ANSWERS

Number System

Exercise 1.1

1. (i) 90 (ii) –95 (iii) –104 (iv) 22 (v) 140
   (vi) –100 (vii) 50 (viii) –171 (ix) –3 (x) 15, –42, –23
2. (i) False (ii) False (iii) True
3. (i) –4 (ii) –8 (iii) –110 (iv) –52 (v) 7 (vi) –63 (vii) –288
4. –38
5. Team A = Team B (yes, it can be added in any order)
6. Both are equal. Associative property under Addition
7. $0+2$, $1+1=2$, $-1+3$, $-2+4$, $-3+5$ (any pair)

Objective type questions

8. (iv) 10 pm
9. (i) $-9+(-5)+6$
10. (ii) –3
11. (iii) 0
12. (i) 20

Exercise 1.2

1. (i) –44 (ii) 30 (iii) –30
2. (i) False (ii) True (iii) False
3. (i) 1 (ii) 17 (iii) 99 (iv) –300
4. 3
5. 5th floor (above the ground floor)
6. 100°F
7. –2
8. Wrong, –35 (correct answer)

Objective type questions

9. (iii) 13
10. (ii) 0

Exercise 1.3

1. (i) 1 (ii) –2 (iii) –5 (iv) 5 (v) 0
2. (i) False (ii) True (iii) False
3. (i) '+' (ii) '–'
4. (i) –770 (ii) 1080 (iii) 3024 (iv) 0 (v) 10,000
5. (i) Not equal (ii) Not equal
   (iii) Equal ; distributive property of multiplication over addition
6. Decrease of 12inches
7. $(-5\times10),(-10\times5),(2\times-25),(-2)\times25,\ ,(-1)\times50,(-50)\times1$

Objective type questions

8. (iv) (–6) × (+5)
9. (iii) distributive
10. (iv) –11
11. (i) 108

Exercise 1.4

1. (i) –1 (ii) –5 (iii) –36 (iv) 1
2. (i) False (ii) False

3. (i) –15 (ii) 5 (iii) –5 (iv) –1

4. 9 5. dropped 3°c per hour 6. 53 minutes

7. 160 calories lost per day

8. 168 9. 5 10. –40

Objective type questions

11. (iv) $12 \div 5$ 12. (iii) $16 \div (-4)$ 13. (ii) – 20 14. (iv) division

Exercise 1.5

1. 14°c 2. (i) –2 (ii) 0 (iii) –3 (iv) –4 (v) 1

3. (i) –2°k (ii) 318°k (iii) –127°k (iv) 0°k

4. (i) ₹1175 (ii) ₹675 (iii) ₹325 (iv) ₹414 (v) ₹114

5. (i) 7 days (ii) 15,750 characters (iii) ₹8750
(iv) 5 days (v) ₹3,500 6. 12 7. Loss of ₹10

8. decrease of 18 inches 9. yes; 80 years

Exercise 1.6

1. 11 2. –40 3. –1,81,805 4. –445 5. –17,999

6. 31,500 7. –9 8. $(-3,-5)$, $(3,5)$

9. (i) Equal (ii) Not equal (iii) Not equal (iv) Equal

10. ₹ 6,800 11. The item x will be costlier is 2020

12. Match the following
1. d, 2. a, 3. e, 4. c, 5. b

Challenge Problem

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

14. –21 15. –5

16. $(-1)+1+(-2)+2+(-3)+3+(-4)+4+(-5)+5=0$
(The answer is not unique. You can take any single digit with its Additive inverse)

17. 2 18. (i) –4 (ii) –11 19. 3000 litres of water

20. 5 jumps 21. ₹ 24 22. 850 feet below the sea level

23. x = 0, y = –4, z = –7

Measurement

Exercise 2.1

1. (i) area $= 33\ sq.cm$ perimeter $= 30\ cm$ (ii) area $= 70\ sq.cm$ perimeter $= 40\ cm$

