ANSWERS

CHAPTER ▸ 1

Exercise 1.1

Q.1. (*i*) $\frac{-12}{20}$ (*ii*) $\frac{18}{-30}$ (*iii*) $\frac{-21}{35}$ (*iv*) $\frac{24}{-40}$

Q.2. $\frac{-4}{5}$ Q.3. (*i*) $\frac{-21}{24}$ (*ii*) = (*iii*) $\frac{16}{19}$ (*iv*) 0

Q.4. (*i*) $\frac{4}{10}, \frac{6}{15}, \frac{8}{20}, \frac{10}{25}$ (*ii*) $\frac{16}{-22}, \frac{24}{-33}, \frac{32}{-44}, \frac{40}{-55}$ (*iii*) $\frac{-10}{18}, \frac{-15}{27}, \frac{-20}{36}, \frac{-25}{45}$ (*iv*) $\frac{-24}{26}, \frac{-36}{39}, \frac{-48}{52}, \frac{-60}{65}$

Q.5. (*i*) $\frac{-2}{5}$ (*ii*) $\frac{-2}{7}$ (*iii*) $\frac{3}{-8}$ (*iv*) $\frac{4}{7}$

Q.6. (*i*) < (*ii*) < (*iii*) < (*iv*) < (*v*) > (*vi*) >

Q.7. (*i*) $\frac{-2}{3} < \frac{4}{-9} < \frac{-5}{12} < \frac{7}{(-18)}$ (*ii*) $\frac{-3}{4} < \frac{-7}{16} < \frac{5}{-12} < \frac{9}{-24}$ (*iii*) $\frac{-11}{15} < \frac{-7}{10} < \frac{-13}{20} < \frac{3}{-5}$ (*iv*) $\frac{-9}{14} < \frac{-4}{7} < \frac{-23}{42} < \frac{13}{-28}$

Q.8. Do youself. Q.9. $\frac{1}{3}, \frac{-1}{3}$ and $\frac{5}{6}, \frac{-5}{6}$ Q.10. Do yourself.

Exercise 1.2

Q.1. Do yourself.

Q.2. (*i*) 0 (*ii*) $\frac{-3}{17}$ (*iii*) $\frac{3}{7}$ (*iv*) – 10
(*v*) $\frac{-7}{5}$ (*vi*) 0

Q.3. (*i*) $\frac{-1}{3}$ (*ii*) $\frac{-17}{9}$ (*iii*) $\frac{15}{4}$ (*iv*) $\frac{-16}{5}$ (*v*) $\frac{-8}{7}$

Q.4. Do yourself.

Q.5. (*i*) T (*ii*) T (*iii*) T (*iv*) F (*v*) F

Q.6. (*i*) $\frac{2}{5}$ (*ii*) $\frac{7}{9}$ (*iii*) 5 (*iv*) 1 (*v*) $\frac{16}{13}$

Q.7. (*i*) $\frac{-141}{12}$ (*ii*) $\frac{-539}{126}$ (*iii*) $\frac{-25}{104}$ (*iv*) $\frac{17}{140}$

Q.8. (*i*) $\frac{-11}{18}$ (*ii*) $\frac{-5}{12}$ (*iii*) $\frac{13}{45}$ (*iv*) $\frac{2}{5}$

Q.9. $\frac{59}{60}$ Q.10. (*i*) *c* (*ii*) *c* (*iii*) c

Exercise 1.3

Q.1. (*i*) $\frac{-21}{40}$ (*ii*) $\frac{-5}{6}$ (*iii*) $\frac{4}{3} = 1\frac{1}{3}$ (*iv*) $-2\frac{2}{15}$

(*v*) 4 (*vi*) $\frac{-4}{7}$ (*iii*) -28 (*viii*) $\frac{10}{11}$

Q.2. (*i*) $\frac{-2}{7}$ (*ii*) $\frac{-81}{140}$ (*iii*) $\frac{4}{7}$ (*iv*) -12

Q.3. (*i*) $\frac{1}{16}$ (*ii*) $\frac{2}{21}$ (*iii*) $\frac{-16}{9}$ (*iv*) $18\frac{2}{7}$

Q.4. & 5. Do yourself.

Q.6. (*i*) $\frac{-17}{12}$ (*ii*) $\frac{-5}{3} = -1\frac{2}{3}$ (*iii*) $\frac{1}{27}$ (*iv*) $\frac{37}{2} = 18\frac{1}{2}$

Q.7. Do yourself.

Q.8. (*i*) $\frac{9}{-4}$ (*ii*) $\frac{1}{-7}$ (*iii*) $\frac{8}{5}$ (*iv*) -3

Q.9. 46 Q.10. $\frac{-3}{2}$ Q.11. $\frac{129}{4}$ Q.12. $1\frac{61}{92}$

Q.13. (*i*) -9 (*ii*) $\frac{-7}{5}$ (*iii*) $\frac{11}{19}$ (*iv*) $\frac{-17}{11}$ (*v*) $\frac{-13}{5}$

Q.14. $\frac{4}{3}$

Exercise 1.4

Q.1. (*i*) $\frac{4}{24}$ (*ii*) $\frac{-24}{30}$ (*iii*) $\frac{9}{18}$

Q.2. $\frac{7}{24}$ Q.3. $-1, 1$ Q.4. $\frac{-11}{4}, \frac{-10}{4}, \frac{-9}{4}$

Q.5. $\frac{8.1}{12}, \frac{8.2}{12}, \frac{8.5}{12}$ Q.6. $-0.4, -0.5, -0.6, -0.7, -0.8, -0.9$

Q.7. $\frac{-1}{12}, \frac{1}{12}, \frac{2}{12}, \frac{3}{12}, \ldots, \frac{9}{12}$ Q.8. $\frac{-2}{13}, \frac{-1}{13}, \frac{1}{13}, \frac{2}{13}, \frac{3}{13}, \ldots, \frac{8}{13}$ Q.9. 1.9, 1.8, 1.7, 1.6, 1.5

Q.10. (*i*) True, (*ii*) Falls, (*iii*) True.

