

ANSWERS

Chapter : 1

Exercise 1.1

- Q1. (i) $>$ (ii) $<$ (iii) $>$ (iv) $<$
Q2. Do it yourself.
Q3. (i) -1 (ii) Negative
(iii) equal to, greater, less
(iv) -90 (v) -381
Q4. -22, -11, -4, -2, 0, 4, 6, 9, 13, 20
Q5. 32, 16, 14, 12, 0, -6, -12, -18, -19, -32
Q6. (i) $<$ (ii) $<$ (iii) $>$ (iv) $>$ (v) $>$
Q7. (i) 31 (ii) 0 (iii) 15 (iv) 12
Q8. (i) -4 (ii) -29 (iii) 0 (iv) -64 (v) -52
Q9. (i) -10, -12, -14
(ii) -2, 1, 4, 7
Q10. Do it yourself.

Exercise 1.2

- Q1. (i) -10, 3 (ii) -6, 4 (iii) -3, 3 (iv) 10, 5
Q2. (i) 8 (ii) -3 (iii) -28 (iv) -8 (v) -52
Q3. Do it yourself.
Q4. (i) -5 (ii) 0 (iii) -17 (iv) -7 (v) -3
Q5. (i) -149 (ii) 78 (iii) 262 (iv) 62 (v) -116
(vi) -16
Q6. (i) -70 (ii) 44 (iii) 16 (iv) 64 (v) -64
(vi) -54
Q7. Do it yourself.
Q8. 29
Q9. 92
Q10. Do it yourself.

Exercise 1.3

- Q1. (i) -3 (ii) -225 (iii) 630 (iv) 316 (v) 270
(vi) -360
Q2. (i) -128 (ii) -180 (iii) -40 (iv) 320 (v) -2600
(vi) 160
Q3. (i) -1 (ii) 1 (iii) -8 (iv) 0
Q4. (i) 136 (ii) -117 (iii) -300 (iv) -546 (v) 0
(vi) 0
Q5. Do it yourself.
Q6. Loss of ₹ 1000
Q7. (i) -5040 (ii) 12338 (iii) -11270 (iv) -66300
(v) -1308

Exercise 1.4

- Q1. (i) -3 (ii) -10 (iii) 4 (iv) -1 (v) -13
(vi) 0
Q2. (i) -30 (ii) -3 (iii) -108 (iv) 0 (v) -39
(vi) -57
Q3. (i) 53 (ii) -27 (iii) -1 (iv) -5 (v) -0
(vi) 18 (vii) 3 (viii) 3
Q4. (i) Commutative property of addition
(ii) Commutative property of multiplication.
(iii) Associative property of addition,
(iv) Associative property of multiplication.
(v) Distributive property of multiplication over addition.
Q5. (i) -5 (ii) 0 (iii) -1 (iv) 500 (v) -25
Q6. (i) -63 (ii) 46 (iii) -141 (iv) 110 (v) -996
Q7. 1 hour Q8. 352 Q9. 10008 Q10. 4
Q11. ₹ 25 Q12. 40 seconds

Exercise 2.1

Q1. (i) $2\frac{1}{3}$ (ii) $1\frac{6}{7}$ (iii) $2\frac{1}{8}$ (iv) $4\frac{10}{15}$ (v) $4\frac{7}{9}$

Q2. (i) $\frac{8}{5}$ (ii) $\frac{7}{2}$ (iii) $\frac{253}{25}$ (iv) $\frac{411}{4}$ (v) $\frac{31}{7}$

Q3. (i) $\frac{5}{8} > \frac{7}{12}$ (ii) $\frac{5}{9} > \frac{11}{15}$ (iii) $2\frac{1}{8}$ (iv) $4\frac{10}{15}$
(v) $4\frac{7}{9}$

Q4. (i) $\frac{3}{4} < \frac{7}{9} < \frac{5}{6} < \frac{11}{12}$ (ii) $\frac{7}{10} < \frac{11}{15} < \frac{4}{5} < \frac{17}{20}$

(iii) $\frac{12}{21} < \frac{2}{3} < \frac{5}{7}$ (iv) $\frac{3}{14} < \frac{4}{7} < \frac{5}{2}$

Q5. (i) $\frac{7}{8} < \frac{17}{24} < \frac{7}{12}$ (ii) $\frac{7}{10} < \frac{2}{3} < \frac{3}{5}$

(iii) $\frac{3}{4} < \frac{5}{8} < \frac{7}{24}$ (iv) $\frac{2}{3} < \frac{8}{21} < \frac{2}{9}$

