

CHAPTER 1

Exercise 1.1

- | | | | |
|--|-------------------------------|--|--------------------|
| 1. i. -8°C , -2°C , $+5^{\circ}\text{C}$, $+14^{\circ}\text{C}$, $+22^{\circ}\text{C}$ | ii. 30°C | | |
| iii. 6°C | iv. Yes, -2°C | | |
| 2. i. -1 | ii. Negative | iii. equal to, greater, less | iv. -90 |
| v. -381 | | | |
| 3. -22 , -11 , -4 , -2 , 0 , 4 , 6 , 9 , 13 , 20 | | 4. 32 , 16 , 14 , 12 , 0 , -6 , -12 , -18 , -32 , -109 | |
| 5. -10 km | | 6. ₹ 358 | |
| 7. i. 17 | ii. 27 | iii. 31 | iv. 125 v. 136 |
| 8. i. $<$ | ii. $<$ | iii. $>$ | iv. $>$ |

Exercise 1.2

- | | | | |
|--------------------------|--|---------------------------|---------------------|
| 1. i. -149 | ii. 78 | iii. 262 | iv. 62 |
| v. -52 | vi. -16 | | |
| 2. i. -70 | ii. 44 | iii. 16 | iv. 64 |
| v. -64 | vi. -54 | | |
| 3. Do yourself | 4. 29 | 5. 92 | 6. Do it yourself |
| 7. i. $<$ | ii. $<$ | iii. $<$ | iv. $=$ v. $>$ |
| 8. 6200 m | 9. Tuesday -8°C , Wednesday -3°C | 10. 62 years | 11. ₹ 1200 |
| 12. i. 9 , 13 , 17 | ii. -10 , -12 , -14 | iii. -5 , -10 , -15 | iv. 1 , 4 , 7 |

Exercise 1.3

- | | | | |
|-------------------------|--------------|--------------|-----------------------------|
| 1. i. 256 | ii. -3630 | iii. -448 | iv. 13824 |
| v. 150 | vi. 1890 | vii. 3960 | viii. -2800 |
| 2. i. -1520 | ii. -13800 | iii. -5916 | iv. 16856 |
| v. 46000 | vi. -1420 | vii. -380 | viii. 2800 |
| 3. i. 74 | ii. 18 | iii. 0 | |
| 4. i. 60 | ii. -168 | iii. -60 | iv. 84 |
| 5. Do yourself | | | |
| 6. i. T | ii. T | iii. F | iv. F v. F |
| 7. 8°C | 8. ₹ 7500 | 9. i. 36 | ii. 38 iii. 50 , Team C |
| 10. ₹ $3,00,000$ profit | | | |

Exercise 1.4

- | | | | |
|----------------------|---------------------------------------|--------------------|--------------------|
| 1. i. -3 | ii. -10 | iii. 4 | iv. -1 |
| v. -13 | vi. 0 | vii. 1 | viii. -1 ix. 1 |
| 2. i. -10 | ii. -1 | iii. -48 | iv. 15 |
| v. -1 | vi. 0 | | |
| 3. 15 min | 4. 47 correct and 3 not supplying | | |
| 5. i. 1000 pencils | ii. 175 pens | iii. 200 pencils | |

Exercise 1.5

- | | | | |
|-----------|---------|----------|--------|
| 1. i. 3 | ii. 9 | iii. 53 | iv. 16 |
| v. 10 | vi. 5 | | |
| 2. i. 27 | ii. -11 | iii. -19 | iv. 20 |
| v. 3 | vi. 6 | | |
| 3. i. -22 | ii. -93 | iii. 2 | iv. 0 |
| v. 36 | vi. 75 | | |

Rapid Assessment

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|---|---------------------------------|-------------|----------------|
| A. 1. (c) | 2. (d) | 3. (c) | 4. (c) |
| 5. (d) | 6. (d) | 7. (b) | |
| B. 1. -1 | 2. -12 | 3. negative | 4. not defined |
| 5. -22 | 6. -8 | 7. 72 | 8. -10 |
| 9. 0 | 10. -3 | | |
| C. 1. $a - r, b - p, c - t, d - q, r - s$ | 2. $a - r, b - s, c - p, b - q$ | | |
| D. 1. T | 2. F | 3. F | 4. T |
| 5. T | 6. F | | |

CHAPTER 2

Exercise 2.1

- | | | | |
|---|--|-----------------------------------|-------------------------------------|
| 1. i. $\frac{11}{9} > \frac{7}{9}$ | ii. $\frac{17}{15} = \frac{119}{105}$ | iii. $\frac{8}{9} > \frac{8}{13}$ | iv. $\frac{37}{41} > \frac{19}{30}$ |
| 2. i. $\frac{13}{20}, \frac{7}{10}, \frac{11}{15}, \frac{4}{5}$ | ii. $\frac{1}{4}, \frac{7}{9}, \frac{5}{6}, \frac{11}{12}$ | | |
| 3. Sonal, $\frac{18}{35}$ | | | |
| 4. i. $\frac{8}{9}$ | ii. $1\frac{17}{36}$ | iii. $1\frac{17}{24}$ | iv. $1\frac{31}{48}$ |
| 5. i. $\frac{3}{7}$ | ii. $\frac{1}{12}$ | iii. $2\frac{1}{2}$ | iv. $2\frac{1}{3}$ |
| 6. i. $1\frac{7}{18}$ | ii. $1\frac{1}{4}$ | iii. $7\frac{1}{24}$ | |
| 7. $10\frac{2}{5}$ | 8. $1\frac{2}{15}$ | 9. $56\frac{1}{2}$ | 10. $1\frac{7}{12}$ hrs |
| 11. i. 6 | ii. 144 | iii. 40 | iv. 66 |
| v. 4 | vi. 11 | | |

