

ANSWERS

1. NUMBERS

Exercise 1.1

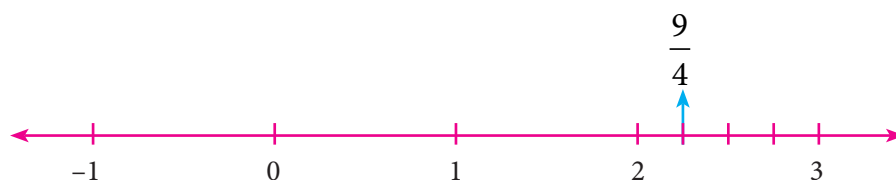
1. (i) -4 and -3 (ii) -3.75 (iii) 0 (iv) $\frac{30}{-48}$ (v) $\frac{-29}{39}$

2. (i) False (ii) True (iii) False (iv) True (v) True

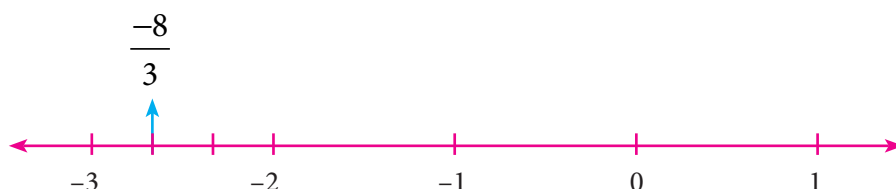
3. (i) $-\frac{11}{3}$ (ii) $-\frac{2}{5}$ (iii) $\frac{7}{4}$ 4. $Y = -\frac{5}{3}, N = -\frac{4}{3}, A = \frac{9}{4}, T = \frac{10}{4}, I = \frac{11}{4}$

5.

(i)



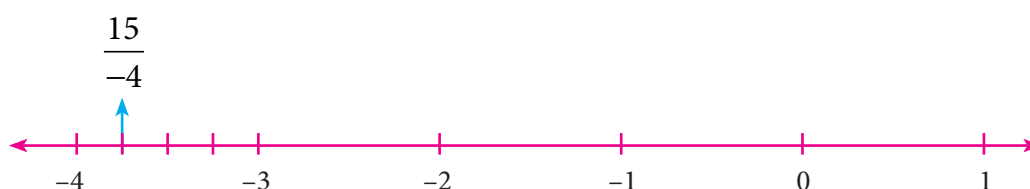
(ii)



(iii)



(iv)



6. (i) $0.0909\dots$ (ii) 3.25 (iii) -2.5714285714 (iv) 1.4 (v) -3.5

7. (i) $-2, 0 \rightarrow \frac{-19}{10}, \frac{-18}{10}, \frac{-7}{10}, \frac{-6}{10}, \frac{-5}{10}$ (ii) $\frac{-1}{2}, \frac{3}{5} \rightarrow \frac{-3}{10}, \frac{-1}{10}, 0, \frac{1}{10}, \frac{2}{10}, \frac{5}{10}$

(iii) $0.25, 0.35 \rightarrow \frac{26}{100}, \frac{27}{100}, \frac{30}{100}, \frac{32}{100}, \frac{33}{100}$ (iv) $-1.2, -2.3 \rightarrow \frac{-21}{10}, \frac{-20}{10}, \frac{-15}{10}, \frac{-14}{10}, \frac{-13}{10}$



8. $\frac{61}{15}$ and $\frac{103}{30}$, many answers possible 9. (i) $\frac{-11}{5} > \frac{-21}{8}$ (ii) $\frac{3}{-4} < \frac{-1}{2}$ (iii) $\frac{2}{3} < \frac{4}{5}$
10. (i) Ascending Order: $\frac{-11}{8}, \frac{-15}{24}, \frac{-5}{12}, \frac{12}{36}, \frac{-7}{-9}$ Descending Order: $\frac{-7}{-9}, \frac{12}{36}, \frac{-5}{12}, \frac{-15}{24}, \frac{-11}{8}$
- (ii) Ascending Order: $\frac{-17}{10}, \frac{-7}{5}, \frac{-19}{20}, \frac{-2}{4}, 0$ Descending Order: $0, \frac{-2}{4}, \frac{-19}{20}, \frac{-7}{5}, \frac{-17}{10}$
11. (B) $\frac{-142}{99}$ 12. (B) $\frac{16}{-30}, \frac{-8}{15}$ 13. (C) -1 and -2 14. (A) $\frac{-17}{24}$ 15. (C) 6