Q6. (i) $\frac{30}{36}, \frac{28}{36}, \frac{33}{36}$

Q7. (i) Improper (ii) Proper

(iii) Improper (iv) Proper Q8. (i) $x = 3$

Exercise 2.2

Q1. (i) $\frac{8}{9}$ (ii) $1\frac{17}{36}$ (iii) $1\frac{17}{24}$ (iv) $1\frac{31}{48}$ (v) $7\frac{1}{6}$

Q2. (i) $\frac{7}{5}$ (ii) $\frac{39}{8}$ (iii) $\frac{31}{35}$ (iv) $\frac{91}{165}$ (v) $6\frac{1}{8}$

Q3. $\frac{a}{b} + \left(\frac{c+e}{d+f}\right)$

Q4. (i) $\frac{65}{72}$ (ii) $18\frac{3}{10}$ (iii) $\frac{143}{24}$

Q5. (i) $x = 3\frac{1}{4}$

Q6. (i) $\frac{17}{36}$ (ii) $\frac{9}{5}$ (iii) 13 (iv) $\frac{7}{8}$

Q7. (i) $\frac{1}{24}$ (ii) $\frac{1}{6}$ (iii) $\frac{6}{7}$ (iv) $\frac{10}{7}$ (v) $\frac{86}{35}$

Q8. (i) $1\frac{7}{18}$ (ii) $1\frac{1}{4}$ (iii) $7\frac{1}{24}$ (iv) $6\frac{1}{24}$ (v) $3\frac{7}{12}$

(vi) $4\frac{7}{8}$

Q9. (i) $10\frac{2}{5}$ Q10. $6\frac{4}{5}$ Q11. $\frac{2}{3} > \frac{5}{9}$ by $\frac{1}{9}$

Q12. Meena Q13. ₹ $11\frac{17}{20}$

Q14. $9\frac{3}{7}$ Q15. $\frac{3}{10}$ cm

Exercise 2.3

Q1. (i) d (ii) b (iii) a (iv) c

Q2. (i) $4\frac{1}{5}$ (ii) $1\frac{1}{3}$ (iii) $1\frac{5}{7}$ (iv) $1\frac{1}{9}$ (v) $2\frac{2}{3}$

(vi) 15 (vii) $6\frac{2}{7}$ (viii) 16

Q3. (i) 16 (ii) $\frac{7}{2}$ (iii) $12\frac{1}{2}$ (iv) $\frac{3}{5}$ (v) $\frac{7}{5}$

Q4. (i) $\frac{9}{28}$ (ii) $\frac{3}{20}$ (iii) $7\frac{1}{2}$ (iv) $\frac{5}{3}$ or $1\frac{2}{3}$

Q5. (i) $6\frac{3}{20}$ (ii) $8\frac{1}{4}$ (iii) $\frac{17}{16}$ (iv) $7\frac{1}{3}$

Q6. (i) $\frac{3}{2}$ (ii) $\frac{5}{8}$ (iii) $1\frac{13}{35}$ (iv) $\frac{77}{90}$ (v) $\frac{1}{5}$

Q7. $4\frac{1}{2}$ Hrs Q8. $115\frac{9}{16}m^2$

Q9. ₹ $150\frac{7}{8}$ Q10. $\frac{4}{5}$

Q11. 44 km

Exercise 2.4

Q1. (i) $\frac{5}{3}$ (ii) $\frac{8}{7}$ (iii) $\frac{7}{11}$ (iv) $\frac{7}{3}$ (v) $\frac{8}{5}$

(vi) $\frac{7}{9}$ (vii) $\frac{5}{6}$ (viii) $\frac{8}{1}$

Q2. (i) $3\frac{1}{3}$ (ii) 20 (iii) $6\frac{3}{4}$ (iv) 56 (v) $1\frac{1}{15}$

Q3. (i) $\frac{3}{4}$ (ii) $\frac{5}{12}$ (iii) $\frac{28}{33}$ (iv) 8 (v) $1\frac{1}{27}$

(vi) $\frac{32}{33}$ (vii) $1\frac{1}{2}$ (viii) $\frac{9}{14}$

Q4. (i) = (ii) \neq (iii) = (iv) \neq

Q5. (i) $\frac{-1}{20}$ (ii) 8 (iii) $\frac{35}{114}$ (iv) $\frac{1}{4}$ (v) $\frac{5}{9}$

(vi) $1\frac{1}{8}$ (vii) $\frac{1}{4}$

Q6. $1\frac{11}{18}$ Q7. ₹ $26\frac{2}{3}$

Q8. 5cm Q9. 18

Exercise 3.1

Q1. (i) 0.5 (ii) 0.7 (iii) 7 (iv) 1.49 (v) 2.30
(vi) 0.88

Q2. (i) $\frac{60}{10}$

Q3. (i) 8.20, 5.68, like decimals

Q4. (i) 7.9, 9.95 unlike decimals.