Exercise 2.2

- | | | | | |
|----------------------|--------------------|----------------------|-------------------------------------|------------------|
| 1. i. 16 | ii. $\frac{7}{2}$ | iii. $12\frac{1}{2}$ | iv. $\frac{3}{5}$ | v. $\frac{7}{5}$ |
| 2. i. $\frac{9}{28}$ | ii. $\frac{3}{20}$ | iii. $7\frac{1}{2}$ | iv. $\frac{5}{3}$ or $1\frac{2}{3}$ | |
| 3. i. $\frac{7}{16}$ | ii. $\frac{5}{12}$ | iii. $\frac{3}{20}$ | iv. $\frac{5}{9}$ | |

$$\text{v. } \frac{11}{2}$$

$$4. \frac{1}{12} \text{ of the basket}$$

$$7. 3 \text{ m}$$

$$\text{vi. } \frac{18}{5}$$

$$5. \frac{1}{2}$$

$$8. 10\frac{1}{2} \text{ hrs}$$

$$\text{vii. } \frac{63}{8}$$

$$6. \text{ i. - c, ii - a, iii - d, iv - b}$$

$$\text{viii. } \frac{213}{70}$$

Exercise 2.3

$$1. \text{ i. } 49$$

$$\text{ii. } 3\frac{1}{5}$$

$$\text{iii. } \frac{2}{37}$$

$$\text{iv. } 2\frac{2}{5}$$

$$2. \text{ i. } \frac{5}{24}$$

$$\text{ii. } \frac{7}{9}$$

$$\text{iii. } \frac{1}{5}$$

$$\text{iv. } 2\frac{1}{6}$$

$$\text{v. } \frac{7}{36}$$

$$\text{vi. } \frac{65}{24}$$

$$\text{vii. } 1\frac{1}{2}$$

$$\text{viii. } \frac{3}{32}$$

$$3. \text{ i. } 1$$

$$\text{ii. } 5\frac{3}{4}$$

$$\text{iii. } 4\frac{2}{7}$$

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

$$\text{v. } \frac{4}{15}$$

$$\text{vi. } 1\frac{23}{25}$$

$$\text{vii. } 1\frac{5}{6}$$

$$\text{viii. } \frac{62}{49}$$

$$4. \text{ i. } -\frac{1}{20}$$

$$\text{ii. } 8$$

$$\text{iii. } \frac{35}{114}$$

$$\text{iv. } \frac{1}{4}$$

$$\text{v. } \frac{5}{9}$$

$$\text{vi. } 1\frac{1}{8}$$

$$\text{vii. } \frac{1}{4}$$

Exercise 2.4

$$1. ₹ 40$$

$$2. \frac{3}{2} \text{ metres}$$

$$3. 7 \text{ jugs}$$

$$4. 32 \text{ pieces}$$

$$5. 1\frac{11}{18}$$

$$6. ₹ 26\frac{2}{3}$$

$$7. 30 \text{ m}$$

$$8. 18$$

$$9. \frac{187}{35} \text{ km}$$

$$10. 32 \text{ letters}$$

$$11. \text{ B, } \frac{1}{8} \text{ hrs}$$

$$12. \frac{5}{6} \text{ hour}$$

Rapid Assessment

$$\text{A. 1. (c)}$$

$$2. (b)$$

$$3. (d)$$

$$\text{B. 1. } \frac{103}{11}$$

$$2. \text{ Proper}$$

$$3. 7 \text{ and } \frac{3}{4}$$

$$4. <$$

$$5. \text{ Fraction}$$

$$\text{D. 1. T}$$

$$2. \text{ F}$$

$$3. \text{ F}$$

$$4. \text{ T}$$

$$5. \text{ T}$$

$$6. \text{ F}$$

$$7. \text{ T}$$

$$8. \text{ F}$$

$$9. \text{ F}$$

$$10. \text{ T}$$

CHAPTER 3

Exercise 3.1

$$1. \text{ i. } 6.23$$

$$\text{ii. } 1.009$$

$$\text{iii. } 7.25$$

$$\text{iv. } 8.235$$

$$2. \text{ Like decimal: } 34.75, 67.05 \text{ and } 125.754, 786.556$$

$$\text{Unlike decimal: } 78.012, 0.5 \text{ and } 258.12, 545.1$$

$$3. 0.419, 1.38, 7.95, 18.149, 24.17, 53.67$$

$$4. 21.42, 17.92, 4.61, 3.678, 0.139$$

$$5. \text{ i. } 0.08$$

$$\text{ii. } 20.94$$

$$\text{iii. } 23.206$$

- | | | | |
|---|--|--------------|---------------|
| 6. i. 13.963 | ii. 12.511 | iii. 41.567 | iv. 0.21749 |
| v. 135.87 | vi. 761.335 | vii. 208.072 | viii. 122.085 |
| 7. i. 40.42 | ii. 16.14 | iii. 4.654 | iv. 125.342 |
| v. 11.116 | vi. 342.868 | vii. 0.624 | viii. 5.8695 |
| 8. i. 0.5 | ii. 7 | iii. 2.30 | iv. 0.88 |
| 9. i. 3.802, 38.002, 38.02, 38.021, 83.02 | ii. 46.05, 46.0542, 46.254, 46.452, 46.542, 64.542 | | |