Exercise 1.2

1. (i) $\frac{1}{20}$ (ii) 1 (iii) 1 (iv) 0 (v) -1
2. (i) True (ii) False (iii) False (iv) True (v) False
3. (i) 2 (ii) $\frac{74}{35}$ (iii) $\frac{4}{15}$ (iv) $2\frac{3}{4}$ 4. $\frac{-15}{11}$ 5. (i) $\frac{-1}{4}$ (ii) $\frac{8}{45}$
6. (i) -6 (ii) $\frac{1}{13}$ (iii) 5 7. (i) -7 (ii) $\frac{7}{11}$
8. $\frac{23}{2} \left(= 11\frac{1}{2} \right)$ and hence lies between 11 and 12. 9. (i) $\frac{133}{60}$ (ii) $\frac{-5}{2}$ 10. 120
11. (A) 1 12. (C) $\frac{5}{8}$ 13. (B) $\frac{2}{3}$ 14. (D) $\frac{15}{16}$ 15. (D) all of these

Exercise 1.3

Verify yourself for Qns 1 to 6.

7. (C) 0 8. (D) associative 9. (A) $\frac{1}{8} - \frac{1}{8} = 0$ 10. (B) subtraction

Exercise 1.4

1. (i) 9 (ii) 48 (iii) 5 (iv) 3 (v) 13, 14
2. (i) True (ii) True (iii) False (iv) False (v) True
3. (i) 289 (ii) 41209 (iii) 1205604 4. (i) No (ii) No (iii) Yes (iv) Yes
5. (i) 12 (ii) 16 (iii) 28 (iv) 34 (v) 69 (vi) 95
6. (i) 42 (ii) 83 (iii) 105 (iv) 134 (v) 647 7. (i) 21 (ii) 28 (iii) 32
8. (i) 1.7 (ii) 8.2 (iii) 1.42 (iv) $\frac{12}{15}$ (v) $2\frac{5}{7}$ 9. 105, 81 10. 2, 60
11. (A) 9 12. (D) 7^2 13. (C) 7 14. (D) $\sqrt{32}$ 15. (B) 5

Exercise 1.5

1. (i) 7 (ii) 6 (iii) 42 (iv) 30 (v) 0.017
2. (i) True (ii) True (iii) False (iv) True (v) True 4. 5 5. 5 6. 120
7. 9, 19 8. $\sqrt{36} = 6$ 9. $\sqrt{3} = 1.732$ 10. 4, 16

Exercise 1.6

1. (i) 1 (ii) 1 (iii) 20^{-3} (iv) $\frac{-1}{128}$ (v) -243





2. (i) True (ii) False (iii) False (iv) True (v) False
3. (i) $\frac{1}{8}$ (ii) 32 (iii) $\frac{-216}{125}$ (iv) 16 (v) 6
4. (i) $\frac{64}{15625}$ (ii) $\frac{4}{5}$ (iii) 1024 5. (i) $\frac{21}{2}$ (ii) 5 (iii) 1
6. (i) 1 (ii) $\frac{3}{2}$ (iii) 72 7. (i) $x = 5$ (ii) $x = 6$
8. (i) $6 \times 10^3 + 5 \times 10^1 + 4 \times 10^0 + 3 \times 10^{-1} + 2 \times 10^{-2} + 1 \times 10^{-3}$
(ii) $8 \times 10^2 + 9 \times 10^1 + 7 \times 10^0 + 1 \times 10^{-1} + 4 \times 10^{-2}$
9. (i) 87652.0407 (ii) 5050.505 (iii) 0.0000000000025
10. (i) 4.678×10^{11} (ii) 1.972×10^{-6} (iii) 1.642398×10^3
(iv) 1.083×10^{12} cu. km (v) 1.6×10^{-24}
11. (B) $\frac{-2}{5}$ 12. (A) $\frac{-1}{32}$ 13. (D) $-\left(\frac{1}{4}\right)^2 = 16^{-1}$ 14. (C) 6 15. (D) 2.02×10^{-10}

Exercise 1.7

Miscellaneous Practice Problems

1. 4 kg 300 gm 2. $10\frac{2}{5}$ litre 3. both are correct 4. 6 m 5. 552 cm²
6. 9 cm and 10 cm 7. 15 decimetre 8. 625 9. 8
10. (i) 4.8×10^3 (ii) 1.152×10^5 (iii) 4.2048×10^7 (iv) 4.2048×10^9