CHAPTER ▸ 2

Exercise 2.1

Q.1. (*i*) $\left(\frac{2}{5}\right)^4$ (*ii*) $\left(\frac{4}{3}\right)^4$ (*iii*) $\left(\frac{-3}{7}\right)^7$ (*iv*) $\left(\frac{-11}{8}\right)^3$

Q.2. (*i*) $\frac{1}{2^3} = \frac{1}{8}$ (*ii*) $(2)^5 = 32$ (*iii*) $\frac{1}{16}$ (*iv*) 9

Q.3. (*i*) $\frac{1}{2}$ (*ii*) 9

Q.4. (*i*) $\left(\frac{7}{5}\right)^2$ (*ii*) $\left(\frac{-2}{3}\right)^3$ (*iii*) $\left(\frac{3}{4}\right)^2$ (*iv*) $\left(\frac{-2}{3}\right)^5$ (*v*) $\left(\frac{-1}{6}\right)^3$

Q.5. (*i*) $\left(\frac{2}{3}\right)^{-5}$ (*ii*) $\left(\frac{5}{3}\right)^{4}$ (*iii*) $\left(\frac{9}{8}\right)^{-1}$ (*iv*) $\left(\frac{5}{6}\right)^{2}$

Q.6. (*i*) $\left(\frac{125}{16}\right)$ (*ii*) $\frac{64}{-27}$ (*iii*) $\left(\frac{1}{-2}\right)^{4}$ (*iv*) $\left(\frac{7}{-3}\right)^{2}$ (*v*) $\left(\frac{-4}{11}\right)^{3}$

Q.7. $x = -3$

Q.8. (*i*) $\frac{216}{125}$ (*ii*) $\frac{6}{5}$ (*iii*) $\frac{12}{5}$ (*iv*) $\frac{1}{144}$

Q.9. $\frac{-2}{3}$ Q.10. $\frac{-1}{8}$

Exercise 2.2

Q.1. (*i*) 1.68×10^{8} (*ii*) 3.5×10^{6} (*iii*) 4.63×10^{12} (*iv*) 2.73×10^{5}

Q.2. (*i*) 25000 (*ii*) 691200000 (*iii*) 1679000000 (*iv*) 374000

Q.3. (*i*) 8.37×10^{-9} (*ii*) 0.00002

Q.4. (*i*) 8.37×10^{-8} (*ii*) 3.142×10^{-3} (*iii*) 5.42×10^{-6} (*iv*) 2×10^{-5}

Q.5. (*i*) > (*ii*) <

CHAPTER ▸ 3

Exercise 3.1

Q.1. (*i*) 34 (*ii*) 45 (*iii*) 69 (*iv*) 121

Q.2. (*i*) yes (*ii*) yes (*iii*) yes (*iv*) no (*v*) yes

Q.3. 16, 36, 64, 81, 121, 100

Q.4. (*i*) 5, 210 (*ii*) 3,105 (*iii*) 5,55 (*iv*) 5,120

(*v*) 6,156 (*vi*) 3,102 (*vii*) 6,216

Q.5. 81 Q.6. 961 Q.7. (*i*) 3 (*ii*) 6 (*iii*) 2

Q.8. 225, 441, 2916, 11025 Q.9. 2, 24 Q.10. 11

Exercise 3.2

Q.1. 2.68 Q.2. (*a*) 3360 (*b*) 16.068

Q.3. 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 Q.4. (*a*) 1155 (*b*) 653

Q.5. 9.15

Q.6. (*a*) unit are odd (*b*) is a negative number

(*c*) odd number of zeros, (*d*) units digit should not be 2,3,7,8

Q.7. (*a*) ab^2 (*b*) $7xy$ (*c*) 21 (*d*) 144

Q.8. (*a*) 3 (*b*) 2 (*c*) 3 (*d*) 2

Q.9. 7 Q.10. 123

Exercise 3.3

Q.1. (*a*) 9 (*b*) 9 (*c*) 4 (*d*) 4

Q.2. (*a*) 10,24,26 (*b*) 12,35,37

Q.3. 1600 Q.4. 18000 Q.5. 105 Q.6. 121

Q.7. 1024 Q.8. (*b*), (*c*) Q.9. (*a*) 84 (*b*) 540 (*c*) 88 (*d*) 78

Q.10. 79

Exercise 3.4

Q.1. 0.92 Q.2. (*a*) 233 (*b*) 83 (*c*) 91 (*d*) 63

Q.3. (*a*) $\frac{13}{17}$ (*b*) $\frac{21}{25}$ (*c*) $\frac{23}{24}$ (*d*) $\frac{9}{17}$

Q.4. (*a*) 0.85 (*b*) 12.5 (*c*) 1.4 (*d*) 15.02

Q.5. $\frac{16}{17}$ Q.6. 0.6547 Q.7. (*a*) 2.6832 (*b*) 2.525

Q.8. (*d*) 0.935 Q.9. (*a*) 16 (*b*) 9 (*c*) 21 Q.10. (*a*) 3.7 (*b*) 42.1 (*c*) 16.4 (*d*) 6.8