2. (i) 90 $sq.cm$ (ii) 7 m (iii) 13 mm 3. 35 cm 4. 54 $sq.cm$ 5. ₹ 4620/-

Objective type questions

6. (iv) 22 cm 7. (i) 70 $sq.cm$ 8. (iii) 13 cm

9. (ii) Remains the same 10. (ii) 192 $sq.cm$

Exercise 2.2

1. (i) 64 $sq.cm$ (ii) 165 $sq.cm$ 2. 126 $sq.cm$
3. (i) 152 $sq.cm$ (ii) 36 m (iii) 30 mm 4. 25 cm 5. ₹ 280

Objective type questions

6. (iii) 12 $sq.cm$ 7. (ii) 32 $sq.cm$ 8. (ii) 8 cm 9. (iv) 4 m 10. (iii) 90°

Exercise 2.3

1. (i) 160 $sq.m$ (ii) 24 cm (iii) 18 m (iv) 30 cm
2. 330 $sq.cm$ 3. 38 cm 4. 24 cm 5. 23 cm and 17 cm
6. ₹ 870 7. ₹ 697.50

Objective type questions

8. (i) 45 $sq.cm$ 9. (iv) 28 cm 10. (iii) isosceles trapezium

Exercise 2.4

1. 144 $sq.cm$ 2. 11 hm 3. 128 m 4. $h = 13\ cm$ $b = 52\ cm$
5. $d_1 = 48\ cm$ $d_2 = 24\ cm$ 6. ₹ 1,57,950

Challenge Problems

7. 45 cm; 25 cm 8. 4725 $sq.cm$ 9. 192 $sq.cm$ 10. $DF = 30\ cm$ $BE = 42\ cm$
11. 54 $sq.cm$ 12. 169 $sq.cm$; ₹ 2535
13. 12 cm 14. ₹ 5250 15. 324 $sq.m$

ALGEBRA

EXERCISE-3.1

1. (i) x (ii) –6 (iii) unlike (iv) three (v) –1
2. (i) True (ii) False (iii) True (iv) False 3. –3 ,12, 1,121, –1 ,9,2.
4.

S.No.	Expression	Variable	Constant	Terms
(i)	$18+x-y$	x,y	18	18, x, $-y$
(ii)	$7p-4q+5$	p,q	5	$7p$,$-4q$, 5
(iii)	$29x+13y$	x,y	0	$29x$,$13y$
(iv)	$b+2$	b	2	b, 2

5. $\frac{x-\text{terms}}{7x,-8x,-12x}$ $\frac{y-\text{terms}}{5y,12y,-9y}$ $\frac{z-\text{terms}}{6z,\ z,11z}$
6. (i) –5 (ii) 5 (iii) 10 (iv) 0