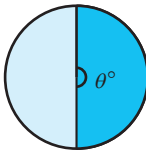
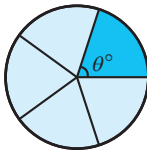
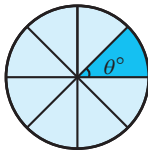
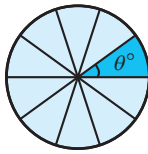
Challenging Problems

11. 900 km 13. 320 gm 14. $\frac{9}{20}$ 15. $x = 3$ 16. $\frac{12}{11}$ 17. No, 64
18. 58.85 19. 7.979×10^5 20. $8^{100}, 2^{600}, 3^{500}, 4^{400}, 16^{25}$

2. MEASUREMENTS

Exercise 2.1

1. (i) π (ii) chord (iii) diameter (iv) 12 cm (v) circular arc
2. (i) c (ii) d (iii) e (iv) b (v) a

3.	Sectors				
	Central angle of each sector (θ°)	180°	72°	45°	36°

4.	Length of arc (approx.)	Area of sector (approx.)	Perimeter of sector (approx.)
(i)	12.56 cm	100.48 cm ²	44.56 cm
(ii)	13.19 cm	41.54 cm ²	25.79 cm

5. (i) 240 m² (ii) 337.5 cm² 6. (i) $\theta = 120^\circ$ (ii) $\theta = 72^\circ$ 7. 30π m
8. 980π cm² 9. 706.5 cm² (approximately) 10. 1232 cm² (approximately)





Exercise 2.2

- (i) 38 m , 50.75 m^2 (approximately) (ii) 30 cm , 40.25 cm^2 (approximately)
- (i) 21.5 cm^2 (approximately) (ii) 27.93 cm^2 (approximately)
- 48 cm^2 4. 41.13 cm^2 (approximately) 5. 5600 cm^2 6. 3500 cm^2 7. 244 m^2

Exercise 2.3

- (i) length, breadth and height (ii) Vertex (iii) Six (iv) Circle (v) Cube
- (i) (b) (ii) (a) (iii) (d) (iv) (c)
- (i) Cube (ii) Cuboid (iii) Triangular Prism (iv) Square Pyramid (v) Cylinder
- (i) F, T, S (ii) T, S, F (iii) S, F, T
- (i) Yes (ii) No (iii) Yes (iv) No (v) Yes

Exercise 2.4

Miscellaneous Practice Problems

- 9.42 feet 2. 314 m 3. 128 cm^2
- (i) Top View Front View Side View (ii) Top View Front View Side View



Challenging Problems

- double door requires the minimum area 6. 63.48 m^2 (approximately)
- 1.46 cm^2 (approximately) 8. (i) $F = 10$ (ii) $V = 4$ (iii) $E = 28$

3. ALGEBRA

Exercise 3.1

1.	x	$2x^2$	$-2xy$	x^4y^3	$2xyz$	$-5xz^2$
	x^4	$2x^6$	$-2x^5y$	x^8y^3	$2x^5yz$	$-5x^5z^2$
	$4xy$	$8x^3y$	$-8x^2y^2$	$4x^5y^4$	$8x^2y^2z$	$-20x^2yz^2$
	$-x^2y$	$-2x^4y$	$2x^3y^2$	$-x^6y^3$	$-2x^3y^2z$	$5x^3yz^2$
	$2y^2z$	$4x^2y^2z$	$-4xy^3z$	$2x^4y^5z$	$4xy^3z^2$	$-10xy^2z^3$
	$-3xyz$	$-6x^3yz$	$6x^2y^2z$	$-3x^5y^4z$	$-6x^2y^2z^2$	$15x^2yz^3$
	$-7z$	$-14x^2z$	$14xyz$	$-7x^4y^3z$	$-14xyz^2$	$35xz^3$