Exercise 3.2

- | | | | | |
|----------------|-----------|------------|---------------|---------------|
| 1. i. 399 | ii. 0.57 | iii. 1 | iv. 3000.01 | v. 0.009 |
| 2. i. 0.000001 | ii. 8.1 | iii. 3700 | iv. 4750 | v. 0.00500075 |
| 3. i. 28.125 | ii. 3051 | iii. 600 | iv. 0.0068206 | v. 15350 |
| 4. i. 4.9 | ii. 9.5 | iii. 0.56 | iv. 1.111 | |
| v. 0.081 | vi. 0.804 | vii. 711.2 | viii. 888 | |

Exercise 3.3

- | | | | |
|--------------|------------|--------------|-------------|
| 1. i. 19 | ii. 16 | iii. 443 | iv. 0.9 |
| v. 0.6 | vi. 0.2 | vii. 6.5 | viii. 2.1 |
| 2. i. 5.04 | ii. 0.103 | iii. 0.048 | iv. 0.142 |
| v. 0.0715 | vi. 5.6 | vii. 0.76 | viii. 0.007 |
| 3. 35.1 kg | 4. 40 | 5. ₹ 42.6 | 6. 4 |
| 7. i. 0.48 | ii. 5.25 | iii. 3.31 | iv. 0.397 |
| v. 27.223 | vi. 0.056 | | |
| 8. i. 0.027 | ii. 0.003 | iii. 0.0078 | iv. 0.236 |
| v. 0.9853 | vi. 0.9328 | | |
| 9. i. 0.0079 | ii. 0.0263 | iii. 0.03853 | iv. 0.005 |
| v. 0.1289 | 10. 21.4 | | |

Rapid Assessment

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|-------------|------------|----------|--------------|
| A. 1. (a) | 2. (b) | 3. (b) | 4. (b) |
| 5. (d) | 6. (d) | | |
| B. 1. F | 2. F | 3. F | 4. T 5. T |
| C. 1. 12.69 | 2. 0.03784 | 3. 38.36 | 4. 18 cm |
| 5. 5.01 | 6. 31.2562 | | |

CHAPTER 4

Exercise 4.1

- | | | | |
|--|--|---|---|
| 1. i. $\frac{-4}{14}, \frac{-6}{21}, \frac{-8}{28}$ and $\frac{-10}{35}$ | ii. $\frac{10}{-6}, \frac{15}{-9}, \frac{20}{-12}, \frac{25}{-15}$ | iii. $\frac{8}{18}, \frac{12}{27}, \frac{16}{36}$ | |
| 2. i. $\frac{-3}{4} = \frac{-9}{12} = \frac{-21}{28}$ | ii. $\frac{-5}{-8} = \frac{10}{16} = \frac{25}{40}$ | iii. $\frac{7}{-9} = \frac{14}{-18} = \frac{35}{45}$ | iv. $\frac{-8}{-26} = \frac{4}{13} = \frac{-20}{-65}$ |
| 3. i. $\frac{33}{16}, \frac{11}{8}, \frac{3}{4}, \frac{9}{16}$ | ii. $\frac{1}{7}, \frac{-2}{8}, \frac{-1}{3}$ | iii. $\frac{3}{-5}, \frac{-7}{10}, \frac{8}{-10}, \frac{-17}{15}$ | iv. $\frac{11}{20}, \frac{7}{10}, \frac{5}{6}$ |

4. i. $\frac{1}{2}, \frac{2}{3}, \frac{7}{8}$ ii. $\frac{1}{6}, \frac{3}{14}, \frac{4}{10}, \frac{5}{12}$ iii. $\frac{5}{16}, \frac{9}{24}, \frac{3}{4}, \frac{7}{8}$ iv. $\frac{12}{27}, \frac{2}{3}, \frac{7}{9}$
5. i. 5 and -6 ii. -12 and 8 iii. -13 and 1 iv. -6 and -7
- v. 28 and 25 vi. -17 and 20
6. i. $\frac{-7}{5}$ ii. $\frac{-1}{8}$
7. i. $\frac{2}{5}$ ii. $\frac{-7}{10}$ iii. $\frac{1}{8}$ iv. $\frac{-1}{5}$
- v. $\frac{-1}{2}$ vi. $\frac{-11}{107}$ vii. $\frac{2}{7}$
8. i. $\frac{15}{40}$ ii. $\frac{12}{32}$ iii. $\frac{-15}{-40}$ iv. $\frac{-9}{-24}$
9. i. < ii. < iii. = iv. >
- v. > vi. = vii. > viii. <
10. Do it yourself
11. i. $\frac{3}{5}$ ii. $\frac{-1}{12}$ iii. $\frac{2}{3}$ iv. $\frac{6}{7}$
12. i. $\frac{1}{7}$ ii. $\frac{6}{11}$ iii. 0 iv. $\frac{9}{16}$ v. $\frac{5}{3}$
13. i. -36 ii. -2 iii. -5 iv. 5
- v. -21 vi. -10
14. -17, -18, -19, -20, -21, -22, -23, -24, -25, -26 and -27
15. $\frac{90}{126}, \frac{91}{126}, \frac{92}{126}, \frac{93}{126}, \frac{94}{126}, \frac{95}{126}$ 16. $\frac{13}{36}, \frac{14}{36}, \frac{15}{36}, \dots$

Exercise 4.2

1. i. $\frac{-3}{2}$ ii. $\frac{34}{15}$ iii. $\frac{17}{30}$ iv. $\frac{82}{99}$
- v. $\frac{-2}{3}$ vi. $\frac{34}{15}$
2. i. $\frac{3}{20}$ ii. $\frac{-25}{27}$ iii. $\frac{1}{10}$ iv. $\frac{37}{24}$
- v. -1 vi. $\frac{2}{3}$
3. i. $\frac{9}{13}$ ii. $\frac{-15}{17}$ iii. $\frac{-8}{9}$ iv. $\frac{1}{12}$
- v. $\frac{-5}{28}$ vi. $\frac{-349}{90}$ vii. $\frac{97}{36}$ viii. $\frac{9}{20}$
- ix. $\frac{-25}{18}$ x. $\frac{1}{30}$ xi. $\frac{3}{4}$ xii. $\frac{-67}{84}$