CHAPTER ▸ 4

Exercise 4.1

Q.1. (*iii*) 0.008 Q.2. (*iii*) 343000 Q.3. (*iv*) 3 Q.4. (*ii*) $\frac{125}{27}$

Q.5. (*i*) 512 (ii) 2,197 (*iii*) 10,92,727 (*iv*) $\frac{-64}{729}$

(*v*) $\frac{27}{125}$ (*vi*) 19,683 (*vii*) – 13.824 (*viii*) 0.000000001

Q.6. (i) 1,331 (ii) 74,088 (iii) 91,125 (iv) 27,2,70,901

(v) 9,70,299 (vi) 1,728 (vii) 9,261 (viii) 1,66375

Q.7. (ii) 25 Q.8. 5

Q.9. (i) 43, 45, 47, 49, 51, 53, 55. (ii) 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155

(iii) 13, 15, 17, 19 Q.10. 4.913 m^3

Exercise 4.2

Q.1. (i) 9 (ii) – 6 (iii) – 1 (iv) 2

(v) 0.4 (vi) 3.7 (vii) – 0.3

Q.2. (i) – 9 (ii) – 12 (iii) – 21 (iv) – 13

Q.3. (i) 12 (ii) 9 (iii) – 42 (iv) $\frac{-4}{5}$

(v) 1.4 (vi) 30

Q.4. – 101 and 13 Q.5. (i) 56 (ii) 135

Q.6. (i) 54 (ii) $\frac{14}{33}$ (iii) $\frac{21}{13}$ (iv) 0.44 (v) $\frac{6}{7}$

Q.7. Not a perfect cube Q.8. 3.6m Q.9. 289, 3 Q.10. 28

Q.11. 216 cm^3 Q.12. 8

CHAPTER ▸ 5

Exercise 5.1

Q.1 Do yourself.

Q.2. (i) Binomial (ii) Monomial (iii) Trinomial (iv) Binomial

Q.3. (i) 1, (ii) 2 (iii) 1 (iv) 2

(v) 3 (vi) 3

Q.4. (i) $22a^2 + 3ab - 5b^2$ (ii) $-9x^2 - x + 10$ (iii) $9x$ (iv) $9x^2 - 2$ (v) $7a^2 + ab - b^2$

Q.5. (i) a – 4b (ii) $2x^3 + 5x^2 - 2x + 1$ (iii) $-x^2 + 6x + 7$

(iv) $x^2y + 3xy^2 + xy - 3x + 5y - 6$ Q.6. $-2x^3 + 5x^2 + 5x + 2$

Q.7. $2x^2 - x + 40$ Q.8. $-20x - 4xy - 5y^2$ Q.9. (i) $8x^2 + 4xy - 8y^2$ (ii) $23x^2 + 20$

(iii) $6x^3 + 7x^2 - 7x + 4$ (iv) $5x^3 + 5x^2 + 9x + 10$ (v) $9a + 11b$ (vi) $x^2 - 18xy + y^2$

Q.10. (i) $6x + 3z$ (ii) $-2r - 18s$ (iii) $-2\,m^2 - 6m - 6$ Q.11. $xy + yz - 5zx$

Q.12. $4x^2 + 3y^2$

Exercise 5.2

Q.1. (iv) $+2x^4y^2z^3$ Q.2. (ii) $6a^3b^2$ Q.3. $\frac{1}{2}x^2yz$

Q.4. *(i)* $-14y^3$ *(ii)* $-24x^3y^3$ *(iii)* $\frac{9}{7}x^3y^5$

Q.5. (i) $10x^5$ *(ii)* $\frac{-1}{3}x^3y^2z$ *(iii)* $\frac{2}{3}x^3y^2z^2$ *(iv)* $\frac{-5}{2}x^3y^3z^3$

(v) $+12a^2b^3$ (vi) $6x^3y^2z$

Q.6. (i) $-12x^3y^4z$ (ii) $-2x^3y^4z^4$ Q.7. a^3b^4 sq units

Q.8. (i) 96 (ii) 224 Q.9. $105a^4b^3$

Exercise 5.3

Q.1. (i) $15x^3y$ (ii) $3x$ (iii) $-20x^3y^2$ (iv) $729x^3y^3$

(v) $\frac{1}{24}x^3y^2$ (vi) $-15a^5b^5$ (vii) $-15a^3b^3$ (viii) $7x^2y^{11}$

Q.2. (i) $(a^2 - ab)$ (ii) $2x + 6$ (iii) $5x^2 - 5y^2$ (iv) $12x^3y + 15x^2y^2$

(v) $3a^3b^2 - 3a^2b^3$ (vi) $20a^5b^4 + 10a^3b^6$

Q.3. (i) $10x^2 + 33x + 20$ (ii) $21x^2 + 34x + 8$ (iii) $15x^2 + 13x - 20$ (iv) $14x^2 - 51x + 45$

(v) $15x^2 + 56x + 49$ (vi) $15x^2 - 16x - 15$ (vii) $6m^2 - 13mn + 6n^2$ (viii) $14x^2 + 17x - 6$

Q.4. (i) $6x^3 - 7x^2 - 2x + 2$ (ii) $x^3 + y^3$ (iii) $2x^2y + 2x^2y^2 + 3xy^2 + 3xy^3 - 2x - 3y$