- (i) $24m^4n^2$ (ii) $-9x^5y^6$ 3. $-24p^6q^6$
- (i) $10xy - 15x$ (ii) $-10p^3 + 6p^2 - 14p$ (iii) $3m^4n^4 - 15m^3n^2 + 21m^2n^3$
- (iv) $x^3 + y^3 - z^3 + x^2y + x^2z + xy^2 + zy^2 + xz^2 - yz^2$ 5. (i) $4x^2 - 2x - 12$
- (ii) $2y^4 + 3y^3 - 8y^2 - 12y$ (iii) $5m^4n^2 - m^2n^2 - 5m^2n^3 + n^3$ (iv) $6x^2 - 36x + 30$
- (i) $-2x^2$ (ii) $-3mp$ (iii) $2y(5x^2y - x + 3y^2)$ 7. (C) iv, v, ii, iii, i 8. $xy + 2x + 30y + 60$
- (B) $28p^7$ 10. (D) $mn^2, -27$ 11. (C) $6x^2y$ 12. (A) $6mn$ 13. (B) $(a+b)$

Exercise 3.2

- (i) $\frac{18m^4(n^8)}{2m^{(3)}n^3} = 9mn^5$ (ii) $\frac{l^4m^5n^{(7)}}{2lm^{(3)}n^6} = \frac{l^3m^2n}{2}$ (iii) $\frac{42a^4b^5(c^2)}{6(a)^4(b)^2} = (7)b^3c^2$
- (i) True (ii) False 3. (i) $9y^2$ (ii) xy (iii) $-3x^2yz^3$ (iv) xy



4. (i) $5m$ (ii) $3p^3q^2$ 5. (i) $16y-4z$ (ii) $2mn^2+8m^3n-\frac{1}{2}$ (iii) $\frac{5}{6}y-3xy^2+1$
(iv) $=9p^2r+18pq-45$
6. (i) $9y^2$ (ii) $9xy$ (iii) $4m^2-3m$ (iv) $16n^2-2n+3$ (v) x^2+1x-6 (vi) $-(3p^2-4p+7)$
7. (ii) A is true but B is false 8. (i) both A and B are true

Exercise 3.3

1. (i) $9m^2+30m+25$ (ii) $25p^2-10p+1$ (iii) $4n^2+4n-3$ (iv) $(2p+5q)(2p-5q)$
2. (i) $m^3+9m^2+27m+27$ (ii) $8a^3+60a^2+150a+125$ (iii) $27p^3+108p^2q+144pq^2+64q^3$
(iv) 14,0608 (v) 1124864
3. (i) $125-75x+15x^2-x^3$ (ii) $8x^3-48x^2y+96xy^2-64y^3$ (iii) $a^3b^3-3a^2b^2c+3abc^3-c^3$
(iv) 110, 592 (v) $912673x^3y^3$
4. p^3-5p^2+2p+8 5. x^3+3x^2+3x+1 6. x^3-2x^2-5x+6
7. (C) 2 8. (B) a^2+ab+b^2 9. (A) p^3+q^3 10. (D) 72 11. (D) $3ab(a+b)$

Exercise 3.4

1. (i) $6y(3x-2z)$ (ii) $3x^2y(3x^3y^2+2xy-6)$ (iii) $(b-2c)(x+y)$
(iv) $(x+y)(a+b)$ (v) $(4x-1)(2x^2-1)$ (vi) $(x-2)[3y(x-2)+2]$
(vii) $2y(9x-2y-zx)$ (viii) $(a-3)(a^2+1)$ (ix) $3y(y+4)(y-4)$ (x) $(b-1)(ab-c^2)$
2. (i) $(x+7)^2$ (ii) $(y-5)^2$ (iii) $(c+2)(c-6)$
(iv) $(m+9)(m-8)$ (v) $(2x-3)(2x-1)$ 3. (i) $(4x+3)^3$ (ii) $(3p+2q)^3$
4. (i) $(y-6)^3$ (ii) $(2m-5n)^3$ 5. (D) $3x, (3x+2y)$ 6. (C) $(2+m)(2-m)$
7. (D) x^2-x-20 8. (B) 3 9. (C) $(1-m)(1+m+m^2)$ 10. (B) $(x+y)$

Exercise 3.5

Miscellaneous Practice Problems

1. $7x^2y^5+4x^4y^3+60x^2y^2$ 2. $12x^3-8x^2+27x-18$ 3. $S.I = \frac{7}{5}a^3b^4$
4. $\frac{1}{2}a+2b+4$ 5. $(y-3)(7y+2)$