Exercise 4.3

1. i. $\frac{25}{7}$ ii. $\frac{3}{11}$ iii. $\frac{2}{21}$ iv. $\frac{1}{18}$
- v. $\frac{1}{14}$ vi. $\frac{1}{7}$ vii. $\frac{1}{15}$ viii. $\frac{-14}{9}$

2. i. $\frac{-62}{63}$

v. $\frac{-3}{5}$

3. i. $\frac{7}{12}$

4. $\frac{220}{441}$

ii. $\frac{-289}{420}$

vi. $\frac{4}{45}$

ii. $\frac{-479}{234}$

5. $\frac{9}{7}$

iii. 0

vii. $\frac{35}{4}$

iii. $\frac{5}{3}$

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

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

Exercise 4.4

1. i. $\frac{5}{9}$

2. i. $\frac{-3}{2}$

3. $\frac{-12}{25}$

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

7. $\frac{7}{9}$

9. -39

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

ii. $\frac{-7}{3}$

5. i. $\frac{-10}{9}$

v. -3

8. i. $\frac{1}{4}$

10. $2\frac{1}{4}m$

iii. $\frac{-9}{32}$

iii. $\frac{1}{6}$

ii. -3

vi. $\frac{7}{15}$

ii. $\frac{74}{3}$

11. Do yourself

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

iv. $\frac{-1}{10}$

iii. $\frac{-3}{2}$

6. $\frac{-54}{5}$

iii. $\frac{1}{80}$

Exercise 4.5

1. $\frac{22}{7}, -\sqrt{2}$

iv. $\frac{213}{10}$

3. i. Rational
v. Rational

4. i. 1.222
v. 8.5333

2. i. $\frac{6}{25}$

v. $\frac{161}{125}$

ii. Rational
vi. Irrational.

ii. 9.8
vi. 0.25

ii. $\frac{-1}{8}$

vi. $\frac{25}{4}$

iii. Irrational

iii. -3.333

iii. $\frac{-111}{20}$

iv. Rational

iv. -82.6667

Rapid Assessment

A. 1. (b)

5. (c)

9. (d)

B. 1. $8\frac{4}{5}$

5. 1

C. i - (c), ii - (e), iii - (a), iv - (b), v - (d)

D. 1. T

5. F

2. (a)

6. (d)

10. (c)

2. $\frac{9}{5}$

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

2. F

6. T

3. (b)

7. (d)

11. (d)

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

3. T

4. (a)

8. (a)

4. $\frac{a}{b}$

4. T

Exercise 5.3

1. No
2. Yes
3. No
4. No
5. 5.4×10^7
6. 9.8×10^{11}
7. 5×10^{13}
8. 2.74×10^{10}
9. i. 5.38×10^2
v. 2.3×10^7
- ii. 6.428×10^6
- iii. 8.2934×10^{10}
- iv. 9.4×10^{11}
10. i. $2 \times 10^4 + 0 \times 10^3 + 0 \times 10^2 + 6 \times 10^1 + 8 \times 10^0$
ii. $4 \times 10^5 + 2 \times 10^4 + 0 \times 10^3 + 7 \times 10^2 + 1 \times 10^1 + 9 \times 10^0$
iii. $7 \times 10^6 + 8 \times 10^5 + 0 \times 10^4 + 5 \times 10^3 + 1 \times 10^2 + 9 \times 10^1 + 2 \times 10^0$
iv. $5 \times 10^6 + 0 \times 10^5 + 0 \times 10^4 + 4 \times 10^3 + 1 \times 10^2 + 3 \times 10^1 + 2 \times 10^0$
v. $9 \times 10^5 + 2 \times 10^4 + 7 \times 10^3 + 3 \times 10^2 + 0 \times 10^1 + 3 \times 10^0$
11. i. 76045
ii. 542003
iii. 900530
iv. 30405
12. i. $5 \times 10^4 + 3 \times 10 + 2$
ii. $4 \times 10^5 + 2 \times 10^4 + 6 \times 10^2 + 2 \times 10 + 1$
iii. $6 \times 10^6 + 3 \times 10^5 + 6 \times 10^3 + 1 \times 10^2 + 7 \times 10 + 3$
13. i. 4670000
ii. 3320
iii. 3500

Rapid Assessment

- A. 1. (d)
2. (c)
3. (d)
4. (c)
- B. i. 9, -5
v. 2
ix. 7
- ii. $\left(\frac{-3}{4}\right)^5$
vi. -9
x. 7
- iii. x^6y^{15}
vii. 3
- iv. 0
viii. 4
- C. i. F
v. T
- ii. F
vi. F
- iii. T
vii. T
- iv. F

CHAPTER 6

Exercise 6.1

1. i. $3x + 6$
v. $x^2 - 3x$
- ii. $13 - 5x$
vi. $mn - (m + n)$
- iii. $x^2 + y^2$
2. ₹ $(9x + 50)$
- iv. $3pq + 7$