(iv) $64y^3 - 48y^2z + 12yz^2 - z^3$

Q.5. $24x^2 - 48x^3, -1080,$ Q.6. $-3x^3y^2 - \frac{3}{2}x^2y^3, 0$

Q.7. *(i)* $30y^2 - 45xy^2, \frac{75}{16}$ *(ii)* $-3xy^2 - 3xz^2, \frac{39}{200}$ *(iii)* $z^2x - z^2y, -\frac{1}{320}$

Q.8. (i) $3x^2 + 2y^2 + 4xy + x + 2y$ (ii) $36x^3 + 18x^2 - 148x + 80$

(iii) $30x^3 + 109x^2 - 2x - 56$ (iv) $72x^3 + 90x^2 - 113x - 140$

Q.9. $6x^3 - 11x^2y + 8xy^2 - 2y^3$ Q.10. $7a^2 - \frac{1}{7}a^4, \frac{180}{7}$ Q.11. $10x^4 - 21x^2y - 10y^2, -72$

Exercise 5.4

Q.1. (i) $-3xy^2$ (ii) $-3x$ (iii) $3xz$ (iv) $10x$

Q.2. (i) $(x + y)$ (ii) $a - b$ (iii) $-25x + 15y$ (iv) $-y^2 - \frac{1}{3}yz^2$

(v) $\frac{16}{y} + 2$ (vi) $25k^2 + 4k$ (vii) $-3q^2 - 4q^6$ (viii) $2y + 3y^3z$

Q.3. $Q = 3x - 2, R = -12$

Q.4. Do yourself

Q.5. (i) $Q = 2x + 1, R = -2$ (ii) $x^2 - 4x + 1$ (iii) $x^2 - xy + y^2$ (iv) $x^2 + xy + y^2$

(v) $(2x - 7)$

Q.6. $(3a^2 + \frac{4}{x^4}a - 1)$ km/h Q.7. ₹ $2x + 4$ Q.8. $2x^2 - 3x + 5$, R = 5

Exercise 5.5

Q.1. (*i*) $4x^2 + y^2 + 4xy$ (*ii*) $a^2 - 4b^2$ (*iii*) $a^4 - b^2c^2$ (*iv*) $x^2 + 49 + 14x$

(*v*) $9x^2 + 25y^2 + 30xy$ (*vi*) $16a^2 + 81b^2 + 72ab$ (*vii*) $\frac{16x^2}{25} - \frac{y^2}{16}$ (*viii*) $4x^2 - \frac{9}{y^2}$

(*ix*) $x^8 + \frac{4}{x^4} + 4x^2$ (*x*) $x^6 - \frac{1}{x^6}$

Q.2. (*i*) $x^2 + 2xc + c^2$ (*ii*) $p^2 + 2pq + q^2$ (*iii*) $x^2 + 6x + 9$ (*iv*) $x^2 + 2xy + y^2$

(*v*) $\frac{9x^2}{16} + \frac{3}{2}x + 1$ (*vi*) $\frac{a^2}{b^2} + \frac{2a}{b} + 1$ (*vii*) $\frac{x^2}{4} + x + 1$ (*viii*) $4x^4y^2 + 12x^3y^3 + 9u^2y^4$

Q.3. (*i*) $a^2 + 25 - 10a$ (*ii*) $4x^2 - 20xy + 25y^2$ (*iii*) $\frac{25}{36}x^2 - \frac{20}{21}xy + \frac{16}{49}y^2$ (*iv*) $a^2 - 2\frac{4}{a^2}$

(*v*) $\frac{1}{16}a^4 - \frac{9a^2}{2}$ (*vi*) $\frac{1}{9}p^4 - \frac{1}{3}p^2q + \frac{1}{4}q^2$

Q.4. (*i*) 10404 (*ii*) 9801 (*iii*) 1002001 (*iv*) 998001 (*v*) 494209

Q.5. (*i*) $9m^2 + 3m + \frac{1}{4}$ (*ii*) $4x^2 + 4 + \frac{1}{x^2}$ (*iii*) $25m^2 - 2 + \frac{1}{25m^2}$ (*iv*) $256a^2 - 8a + \frac{1}{16}$

Q.6. (*i*) $16z^2 + 20z + \frac{25}{4}$ (*ii*) $9z^4 + 6 + \frac{1}{z^4}$ (*iii*) $\frac{1}{4}x^4 - \frac{7}{3}x^2y^2 + \frac{49}{9}y^4$ (*iv*) $81y4 - 9y^2z^2 + \frac{1}{4}z^4$

Q.7. (*i*) 8400 (*ii*) 14400 (*iii*) 79200 (*iv*) 42 (*v*) 92.6

Q.8. (*i*) $\sqrt{29}$ (*ii*) 5 Q.9. 11 Q.10. 119 Q.11. 38, 1442

Q.12. 116 Q.13. 67 Q.14. 100 Q.15. 72

Q.16. (*i*) $\sqrt{33}$ (*ii*) 5 (*iii*) 833 Q.17. (*i*) $x^8 - y^8$ (*ii*) $98m^2 + 128n^2$ (*iii*) and (*iv*) do it yourself

Exercise 5.6

Q.1. (i) $x^8 - y^3 - 3x^4y + 3x^2y^2$ (ii) $27x^3 - 8y^3 - 54x^2y + 36xy^2$

(iii) $x^3 + 27y^3 + 6x^2y + 27xy^2$ (iv) $8x^3 + y^3 + 6x^2y + 6xy^2$

Q.2. (i) 11,57,625 (ii) 97,02,99 (iii) 10,61,208 (iv) 10,03,003,001

Q.3. (i) $-2y^3 - 24x^2y$ (ii) $54x^3 + 288xy^2$ (iii) $54a^3 + 18ab^2$ (iv) $16y^3 + 300x^2y$