Challenging Problems

6. $4x+3$ 7. $x+2$ 8. $(y+7)(y+8)$ 9. $(4p^2+1)(2p+1)(2p-1)$ 10. $3(x-5y)^3$

Exercise 3.6

1. (i) $x=7$ (ii) $y=11$ (iii) $m=7$ (iv) $p=15$ (v) One
2. (i) True (ii) False 3. (c) (iii), (i), (iv), (v), (ii)
4. (i) $x=11$ (ii) $y=\frac{1}{-4}$ (iii) $x=-1$ 5. (i) $x=-4$ (ii) $p=-1$ (iii) $x=-11$
6. (i) $x=-2$ (ii) $m=-4$

Exercise 3.7

1. (i). $x=-\frac{b}{a}$ (ii) Positive (iii) $x=30$ (iv) 40° (v) $b=9$
2. (i) True (ii) False (iii) False 3. 3, 21 4. 27
5. $l=8$ cm, $b=24$ cm 6. (80,10) notes 7. Murali's is 15 years old, Thenmozhi's age is 20 years old 8. 63 9. $\frac{13}{21}$
10. 37.4km 11. (B) 20 12. (A) 62° 13. (C) 10000 14. (C) 4 15. (D) $(x-1)$





Exercise 3.8

1. (i) Origin (0,0) (ii) negative (iii) y-axis (iv) zero (v) X-Coordinate
2. (i) True (ii) True (iii) False

Exercise 3.9

1. (i) Origin (ii) (4,-4) (iii) x-axis 1cm=3 units, y-axis 1cm=25 units
2. (i) True (ii) False

Exercise 3.10

Miscellaneous Practice Problems

1. $x = 20$ 2. $60^\circ, 40^\circ, 80^\circ$ 3. $y = 11$ units $p = 133$ units 4. $116^\circ, 64^\circ$

Challenging Problems

6. 7,8,9 7. 54 8. 12 pencils

4. LIFE MATHEMATICS

Exercise 4.1

1. (i) $x = 500$ (ii) $3\frac{1}{3}\%$ (iii) $x = 50$ (iv) 70% (v) 52.52%
2. (i) 50% (ii) 75% (iii) 100% (iv) 96% (v) $66\frac{2}{3}\%$
3. $x = 150$ 4. 30 5. $33\frac{1}{3}\%$ 6. 110 7. $x = 200$ 8. $x = 100$ 9. No change
10. 87% 11. (C) 20% 12. (B) 49% 13. (A) 375 14. (D) 200 15. (D) 36

Exercise 4.2

1. (i) Cost price (ii) ₹7000 (iii) ₹600 (iv) 8% (v) ₹945
2. ₹902 3. ₹670 4. 50% 5. $11\frac{1}{9}\%$ 6. ₹1152
7. (i) $x = ₹207$ (ii) $y = ₹12600$ (iii) $z = 18\%$ 8. ₹2836
9. Discount of 8% is better 10. ₹5400
11. (C) 25% 12. (B) 550 13. (B) 168 14. (D) ₹250 15. (A) 40%

Exercise 4.3

1. (i) ₹1272 (ii) ₹820 (iii) ₹20,000 (iv) $A = P \left(1 + \frac{r}{400}\right)^{4n}$ (v) ₹32
2. (i) True (ii) False (iii) True (iv) False (v) True
3. ₹162 4. ₹936.80 5. ₹1875 6. $1\frac{1}{2}$ years 7. ₹10,875 8. ₹0.50
9. 5% 10. ₹16000 11. (C) 6 12. (B) 1 year 13. (B) ₹12500
14. (A) ₹2000 15. (D) ₹2500

Exercise 4.4

1. (i) 2 (ii) 5 (iii) 8 (iv) 25 (v) ₹1,20,000 2. 162 men
3. 7000 cement bags 4. $7\frac{1}{2}$ days 5. 4 more lorries 6. 4 hours
7. A- 30 days, B -20 days, C-60 days 8. 180 minutes 9. 16 days 10. 6 days





Exercise 4.5

Miscellaneous Practice Problems

1. 400 2. 300 3. ₹38163 4. 20% 5. $2\frac{2}{9}\%$ loss 6. 48 men 7. 6 days 8. 8 days

Challenging Problems

9. $\frac{8}{25}$ 10. ₹15000 11. 20% 12. 30% 13. 20 more men 14. 3 days 15. ₹6000

5. GEOMETRY

Exercise 5.1

1. (i) in proportion (ii) shape (iii) equal (iv) congruent (v) similar
6. Yes, RHS Congruence 8. $HE = 18, TE = 16$ 9. $\angle T = \angle N = 75^\circ, \angle E = \angle B = 35^\circ, \angle A = \angle U = 70^\circ$
11. (D) matching 12. (A) $\angle Q = \angle Y$ 13. (D) 93 m 14. (A) 50° 15. (C) $AC = CD$