3.	S.No.	Expression	Terms with factor (x)	Co-efficient of x
	i.	$y^2x + y$	y^2x	y^2
	ii.	$13y^2 - 8yx$	$-8yx$	$-8y$
	iii.	$x + y + 2$	x	1
	iv.	$5 + z + zx$	zx	z
	v.	$1 + x + xy$	x, xy	1, y
	vi.	$12xy^2 + 25$	$12xy^2$	$12y^2$
	vii.	$7x + xy^2$	$7x, xy^2$	7, y^2

4. i. binomial
v. binomial
- ii. binomial
vi. trinomial
- iii. binomial
vii. trinomial
- iv. monomial
viii. monomial
5. (ii), (iii), (vi)

6. i. $15m^2$ $-24mn$ 8
- iii. xyz $-2x^2y$ $-2y^2z$
7. i. 2 ii. 2
8. i. T ii. T
- v. F vi. F

- ii. $6t$ $-4st$
- iv. a^3 b^3 c^3 $3abc$.//
- iii. 2 iv. 3 v. 3
- iii. F iv. F
- vii. F viii. T

Exercise 6.2

1. i. monomial, quadratic polynomial
iii. binomial, linear polynomial
v. trinomial, quadratic polynomial
2. i. linear ii. quadratic
v. linear vi. cubic
3. i. 1 ii. $\frac{-14}{3}$
- ii. binomial, linear polynomial
iv. trinomial, quadratic polynomial
vi. monomial, quadratic polynomial
iii. cubic iv. cubic
- iii. 17 iv. 1

Exercise 6.3

1. i. $-24a^2y$ ii. $-10ab$
2. i. $4x + 3y$ ii. $4x + 2y$
4. i. $4x$ ii. $10a$
6. $-9y + 10z$ 7. $2ab - a^2$
10. $2x^3 + 12x^2 + 6x - 10$ 11. i. $11xy - 7$
iv. $-5x^2y - 10$ v. $2y$
12. $-6x^2 - 8xy - 3z^2 + 8$ 13. i. $4x^2 + y^2 + 2xyz$
iv. $4x - y - 7$ v. $4x^3y + 2x^2y + xy$
14. $2x^2 + 5y^2 - 10$ 15. $4x + 6$
- iii. xyz iv. $14mn + 11$
3. i. $3x^3 + x^2y - 2xy^2 - 5y^3$ ii. $-a^4 + 5a^3b - 2a^2b^2 - 2ab^3 + 4b^4$
5. i. $4x^2 - 4y^2$ ii. $a^2 - 4ab$
8. $a^3 - 5a^2 + 7a - 7$ 9. $-x^3 - 9x^2 + 6x - 2$
- ii. $2x^3 - 5x^2 + 19x - 10$ iii. $7z^2 + 5y^2 + xy + xyz + 16y$
- vi. $18x^2yz - 8xy^2z - 7 - 7xyz$
ii. $6x - y - z$ iii. $x + xy$
- vi. $70x + y - x^2 - 14$

Exercise 6.4

1. i. $3n + 1$ ii. $5n + 1$
2. i. 11, 21, 201 ii. 16, 31, 301
v. 27, 52, 502 vi. 23, 43, 403
3. 5th term 10th term 100th term
- | | | | |
|-----|----|-----|--------|
| (a) | 11 | 21 | 201 |
| (b) | 13 | 28 | 298 |
| (c) | 21 | 41 | 401 |
| (d) | 55 | 90 | 720 |
| (e) | 26 | 101 | 10,001 |
- iii. $5n + 2$
- iii. 17, 32, 302 iv. 26, 51, 501

Rapid Assessment

A. 1. (a)

2. (c)

3. (d)

4. (c)

5. (d)

6. (b)

B. i. π

ii. like

iii. one

iv. $n, 6n$

v. $b + c$

vi. $55y \text{ km}$

C. i. T

ii. F

iii. F

iv. F

v. T

D. i. $-(b)$

ii. $-(c)$

iii. $-(d)$

iv. $-(a)$

v. $-(f)$

vi. $-(e)$

CHAPTER 7

Exercise 7.1

1. i. $x = -2$

ii. $x = 8$

iii. $x = 1$

iv. $x = 6$

v. $x = \frac{4}{7}$

vi. $x = \frac{5}{2}$

vii. $x = \frac{-3}{5}$

viii. $x = 3$

ix. $x = 29$

x. $x = \frac{25}{2}$

xi. $y = 4$

xii. $x = 2$

2. i. Yes

ii. No

iii. No

iv. Yes

v. No

3. i. $\frac{3}{4}z = 14$

ii. $6a - 10 = 45$

iii. $t + 57 = 100$

iv. $6y - 6 = 60$

v. $3m + 3 = 30$

vi. $\frac{n}{5} + 6 = 11$

4. i. $x = 2$

ii. $n = 12$

iii. $x = 12$

iv. $x = -4$

v. $x = 0$

5. i. $P = \frac{14}{15}$

ii. $P = \frac{6}{5}$

iii. $E = 2$

iv. $P = 7$

v. $m = 2$

6. i. 3

ii. $\frac{58}{21}$

iii. -30

iv. -8

v. 9

vi. 10

vii. 10

viii. $\frac{17}{4}$

ix. $\frac{18}{15}$

x. 12

Exercise 7.2

1. $n = 6$

2. 26, 27

3. 17, 43

4. 9

5. 30

6. 10

7. 40

8. 33

9. $\frac{7}{4}$

10. 57, 23

11. fruit tree = 295, nm = fruit trees = 102

12. 1, 2, 3

13. 16 m

14. ₹ 13740

15. 72 coins

Rapid Assessment

A. 1. (d)

2. (a)

3. (c)

4. (b)

5. (d)

6. (c)