Q.4. (i) $25a^2 + b^2 + 9c^2 + 10ab - 6bc - 30ac$ (ii) $a^2 + 9b^2 + 49c^2 - 6ab + 42bc - 14ac$

(iii) $a^2 + b^2 + c^2 - 2ab - 2bc + 2ac$ (iv) $a^2 + b^2 + c^2 - 2ab - 2bc - 2ac$ (v) $4x^2 + y^2 + 9z^2 - 4xy - 6yz + 12zx$

(vi) $25x^2 + y^2 + 42^2 + 10xy + 4yz + 20xz$

Q.5. 9 Q.6. 0 Q.7. 5,833

CHAPTER ▸ 6

Exercise 6.1

Q.1. (i) $7a^3b^5$ (ii) xy (iii) $9xy$ (iv) 1

(v) $2ax^2$ (vi) $3xy^2$ (vii) $18a^2c^2$ (viii) 7

(ix) $12x^2y$ (x) ac (xi) y (xii) $5a^2$

Q.2. (i) $x\,(a+b)$ (ii) $a\,(b-4c)$ (iii) $x\,(x^2-x+1)$ (iv) $5x\,(1-3x)$

(v) $3x\,(3x+1)$ (vi) $ab\,(c+y+2)$ (vii) $6g\,(5+9h)$ (viii) $2d^2\,(14c^2-k^2)$

(ix) $xyz\,(x+y+z)$ (x) $3xy\,(3x+a)$ (xi) $2p\,(3+4p-2p^2)$ (xii) $6\,(2y^3+a^3)$

Exercise 6.2

Q.1. (i) $(2x-1)\,(5y-8)$ (ii) $(ax+b)\,(bx+a)$ (iii) $(x+a)\,(ax^2+1)$ (iv) $(a+b)\,(a+c)$

(v) $(p-1)\,(pq-r^2)$ (vi) $(x-y)\,(x-5)$ (vii) $(a-3)\,(a^2+2-b)$ (viii) $(x-11y)\,(x-1)$

(ix) $(3x-4)\,(y-1)$ (x) $(3x+y)\,(3x-4)$ (xi) $(x+2a)\,(ay^2+3)$ (xii) $(2p+3q)\,(3m+4n)$

Exercise 6.3

Q.1. (i) $(p+4)^2$ (ii) $(x+12)^2$ (iii) $(c-d)^2$ (iv) $(\mathrm{m}+\frac{3}{2})^2$

(v) $(8-11x)^2$

Q.2. (i) $(3a+4b)\,(3a-4b)$ (ii) $(x^2+y^2)\,(x^2-y^2)$ (iii) $(x^2+9)\,(x+3)\,(x-3)$ (iv) $2x\,(1-16x^4)$

(v) $(2a-1)^2$ (vi) $(a^4+y^4)\,(a^2+y^2)\,(a+y)\,(a-y)$

(vii) $3x\,(x^2+1)\,(x+1)\,(x-1)$ (viii) $\{5a-2b+2a-b\}\,\{5a-2b-2a+b\}$

(ix) $3xy\,(x+9y)\,(x-9y)$ (x) $(a^2+9)\,(a+3)\,(a-3)$ (xi) $(10b+9)\,(10b-9)$ (xii) $(7c+5d)\,(7c-5d)$

(xiii) $(4x-3y-4z)\,(4x+3y+4z)$ (xiv) $\left(\frac{1}{7}xy+\frac{3}{5}yz\right)\left(\frac{1}{7}xy-\frac{3}{5}yz\right)$

(xv) $\left(\frac{2}{5}+9x\right)\left(\frac{2}{5}-9x\right)$

Exercise 6.4

Q.1. (i) $(x+12)\,(x-5)$ (ii) $(y-4)\,(y-3)$ (iii) $(3x-4y)\,(2x-4y)$ (iv) $(6a-b)\,(a+3b)$

(v) $(7x-5y)\,(2x+3y)$ (vi) $(2a-b+4)\,(2a-b-z)$ (vii) $3c^3\,(c-4)^2$ (viii) $(2x+3)\,(x+4)$

(ix) $3x^2\,(3x-4y)\,(x-y)$

Q.2. (i) $(2y-1)\,(2y-3)$ (ii) $(y+4)\,(y+2)$ (iii) $(2x-1)\,(2x+3)$ (iv) $(x+2)\,(2x+3)$

(v) $(p-4)^2$ (vi) $(2x-3y)\,(3x+2y)$ (vii) $(z-6)\,(z+2)$ (viii) $4\,(x+9)\,(x-2)$

(ix) $(a+3)\,(a-1)$ (x) $\left(x+\frac{1}{7}\right)\left(x+\frac{1}{5}\right)$

CHAPTER ▸ 7

Exercise 7.1

Q.1. (ii) Q.2. (iv) Q.3. (iii) Q.4. (iv)