Objective type questions

7. (i) $3(x+y)$ 8. (ii) –7 9. (iv) $-4x,7x$ 10. (ii) 13

EXERCISE-3.2

1. (i) $-5b$ (ii) $-8m$ (iii) $37xyz$
2. (i) False (ii) False (iii) True

3. (i) $11x$ (ii) $12mn$ (iii) $4y$

4. (i) $8k$ (ii) $10q$ (iii) $10xyz$

5. (i) $28p+6q$ (ii) $3a+15b+16c$ (iii) $6mn-4t$
(iv) 6u (v) $8xyz-8xy$

6. (i) $14x-7y-38$ (ii) $-2p-2q+2$ (iii) $2m-8n$ (iv) $-7y+5z$

7. (i) $-10x-11y+12z$ (ii) $2p+6$ (iii) $3m+3n+15$

Objective type questions

8. (iii) $2mn$ 9. (iii) $-2a$ 10. (i) Like terms

EXERCISE-3.3

1. (i) equation (ii) 15 (iii) $6x$

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

3. (i) $x=3$ (ii) $p=10$ (iii) x = 15 (iv) $m=30$ (v) $x=10$

4. $2x+2y$ 5. $x=12$ 6. 99 and 101 7. $x=45km$

Objective type questions

8. (iii) $3n$ 9. (i) 2 10. (ii) -1

EXERCISE-3.4

1. $6ab+16;\ -6ab-16$ 2. $4x+3y$ 3. $x=13$ 4. $3ab-7b+3c$ 5. $x=8$

Challenge Problems

6. $12x+6y-18$ 7. $-4a-b-4c$ 8. $5m+n-6$ 9. $lb-2(l+b)=20$

10. $3a+\frac{4}{3}b+\frac{17}{5}c$

Direct and Inverse Proportion

Exercise 4.1

1. (i) ₹ 84 (ii) $21kg.$ (iii) 10 litres (iv) ₹ 210 (v) 360

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

3. ₹ 80 4. 42 5. 180 6. 40 m 7. 1107

8. ₹ 250 9. 5 $kg.$ 10. ₹ 30,000 11. 10 days

12. Kamala 13. 5 litres

Objective Type Questions

14. (iii) ₹ 360 15. (ii) 7 16. (iv) 147 17. (ii) 10 18. (i) 9

Exercise 4.2

1. (i) 32 (ii) 80 2. 1 hour 48 minutes

3. 36 days 4. 20 days 5. 15 days 6. 100 gm

7. 18 8. 4 km/hr 9. 24

Objective Type Questions

10. (iii) 6 11. (ii) 8

Exercise 4.3

1. (i) 15 kg. (ii) ₹ 36 2. (i) Direct proportion (ii) k = 5 (iii) C = 50
3. 90 months 4. 12 minutes 5. ₹ 140 6. 3 7. 300 litres

Challenge Problems

8. ₹ 1155 9. 35 minutes 10. 81 11. 6 days 12. 10 days 13. 5 days

GEOMETRY

Exercise 5.1

1. The pairs of adjacent angle are ∠ABG and ∠GBC, ∠BCF and ∠FCE, ∠FCE and ∠ECD, ∠ACF and ∠*FCE* , ∠ACF and ∠ECD
2. 65° 3. 86° 4. (i) 108° (ii) 46° (iii) 30°
5. The other angle is also a right angle. 6. 30° , 120°, 210° 7. 63°
8. Adjacent angles: ∠PQU and ∠PQT, ∠PQT and ∠TQS, ∠TQS and ∠SQR, ∠SQR and ∠RQU, ∠RQU and ∠PQU (all possible answers).

   Vertically opposite angles: ∠PQU and ∠TQR, ∠PQT and ∠UQR.
9. 120° 10. 105° 11. 45°, 135° 12. (i) 125° (ii) 55°

Objective type questions

13. (iii) one common arm, one common vertex, no common interior
14. (iii) linear pair 15. (iv) equal in measure
16. (i) 360° 17. (ii) 80°

Exercise 5.2

1. (i) The angles are exterior angles on the same side of the transversal
   (ii) The angles are alternate exterior angles
   (iii) The angles are corresponding angles
   (iv) The angles are interior angles on the same side of the transversal
   (v) The angles are alternate interior angles
   (vi) The angles are corresponding angles
2. (i) 35° (ii) 65° (iii) 145° (iv) 135° (v)90°
3. (i) 28° (ii) 58° (iii) 123° (iv) 108°
4. (i) 149° (ii) 45° (iii) 101° (iv) 158°
5. (i) 42° (ii) 8° (iii) 2° (iv) 15°
6. (i) 55° (ii) 35°
7. (i) No. Since, interior angles on the same side of the transversal are supplementary.

   (ii) No. Since Corresponding angles are equal.
9. Minimum number of angles is 1. Using the concept of linear pair of angles, we can find one more angle and by the concepts of corresponding angles and alternate angles (interior and exterior) we could find all other angles.

Objective type questions

10. (ii) transversal 11. (i) alternate exterior angle

12. (iv) interior angles on the same side of the transversal are supplementary

13. (ii) 44°

Exercise 5.6

1. 18° 2. 41° 3. 35°, 115°, 25° 4. 55°, 125°

5. (i) Yes. They have a common vertex, a common arm and their interiors do not overlap.