B. 1. 10

2. 3

3. 35

4. one

C. 1. F

2. T

3. F

D. 1. $x = 10$

2. $x = 10$

3. $x = 24$

4. $x = 2$

5. $x = 3$

6. 0

7. 12

8. 10

CHAPTER 8

Exercise 8.1

- | | | | |
|--|--------------------------------|-----------------|------------------|
| 1. i. 5 : 3 | ii. 2 : 3 | iii. 4 : 3 | iv. 1 : 4 |
| v. 13 : 10 | vi. 3 : 4 | | |
| 2. i. 4 : 5 | ii. 1 : 2 | iii. 7 : 10 | iv. 2 : 3 |
| v. 4 : 3 | vi. 0.5 : 1.3 | | |
| 3. i. 90, 180 | ii. 45, 90, 135 | 4. 40°, 60°, 80 | 5. ₹ 16; ₹ 24 |
| 6. 35, 20 | 7. 7 : 15 | 8. 20 : 35 : 42 | 9. ₹ 3780, 1 : 3 |
| 10. 3 : 22 | 11. 1 : 41 | 12. No | |
| 13. Anjali : 10 years, Asha : 15 years | 14. A : 15 years, B : 18 years | | |
| 15. 10, 12 | 16. 14 | 17. i. 6 : 7 | ii. 13 : 24 |

Exercise 8.2

- | | | | |
|----------------------------|---------------|---------------|---------------|
| 1. i. 2 | ii. 28 | iii. 33 | iv. 32 |
| 2. i. Prop. | ii. Not prop. | 3. $x = 18$ | 4. 18 |
| 5. Yes | 6. $x = 6$ | 7. 88 packets | 8. ₹ 17250 |
| 9. i. 45 | ii. 80 | iii. 35 | iv. 18 |
| 10. 15, 18, 35, 42 | 11. ₹ 2400 | 12. ₹ 4800 | 13. 60 litres |
| 14. 1 cm represents 100 km | 15. 1024 kg | 16. 15 m | 17. 100 men. |

Rapid Assessment

- | | | | |
|---------------|----------|--------------|------------------|
| A. 1. (b) | 2. (a) | 3. (c) | 4. (b) |
| 5. (c) | 6. (d) | 7. (c) | 8. (d) |
| B. 1. 15 : 19 | 2. C | 3. 45 days | 4. 2 : 3 |
| C. 1. F | 2. F | 3. F | 4. T |
| D. 1. | 2. ₹ 156 | 3. 35 litres | 4. 480, 800, 320 |

CHAPTER 9

Exercise 9.1

- | | | | |
|---|----------------------------|-----------------------------|----------------------------|
| 1. i. 75% | ii. 125% | iii. 7.5% | iv. $14\frac{2}{7}\%$ |
| 2. i. 65% | ii. 210% | iii. 2% | iv. 12.35% |
| 3. i. 88.89% | ii. 40% | iii. 75% | iv. 37.5% |
| 4. i. $\frac{22}{100}$, 22% | ii. $\frac{25}{100}$, 25% | iii. $\frac{32}{100}$, 32% | iv. $\frac{21}{100}$, 21% |
| 5. Ravi : ₹ 500, 20%; Raju : ₹ 750, 30% : Roy : ₹ 1250, 50% | | | |
| 6. i. 0.28 | ii. 0.03 | iii. 0.0044 | iv. 0.375 |
| 7. i. 65% | ii. 90% | iii. 210% | iv. 2% |
| 8. i. 58% | ii. 20% | | |

Exercise 9.2

- | | | | |
|-------------|------------|---------|--------------------|
| 1. i. ₹ 350 | ii. 0.24 | iii. 96 | iv. $5\frac{9}{4}$ |
| v. 4.5 kg | vi. 540 ml | | |

2. i. $6\frac{2}{5}$
3. 50%
7. 216
10. i. 75%
11. i. 25%
- ii. 5
4. 25%
8. 6000
- ii. 36%
- ii. 50%
- iii. 12
5. 6500%
9. 6.3 m
- iii. 52%
- iv. 10
- v. 85
6. ₹ 48 per kg
- iv. 15%

Exercise 9.3

1. i. ₹ 30
2. i. 10%
3. i. ₹ 280
5. i. 20% loss
6. 4% loss
10. ₹ 72, ₹ 972
13. ₹ 24000
- ii. C.P. = ₹ 850
- ii. 20%
- ii. ₹ 84
- ii. $7\frac{1}{7}$ % gain
7. $9\frac{1}{11}$ % loss
11. i. ₹ 13.20
14. Gain = 2.8%
- iii. S.P. = ₹ 730
- iii. 10%
4. i. ₹ 480
- iii. $16\frac{2}{3}$ % loss
8. $2\frac{3}{46}$ % gain
- ii. ₹ 14.16
- iv. S.P. = ₹ 300
- v. C.P. = ₹ 400
- iv. $6\frac{2}{3}$ %
- ii. ₹ 3000
9. ₹ 2700; ₹ 17.10 per kg
12. i. ₹ 10
- ii. ₹ 400

Exercise 9.4

1. i. ₹ 424, ₹ 3074
2. i. 2.5 years
3. ₹ 400
7. ₹ 224
- ii. ₹ 2800, ₹ 98800
- ii. 3 years or 2 years 6 month
4. ₹ 28800
8. ₹ 4030
- iii. ₹ 768, ₹ 7168
5. ₹ 500
9. $6\frac{2}{3}$ % p.a.
- iv. ₹ 216, ₹ 6216
6. ₹ 1340
10. ₹ 5000, ₹ 5000