Q.5. (i) $x=3$ (ii) $x=\frac{7}{4}$ (iii) $x=-13$ (iv) $q=25\,\frac{1}{2}$

(v) $x=-2$ (vi) $x=\frac{-23}{5}$

Q.6. (i) $x=23$ (ii) $x=-4$ (iii) $x=5$ (iv) $x=-0.625$

(v) $y=\frac{-14}{33}$ (vi) $x=-\frac{3}{11}$

Q.7. (i) 5 (ii) -10 (iii) 3.8 (iv) 6 (v) 9

Q.8. (i) $x = -0.8$ (ii) $x = 4$ (iii) $p = 12$ (iv) $x = \frac{-26}{17}$

(v) $p = 3\frac{1}{2}$ (vi) $x = 4$ (vii) $x = 18$ (viii) $x = \frac{-11}{9}$

(ix) $m = 25$ (x) $x = 1$

Exercise 7.2

Q.1. 30 Q.2. 15, 16 Q.3. 200 Q.4. 60, 72

Q.5. 96 Q.6. 72 Q.7. 13 Q.8. 39

Q.9. 45 years Q.10. 19, 21, 23 Q.11. $\frac{1}{3}$ Q.12. 96

Q.13. $\frac{1}{5}$ Q.14. ₹48,000 Q.15. 15 cm, 10 cm

Q.16. ₹900, ₹300, ₹180 Q.17. 18 km/hr

Q.18. Father's age = 65 years, A = 35 years, B = 13 years Q.19. 7.5 kg.

CHAPTER ▸ 8

Q.1. Do it yourself. Q.2. Polyhedron Q.3. polyhedron Q.4. Do it yourself.

Q.5. 15

CHAPTER ▸ 9

Exercise 9.1

Q.1. (i) ₹3,770 (ii) ₹460 (iii) ₹122 (iv) ₹10,000

(v) ₹600 (vi) ₹6,055.

Q.2. 6% p.a. Q.3. ₹1,414.40 Q.4. ₹6,776 Q.5. ₹5,408

Q.6. (i) ₹1,000 (ii) ₹2,050 (iii) ₹22050 (iv) ₹50

Q.7. ₹788.125 Q.8. ₹1984 Q.9. ₹69,089.06 Q.10. ₹660.75

Exercise 9.2

Q.1. ₹202.50 Q.2. ₹4921 Q.3. Sanjana, ₹198.40 Q.4. ₹6,091.52

Q.5. ₹6,770.40 Q.6. ₹1,082

Q.7. (*i*) ₹1,27,690 (*ii*) ₹16,599.70 Q.8. ₹8,000 Q.9. ₹ 3,783

Q.10. ₹19,448.1.

Exercise 9.3

Q.1. 30,051. Q.2. 5% p.a Q.3. 12,92,26,875 Q.4. 14,432

Q.5. $\frac{3}{2}$ years Q.6. 21,375 Q.7. ₹21,600 Q.8. ₹3,55,503.72

Q.9. ₹10,000 Q.10. ₹6,86,375

CHAPTER ▸ 10

Exercise 10.1

Q.1. (i) ₹180 (ii) ₹850 (iii) ₹225

Q.2. (i) 60 cm (ii) ₹9

Q.3. (i) 412·5% (ii) 0·175 Q.4. 1,800 Q.5. 200

Q.6. 320,560,720 Q.7. ₹33050 Q.8. 5 Q.9. ₹1,000
Q.10. 1% decrease Q.11. ₹500 Q.12. 66.6% Q.13. 400
Q.14. 87·5% Q.15. ₹ 20,000 Q.16. 3560 plants Q.17. ₹45,000
Q.18. 13,80,000 Q.19. 2,250

Exercise 10.2

Q.1. Gain = ₹10, Gain % = $11\frac{1}{9}$% Q.2. $11\frac{1}{9}$% Q.3. Loss = 3%
Q.4. 25% Q.5. 44% Q.6. S.P. = ₹4·80 Q.7. ₹550
Q.8. 20% Q.9. 1% loss Q.10. 13.9% gain Q.11. $8\frac{1}{3}$ % loss
Q.12. ₹19,125, ₹23,375 Q.13. Sanjay 25% Q.14. 14% Q.15. ₹400
Q.16. ₹1,920 ; ₹ 1,200 Q.17. ₹2,500 Q.18. ₹525 Q.19. ₹59,850
Q.20. ₹35.25/kg.

Exercise 10.3

Q.1. (i) ₹585 (ii) ₹5,177.50 Q.2. (*i*) ₹5/- (*ii*) $5\frac{5}{9}$% Q.3. 11% Q.4. MP = ₹10,000
Q.5. 25% Q.6. 1 : 2 Q.7. ₹240 Q.8. ₹600
Q.9. ₹180 Q.10. ₹180 Q.11. ₹1150 Q.12. MP = ₹600
Q.13. ₹1,12,896 Q.14. ₹2,330 Q.15. ₹4,700

CHAPTER ▸ 11

Exercise 11.1 to Ex. 11.6.

Do it yourself first draw rough figure and accordingly construct.

