cm , 15 cm
4. 2624000 litres
5. 25000
6. 12 m
- 7.(i) 125 cm^3
- (ii) 42.875 m^3
- (iii) 9261 cm^3
8. 5 m
9. 15 cm

Exercise 7.4

1. (3)
2. (2)
3. (4)
4. (3)
5. (3)
6. (1)
7. (2)
8. (3)
9. (4)
10. (1)

8 Statistics

Exercise 8.1

1. 27°C
2. 44kg
3. 56.96 (or) 57 (approximately)
4. 142.5 mm^3
5. $p = 20$
6. 40.2
7. 29.29
8. 29.05

Exercise 8.2

1. 47
2. 44
3. 21
4. 32
5. 31
6. 38

Exercise 8.3

1. 6600, 7000, 7000
2. 3.1 and 3.3 (bimodal)
3. 15
4. 40
5. 24
6. 58.5

Exercise 8.4

1. (1)
2. (3)
3. (3)
4. (2)
5. (1)
6. (4)
7. (1)
8. (2)
9. (2)
10. (3)

9 Probability

Exercise 9.1

1. $\frac{1}{7}$

2. $\frac{3}{13}$

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

4.(i) $\frac{5}{24}$

(ii) $\frac{1}{8}$

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

5. $\frac{1}{4}$

6.(i) 0

(ii) $\frac{1}{12}$

(iii) 1

7. $\frac{1}{280}$

8. $\frac{1}{5}$

9. $\frac{3}{4}$

Exercise 9.2

1. 0.9975

2. $\frac{209}{400}$

3. $\frac{15}{8}$

4. 0.28

5.(i) $\frac{1}{6}$

(ii) $\frac{43}{75}$

(iii) $\frac{1}{75}$

Exercise 9.3

1. (4)

2. (2)

3. (1)

4. (4)

5. (1)

6. (4)

7. (4)

8. (4)

9. (1)

10. (2)