Rapid Assessment

- A. 1. (b)
5. (b)
- B. 1. 0.0625
- C. 1. T
5. T
2. (b)
6. (c)
2. 10
2. F
6. F
3. (b)
3. 25%
3. T
7. F
4. (b)
4. ₹ 10
5. ₹ C.P.
4. T
8. F

CHAPTER 10

Exercise 10.1

1. i. a common vertex, a common arm and the other two arms on opposite sides of the common arm.
- ii. linear pair
- iii. vertically opposite angles
- iv. 45°
- v. 90°
2. i. 5 and 1, 4 and 5
- ii. 5 and 1, 4 and 5
- iii. 1 and 4
- iv. 1 and 2
3. obtuse angle
4. i. No
- ii. No
- iii. Yes
- iv. Yes
5. i. 36°
- ii. 28°
- iii. 45°
- iv. 72°
6. i. 76°
- ii. 132°
- iii. 30°
- iv. 158°
7. 70° and 110°
8. right angle

9. i. F ii. F iii. T iv. T
10. Adjacent angles: $(\angle XOP, \angle POQ)$, $(\angle POQ, \angle QOY)$, $(\angle XOP, \angle POY)$, $(\angle XOQ, \angle QOY)$
 Linear Pairs: $(\angle XOP, \angle POY)$, $(\angle XOQ, \angle QOY)$
11. i. $x = 10^\circ$ ii. $y = 63^\circ$ 12. $152^\circ, 152^\circ, 28^\circ$ 13. $62^\circ, 118^\circ$

Exercise 10.2

1. i. 60° ii. 152° iii. 135° iv. 60°
2. $104^\circ, 76^\circ$ 3. $x = 50^\circ, y = 130^\circ, z = 70^\circ, w = 60^\circ$
4. $\angle 1, \angle 2, \angle 7, \angle 8$ are exterior angles; $\angle 3, \angle 4, \angle 5, \angle 6$ are interior angles; $(\angle 2, \angle 6)$, $(\angle 1, \angle 5)$, $(\angle 3, \angle 7)$, $(\angle 4, \angle 8)$ are pairs of corresponding angles; $(\angle 3, \angle 5)$ and $(\angle 4, \angle 6)$ are pairs of alternate interior angles; $(\angle 2, \angle 8)$ and $(\angle 1, \angle 7)$ are pairs of alternate exterior angles.
5. i. Yes, $\angle 1$ and $\angle 2$ are corresponding angles ii. Yes, $\angle 2$ and $\angle 3$ are corresponding angles
 iii. Yes, $\angle 1 = \angle 3$
6. $\angle 2 = 65^\circ, \angle 3 = 65^\circ, \angle 4 = 115^\circ, \angle 5 = 115^\circ, \angle 6 = 115^\circ, \angle 7 = 115^\circ, \angle 8 = 65^\circ$
7. i. $x = 30^\circ, y = 80^\circ, z = 70^\circ$ ii. $x = 60^\circ, y = 30^\circ, z = 90^\circ$
8. 261° 9. $x = 104^\circ$ 10. $a = 15^\circ, b = 20^\circ, c = 12^\circ$

Rapid Assessment

- A. 1. (b) 2. (c) 3. (a) 4. (d)
 5. (b) 6. (b) 7. (b)
- B. 1. 90° 2. 180° 3. adjacent angles 4. linear pair
 5. equal 6. obtuse angles
- C. 1. F 2. F 3. F 4. F
 5. F 6. T 7. F 8. F
- D. 1. i. (1, 2) (2, 3) (3, 4) (1, 4) (6, 5) (6, 7) (7, 8) (5, 8) ii. (2, 4) (1, 3) (6, 8) (5, 7)
 2. $\angle 2 = 70^\circ, \angle 1 = 110^\circ, \angle 3 = 110^\circ$ 3. $\angle 1 = 115^\circ, \angle 2 = 65^\circ, \angle 3 = 65^\circ, \angle 4 = 115^\circ, \angle 5 = 65^\circ$

Mental Maths

1. Two angles are said to be supplementary if their sum is 180° .
 2. Linear Pair 3. If sum is greater than 180° .
 4. Not necessarily, the non-common arms should be on either side of the common arm.

Brain Storming

1. No 2. $66^\circ, 114^\circ$ 3. 72°

CHAPTER 11

Exercise 11.1

1. i. $x = 60^\circ$ ii. $x = 45^\circ$ iii. $x = 35^\circ$ iv. $x = 20^\circ$
 2. i. $x = 82^\circ$ ii. $x = 60^\circ, y = 150^\circ$ iii. $x = y = 25^\circ$ iv. $x = y = 60^\circ$
 3. (b), (c) and (d) 4. $80^\circ, 80^\circ, 20^\circ$ 5. $36^\circ, 54^\circ, 90^\circ$
 6. i. No ii. No iii. Yes iv. Yes
 v. No vi. No

Exercise 11.2

1. i. 78° ii. 123° iii. 49° iv. 70°

v. 56°

2. i. 25°

3. 65° , 65° and 50°

vi. 25°

ii. $x = 5^\circ$

4. $\angle ACD = 75^\circ$, $\angle ADC = 45^\circ$, $\angle DAE = 85^\circ$

vii. 20°

iii. $x = 20^\circ$

viii. 46°

iv. Do yourself

Exercise 11.3

1. i. No

2. i. 4 cm and 16 cm

3. i. Yes

4. $AB = 24$ cm

7. i. 20

ii. Yes

ii. 5.7 cm and 20.7 cm

ii. No

5. 15 m

ii. 70

iii. Yes

iii. 7.5 cm and 17.5 cm

iii. No

6. $AC = 15$ m

iii. 13

iv. No

Rapid Assessment

A. 1. (d)

5. (d)

B. 1. F

5. F

C. 1. 100°

5. Right equal triangle

D. 1. (a) Yes

2. 10 units

2. (c)

6. (d)

2. T

6. F

2. 40°

(b) No

3. 25°

3. (a)

3. T

3. 180°

4. 4.98 cm

4. (a)

4. T

4. 145°

CHAPTER 12

Exercise 12.1

1. i. a

4. b.

ii. b

5. a.