Exercise 5.2

1. (i) Q (ii) $n^2 - m^2$ (iii) a right angled triangle (iv) centroid (v) 2:1
2. (i) True (ii) True (iii) True (iv) True (v) False
3. (i) Yes (ii) No (iii) Yes (iv) Yes (v) yes
4. (i) $x = 41$ (ii) $y = 16$ (iii) $z = 15$ 5. 5cm 6. 170m
7. 10cm 8. W 9. P 10. 9cm
11. (c) 45Y 12. (b) 20cm 13. (c) 420cm^2 14. (d) 20, 48, 52

Exercise 5.3

Miscellaneous Practice Problems

3. 48 ft 4. 25 ft 5. No, the wide of cabinet is lesser than the wide of TV

Challenging Problems

8. 40cm 9. 28 ft 10. (i) 24 (ii) 6 (iii) 16 (iv) 24

Exercise 5.4

1. (i) Orthocentre (ii) Centroid (iii) Incentre (iv) Circumcentre (v) 2:1
2. (i) True (ii) True (iii) false
3. (a) (i) Interior (ii) Exterior (iii) On the hypotenuse
 (b) (i) Interior (ii) Exterior (iii) On the vertices containing 90°
4. (i) BE (ii) AD (iii) CF
5. $AB = 5\text{cm}$ 6. $\angle XYM = \angle ZYM = 50^\circ$ 7. 7 cm 8. 10 cm

Exercise 5.5

1. W 2. P 3. 9cm 4. 12 feet 5. 40°
6. (i) 22 (ii) 6 (iii) 16 (iv) 24

6. STATISTICS

Exercise 6.1

1. (i) Secondary (ii) 35 (iii) 197 (iv) 8 (v) Circular
2. (i) False (ii) True (iii) True (iv) True
5. (i) 20% (ii) 75 (iii) $\frac{1}{4}$ (iv) 400 (v) 275 (vi) 500
8. (i) ₹8000 (ii) ₹40000 (iii) ₹12000





Exercise 6.2

1. (i) Yes (ii) No (iii) No (iv) Yes (v) Yes
2. (i) Proportional (ii) Histogram (iii) Grouped
3. (i) 330 (ii) 150 (iii) No
9. (d) all the three 10. (c) Frequency 11. (a) range 12. (b) grouped
13. (b) discontinuous 14. (b) Exclusive 15. (c) pie chart 16. (a) continuous
17. (a) frequency polygon 18. (d) histogram

7. INFORMATION PROCESSING

Exercise 7.1

1. 5 2. 9 3. 8 4. 6 5. 4995 6. 10000 7. 15 8. 20
9. (i) 10. (i) (ii)



more possible ways

more possible ways

11. (A) 41 12. (B) 8 13. (D) 64 14. (C) 19

Exercise 7.2

1. (i) 13 (ii) 8 (iii) 5 (iv) 46
2. (i) 14 (ii) 4 (iii) 140 (iv) 6
3. (i) 4 (ii) 5 4. 14 5. 28
6. (C) 89 7. (B) $F(8) = F(7) + F(6)$ 8. (A) 2 9. (C) 6th 10. (D) 987
11. (A) 2×5 12. (B) 2×3 13. (D) 1

Exercise 7.3

1. (i) TAMIL (ii) ENGLISH (iii) MATHEMATICS
(iv) SCIENCE (v) SOCIAL SCIENCE
2. (i) c (ii) d (iii) a (iv) e (v) b

Plain Text	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
3. Cipher Text	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	00	01	02	03

4. To understand that mathematics can be experienced everywhere in nature and real life.
5. (i) 28 (ii) CHAIR (iii) GIFT VOUCHER
6. (c) [e 8 2 S H S 1 N T] 7. (i) (a) C R D T (ii) (d) A D G J
8. (ii) 5 6 3 4 2 1 9. (i) (c) R F U Q N P C (ii) (c) U D G L R

Exercise 7.4

1. (i) 5 Chocolate bars for ₹ 175b (ii) 15 eggs for ₹ 64.50
2. ₹ 634 3. ₹ 39.25 4. ₹ 809 5. (d) all the above
6. (c) something that I need to purchase
7. (b) Compare the choices before buying