   (ii) No. They have overlapping interiors.

   (iii) No. Since $\angle BOC$ is a straight angle, their sum will exceed 180°.

   (iv) Yes. They are linear pair.

   (v) No. They are not formed by intersecting lines

6. 52° 7. 30°, 80° 8. 75° , 42° , 42°

9. 90° 10. 127°

Challenge Problems

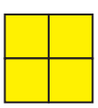
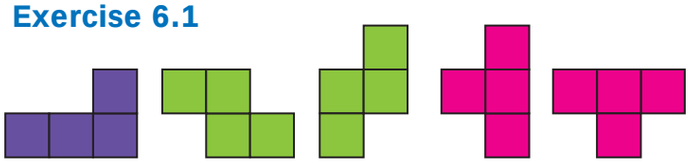
11. 26° 12. 38° 13. 40°,25° 14. 44°

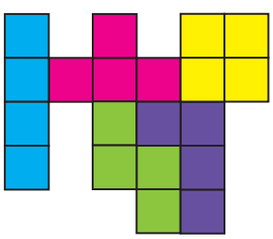
15. 72°,57°,51° 16. 76°,29° 17. 7° 18. 48°,60°,108°

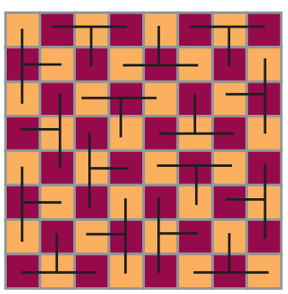
19. 21° 20. 214°

Information Processing

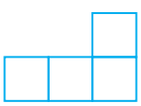
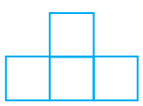
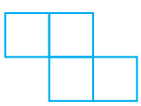
Exercise 6.1

1. 4 2.  3. 

4. 

5. 

(more possible ways)

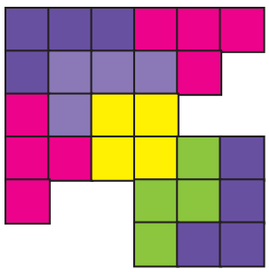
6. (i)  (ii)  (iii)  (iv) 

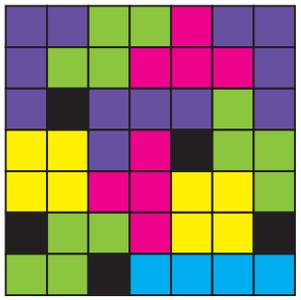
7.

16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

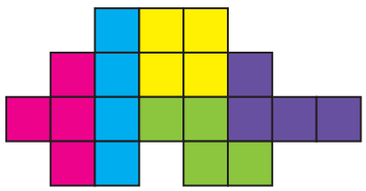
(more possible ways)

Exercise 6.2

1. 

2. 

(more possible ways)

3. 

4.

16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

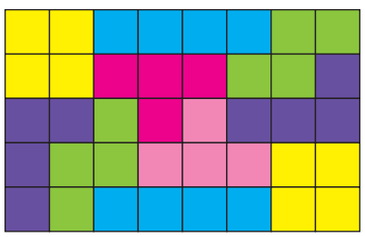
(more possible ways)

5. Mandapam → Krusadai Island → Vivekanandar Memorial Hall

Challenge Problems

6. 

(more possible ways)

7. 

(more possible ways)

8 (i) *route* 1 $A \to G \to D$

route 2 $A \to B \to D$

route 3 $A \to B \to C \to D$

route 4 $A \to G \to F \to E \to D$

(ii) 320 *m*

(iii) *route* 1 $B \to A \to G \to F$

$250 + 100 + 150 = 600\,m$

route 2 $B \to D \to E \to F$

$100 + 120 + 300 = 520\,m$

route 3 $B \to D \to G \to F$

$100 + 200 + 150 = 450\,m$

route 4 $B \to C \to D \to E \to F$

$120 + 200 + 120 + 300 = 740\,m$

Route 3 is the shortest route.