2. Yes

3. $\angle PYQ$

Exercise 12.2

1. i. $\triangle ABC \cong \triangle EFD$

2. i. Yes

4. i. Yes, by SAS

5. i. Yes by SAS

ii. $\triangle PRQ \cong \triangle YXZ$

ii. Yes

ii. by CPCT

ii. by CPCT

iii. $\triangle ABD \cong \triangle CDB$

3. Yes, by SAS

iii. by SAS

6. Yes, by SAS.

Rapid Assessment

A. 1. (b)

B. 1. they have the same length

5. $\angle Q$ and $\angle R$

C. 1. F

5. T

2. (b)

2. 63°

6. $\triangle RPQ$

2. T

6. F

3. (a)

3. $m\angle A = n\angle B$

7. $D \leftrightarrow S$, $E \leftrightarrow R$, $F \leftrightarrow T$

3. T

4. (a)

4. MN

4. F

Fun with Maths

1. i. $-(q)$

(e) T

ii. $-(p)$

(f) F

iii. $-(s)$

iv. $-(r)$

Assertion and Reason

1. (c)

2. (d)

3. (b)

Brain Storming

1. Congruency by SAS

2. (a)

47° (b)

32° (c)

74°

CHAPTER 13

Exercise 13.1

1. 40 cm

2. 560 cm

3. 10.8 cm

4. 800 sqm

5. i. Area because four times ii. Area remains unchanged iii. Area reduces to one-fourth

6. 25 stamps

7. ₹ 700

8. 3600 sq.cm

9. ₹ 5,841 for the roads, ₹ 37,345 for the garden; Total = ₹ 43,186

10. ₹ 15000

11. ₹ 4888

12. ₹ 6912

13. i. 80 m

ii. ₹ 30400

Exercise 13.2

1. 48 sq.m

2. 100 m

3. 100 sq.m; 1400 sq.m

4. 4.8 cm

5. $xy = 6$ cm, $yz = 8$ cm

6. i. 82 sq.m

ii. 55 sq.m

7. Base = 18 m, height = 12 m

8. i. 56 m²

ii. 228.78 cm²

9. i. 17.64 cm²

ii. 66.75 cm²

iii. 50.4 cm²

iv. 39.53 m²

Exercise 13.3

1. 22.886 m²

2. 21.5 cm²

3. 10 : 1

4. 200 cm²

5. 440 m

6. 4 : 9

7. i. 44 cm

ii. 132 cm

c. 176 mm

d. 22 cm

8. 1886.5 sq.m

9. 16.15

Rapid Assessment

A. 1. (c)

2. (b)

3. (c)

4. (a)

5. (b)

6. (d)

7. (a)

B. 1. number of sides

2. perimeter, area

3. Π

4. 1000000

5. 100000

C. 1. T

2. F

3. F

4. T

5. F

D. 1. (b), (d), (c), (f), (g), (h)

3. (b), (c), (d), (e)

4. 5 cm

5. 37.5 cm²

Assertion and Reason

1. (a)

2. (b)

3. (d)

Fun with Maths

(a) $-(r)$, (b) $-(p)$, (c) $-(q)$, (d) $-(s)$

CHAPTER 14

Exercise 14.1

1. i. 6, 8, 12, 6 + 8 - 12

ii. 6, 8, 12, 6 + 8 - 12

iii. 5, 6, 9, 5 + 6 - 9

iv. 5, 5, 8, 5 + 5 - 8

v. 5, 5, 8, 5 + 5 - 8

vi. 4, 4, +6, 4 + 4 - 6

2. i. F

ii. F

iii. T

iv. T

3. i. Cuboid

ii. 8

iii. Flat

iv. One

v. 12

4. (b)

Exercise 14.2

1. i. HD, HG and HE
iv. EFGH
vii. AE, DH, BF and CG
3. i. $V = 7$, $E = 7$
4. i. match box, book, brick, bus
6. and 7. Do it yourself
- ii. ABCD and ABFE
v. AG, BH, CE and DF
- iii. EFGH, ABCD, ABEF and DCGH
vi. AEHD, BFGC, DHGC and AEFB
- ii. $V = 4$, $E = 4$
- ii. pipe, pen, jar, wire

Exercise 14.3

Do yourself.

Exercise 14.4

1. i. cubes
ii. cube and cone
iii. cylinder and cuboid
iv. cuboid and pyramidal
2. i. Rectangle
ii. Triangle
iii. Circle
3. i. Circle
ii. Triangle
iii. Rectangle
4. i. 
ii. 
iii. 
5. i. (b), (c), (a)
ii. (c), (b), (a)
iii. (b), (a), (c)

Rapid Assessment

- | | |
|---|----------------------------|
| A. 1. (b)
2. (d) | 3. (c)
4. (a)
5. (d) |
| B. 1. edge
2. 5
3. three
4. pyramidal
5. one
6. opposite
7. 6
8. edge
9. 12, 8
10. 3, no, two | |
| C. 1. F
2. T
3. F
4. F
5. F
6. F
7. T
8. T
9. F
10. T | |

Fun with Maths

(a) $- (s)$, (b) $- (r)$, (c) $- (q)$, (d) $- (p)$