Exercise 11.7

Q.1. 105° each Q.2. 75° Q.3. 45°, 75°, 105°, 135° Q.4. 135°
Q.5. 72°, 108°, 72°, 108° Q.6. 60°, 45°

CHAPTER ▸ 12

Exercise 12.1

Q.1. $6\frac{2}{3}$ m Q.2. 57.6 cm^2 Q.3. 19 cm Q.4. 20 cm
Q.5. 240 cm^2 Q.6. 34 cm Q.7. 240 cm^2 Q.8. 8 cm
Q.9. 1680 cm^2 Q.10. Do it yourself Q.11. 342 cm^2 Q.12. Do it yourself

Exercise 12.2

Q.1. 202.5 cm^2 Q.2. 64 cm^2 Q.3. 119 m^2 Q.4. 54 cm^2
Q.5. 252 m^2 Q.6. 432 cm^2 Q.7. 400 m^2 Q.8. 480 m^2

Exercise 12.3

Q.1. 13.5 m^2 Q.2. 0.46 m^2 Q.3. 792 cm^2, 600 cm^2 Q.4. Four times
Q.5. 15 cm Q.6. ₹ 1408 Q.7. 60690 cm^2 Q.8. 10 cm^2
Q.9. 2.5 m Q.10. 3.5 m Q.11. 440 m^2 Q.12. ₹ 1351.68

Q.13. ₹ 11200 Q.14. ₹ 324 Q.15. 10 m^2 Q.16. 2 m, 4m and 6m

Q.17. 4m Q.18. ₹ 1190

Exercise 12.4

Q.1. 216 cm^3 Q.2. 10m Q.3. 20 cm Q.4. 9.05 lit

Q.5. to Q.20. Do it yourself

CHAPTER ▸ 13

Exercise 13.1

Q.1. (i) Yes (ii) No. Q.2. 300 km

Q.3. 480 Q.4. ₹ 91 Q.5. (*i*) 4, 6, 30 (*ii*) 12, 36

Q.6. 375 sheets Q.7. 14 kg Q.8. $\frac{28}{3}$

Q.9. (i) $w \times l^2$ (ii) 160, 0.1 g (iii) $w = 0.4\ l^2$ Q.10. 60 days

Exercise 13.2

Q.1. (i) No (ii) Yes Q.2. 16 men Q.3. 168 men

Q.4. (i) $y = 6$ (ii) $x = \frac{25}{4}$ (iii) $y = 30$ (iv) $x = \frac{1}{5}$

Q.5. 45 minutes Q.6. 30 days Q.7. 75 km/h

Q.8. 12 hours Q.9. 42 days Q.10. 100 machines

CHAPTER ▸ 14

Exercise 14.1

Q.1. 36 Q.2. 63 Q.3. 16 Q.4. 35

Q.5. 639 Q.6. 72

Q.7. (i) $10 \times 2 + 5$ (ii) $10 \times 7 + 3$ (iii) $100 \times 1 + 10 \times 2 + 9$ (iv) $300 + 0 + 2$

Exercise 14.2

Q.1. 34, 60, 126, 890, 992

Q.2. 78, 474, 267144, 9412503

Q.3. 30, 75, 210, 305, 640, 965

Q.4. 306, 730143, 862497, 1257777

Q.5. 80, 140, 400, 670, 990

Q.6. $y = 0$ or 3 or 6 or 9; (5301, 5331, 5361, 5391)

Q.7. $z = 7$, 47178

Exercise 14.3

Q.1. A = 6, B = 4, C = 1 Q.2. A = 5, B = 1 Q.3. A = 2, B = 5

Q.4. A = 1, B = 1, C = 2 Q.5. A = 7B = 6C = 6 Q.6. 1, 2, 3

Q.7.

3	14	13	0
8	5	6	11
4	9	10	7
15	2	1	12

CHAPTER ▸ 15

Exercise 15.1

Q.1. Do it yourself

Q.2. (i) 100 (ii) 37 (iii) 63 (iv) 8

Q.3.

Number of Members	3	4	5	6	7

Q.4.

Marks	No. of Students	Marks	No. of Students	Marks	No. of Students
7	2	33	2	49	1
14	1	34	1	51	3
16	1	37	4	52	1
17	1	38	2	53	3
19	1	39	4	54	1
21	1	41	1	57	1
22	1	42	6	59	2
27	2	43	1	61	1
29	1	44	1	62	1
31	1	47	1	67	1

Q.5.

Number of Accidents	0	1	2	3	4	5	6
Number of Days	2	3	6	3	4	6	6

Q.6.

Number of Children	0	1	2	3	4	5	6
Frequency	4	7	12	5	6	3	3

Q.7. (i) 200 (ii) 1

Exercise 15.2

Q.1.

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	3	6	14	6	5

Q.2. 50 – 60

Marks in class intervals	Tally	Frequency (No. of children)
40 – 50	||||	4
50 – 60	𝍸 ||||	8
60 – 70	|||	3
70 – 80	|||	3
80 – 90	||	2

Q.3.

Amount of the bill (in ₹)	610 – 630	630 – 650	650 – 670	670 – 690	690 – 710	710 – 730
Frequency	5	5	5	3	7	5

Q.4. (i) 42.5 (ii) 44

Q.5.

Daily Earning (in ₹)	500 – 550	550 – 600	600 – 650	650 – 700	700 – 750
Frequency	7	5	4	3	5

Exercise 15.3

Q.1. Do it yourself. Q.2. Do it yourself. Q.3. Do it yourself.

Q.4. (i) 5000 sq. miles, (ii) Lake superior is about four times lake on Ontario
(iii) 2500 sq. miles (iv) Lake Michigan and Lake Horan

Q.5. Do yourself. Q.6. Do yourself. Q.7. Do yourself Q.8. Do yourself.

Q.9. (i) It gives the number of families containing 2,3,4,5 members each
(ii) 40 (iii) none (iv) family having 3 members 3 members.

Exercise 15.4

Q.1. to Q.5. Do it yourself. Q.6. 13, 20

Q.7. (i) 20–20 years (ii) 5 (iii) 320 (iv) 12.5, 17.5 etc
(v) 10–15 years

Q.8. (*i*) 20 (*ii*) 140–145 cm (*iii*) 125–130 cm, 155–160 cm (*iv*) 7

Q.9.

Wages (in ₹)	800–810	810–820	820–830	830–840	840–850	850–860	860–870	870–880	880–890	890–900
No. of Workers	3	2	1	9	5	1	3	1	1	4

(i) Rs 830-840 (ii) 10 (iii) 20

Exercise 15.5

Q.1. to Q.5. Do yourself. Q.6. (i) ₹ 5,40,000 (ii) ₹ 1,50,000

Q.7. (i) 3600 (ii) 5 : 6 Q.8. 540

Math	Science	S.Sc	English	Hindi
135	114	108	93	90

Q.9. Hockey : ₹30,000 ; Cricket : ₹45,000; Football : ₹18000; Tennis : ₹15, 000;

CHAPTER ▸ 16

Exercise 16.1

Q.1. (*a*) $\frac{1}{6}$ (*b*) $\frac{0}{6} = 0$ (*c*) $\frac{3}{6}$ *i.e.*, $\frac{1}{2}$ (*d*) $\frac{1}{2}$

Q.2. 0.15

Q.3. (*a*) $\frac{1}{6}$ (*b*) $\frac{5}{6}$ (*c*) $\frac{3}{6}=\frac{1}{2}$ (*d*) $\frac{2}{6}=\frac{1}{3}$

Q.4. (*a*) $\frac{3}{8}$ (*b*) $\frac{1}{2}$ (*c*) $\frac{3}{4}$ (*d*) $\frac{1}{8}$

Q.5. $\frac{1}{5}$ Q.6. (*a*) $\frac{1}{3}$ (*b*) $\frac{2}{3}$ (*c*) $\frac{2}{3}$ (*d*) $\frac{1}{3}$

Q.7. Getting a constant, $\frac{21}{26}, \frac{5}{26}$

CHAPTER ▸ 17

Exercise 17.1

Q.1. Do it yourself

Q.2. Yes, points having same x-coordinate lie on a live parallel to y-axis.

Q.3. Do it yourself

Q.4. (*a*) I (*b*) IV (*c*) II (*d*) III

Q.5. P (10, 70), Q (12, 80), R (16, 100), S (20, 120)

Q.6. Do it yourself

Q.7. (*a*) I (*b*) III (*c*) IV (*d*) II

Q.8. A (1, 1), B (1, 4), C (4, 6), D (5, 3)

Exercise 17.2

Q.1. Do it yourself.

Q.2. Do it yourself.

Q.3.

x	1	2	3	4	5
$P = 4x$	4	8	12	16	20

Q.4.

x	1	2	3	4	5
s	1	4	9	16	25

Q.5. Do it yourself.

Exercise 17.3

Q.1. (*a*) (iv) (*b*) (iii) (*c*) (ii) (*d*) (i)

Q.2. (i) 300 km (ii) 10 hours, 6:30 pm. (iii) (*a*) 50 km/hr (*b*) $\frac{50}{3}$ km/hr.

PRACTICE PAPER–1

Q.1. (*i*) $\frac{-21}{24}$ (*ii*) < (*iii*) $\frac{16}{19}$ (*iv*) 0

Q.2. (*i*) $\frac{9}{-4}$ (*ii*) $\frac{1}{-7}$ (*iii*) $\frac{8}{5}$ (*iv*) -3

Q.3. (*i*) 9.3×10^{-8} (*ii*) 3.142×10^{-3} (*iii*) 5.42×10^{-6} (*iv*) 2×10^{-5}

Q.4. (*i*) 84 (*ii*) 540 (*iii*) 88 (*iv*) 78

Q.5. (*i*) 1,331 (*ii*) 74,088 (*iii*) 91,125 (*iv*) 2,72,70,901

(*v*) 9,70,299 (*vi*) 1,728 (*vii*) 9,261 (*viii*) 16,63,75

Q.6. (*i*) $2y^3 + 24x^2y$ (*ii*) $4x^2 - 20xy + 25y^2$ (*iii*) $\frac{25}{36}x^2 - \frac{20}{21}xy + \frac{16}{49y^2}$ (*iv*) $a^2 - 2\frac{4}{a_2}$

Q.7. (*i*) $(p + 4)^2$ (*ii*) $(x + 12)^2$ (*iii*) $(c - d)^2$ (*iv*) $\left(m + \frac{3}{2}\right)$

Q.8. 96

Q.9. Father's age = 65 years, A = 35 years, B = 13years

Q.10. Polyhedron

Q.11. Polyhedron

Q.12. 15

Q.13. $2x^2 - 3x + 5$, R = 5

PRACTICE PAPER–2

Q.1. (*i*) ₹ 1000 (*ii*) ₹ 2050 (*iii*) ₹ 22050 (*iv*) ₹ 50

Q.2. (*i*) ₹ 585 (*ii*) ₹ 5177.50

Q.3. 45°, 75°, 105°, 135° Q.4. 1680 cm^2 Q.5. 432 cm^2 Q.6. 300 km

Q.7. 35

Q.8. (*i*) 20–25 years (*ii*) 5 (*iii*) 320 (*iv*) 12.5, 17.5 etc

(*v*) 10–15 years

Q.9. (*i*) $\frac{3}{8}$ (*ii*) $\frac{1}{2}$ (*iii*) $\frac{3}{4}$ (*iv*) $\frac{1}{8}$

Q.10. A (1, 1); B (1,4); C (4,6); D (5,3)

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