Q5. (i) 13.963 (ii) 12.511 (iii) 41.567
(iv) 0.21749 (v) 135.87 (vi) 761.335
(vii) 208.072 (viii) 122.085

Q6. (i) 40.42 (ii) 16.14 (iii) 4.654
(iv) 125.348 (v) 11.116 (vi) 342.868
(vii) 0.624 (viii) 5.8695

Q7. (i) 12.762 (ii) 22.86 (iii) 33.626
(iv) 219.486 (v) 42.6641 (vi) 7.906
(vii) 27.598 (viii) 582.138

Q8. (i) 7.44 (ii) 7.34 (iii) 10.489
(iv) 2.2 (v) 0.77

Q9. 14.6 km

Q10. 34.15

Q11. Shyama

Q12. ₹ 108.88

Exercise 3.2

Q1. (i) 14.5 (ii) 2.32 (iii) 0.38
(iv) 0.8236 (v) 0.94521 (vi) 868494
(vii) 0.14 (viii) 0.009261 (ix) 29.414074
(x) 9.5872704

Q2. (i) 13.26 (ii) 0.000027 (iii) 0.029791
(iv) 5.832 (v) 10.7448 (vi) 0.0144

Q3. (i) 3.42, 34.2, 342 (ii) 7, 70, 700 (iii) 96, 960, 9600
(iv) 0.349, 3.49, 34.9
(v) 323.4, 3234, 32340
(vi) 4369, 43690, 436900
(vii) 1.25, 12.5, 125
(viii) 44.1, 441, 4410

Q4. 17.1 cm^2

Q5. 553 km

Q6. ₹ 72436.8

Exercise 3.3

Q1. (i) 0.48 (ii) 5.25 (iii) 3.31
(iv) 0.397 (v) 27.223 (vi) 0.056

Q2. (i) 0.027 (ii) 0.003 (iii) 0.0078
(iv) 0.236 (v) 0.9853 (vi) 0.9328

Q3. (i) 0.0079 (ii) 0.0263 (iii) 0.03853
(iv) 0.0005 (v) 0.1289

Q4. (i) 0.3 (ii) 4.2 (iii) 0.308
(iv) 0.000074 (v) 0.273 (vi) 0.024

Q5. (i) 0.036 (ii) 8.2 (iii) 2140
(iv) 3.8 (v) 1070 (vi) 26.25
(vii) 0.03 (viii) 1.311

Q6. (i) 3.9 (ii) 2.2032 (iii) 1.846
(iv) 2.58 (v) 3.54 (vi) 0.01

Q7. 18 km

Q8. ₹ 124.575

Q9. 0.264 kg

Exercise 4.1

Q1. (i) $\frac{5}{3}$ (ii) $\frac{5}{2}$ (iii) $\frac{3}{2}$ (iv) 0 (v) 1

Q2. (i) $\frac{-15}{25}, \frac{-18}{30}, \frac{-21}{35}, \frac{-24}{40}$ (ii) $\frac{-4}{16}, \frac{-5}{20}, \frac{-6}{24}, \frac{-7}{28}$

(iii) $\frac{4}{-24}, \frac{5}{-30}, \frac{6}{-36}, \frac{7}{-42}$ (iv) $\frac{8}{-12}, \frac{10}{-15}, \frac{6}{-18}, \frac{7}{-21}$

Q3. (i) $\frac{4}{10}, \frac{16}{15}, \frac{8}{20}, \frac{10}{25}, \frac{12}{30}$ (ii) $\frac{-12}{22}, \frac{-18}{33}, \frac{-24}{44}, \frac{-30}{55}, \frac{-36}{66}$

(iii) $\frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \frac{15}{25}, \frac{18}{30}$ (iv) $\frac{16}{30}, \frac{24}{45}, \frac{32}{60}, \frac{40}{75}, \frac{48}{90}$

Q4. (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) $\frac{-8}{-26} = \frac{4}{13} = \frac{-20}{-65}$

Q5. (i) $\frac{-4}{3}$ (ii) $\frac{5}{9}$ (iii) $\frac{-11}{18}$ (iv) $\frac{-4}{5}$ (v) $\frac{5}{9}$

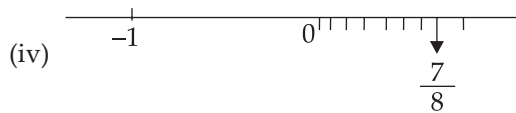
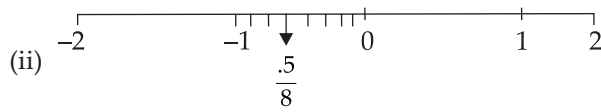
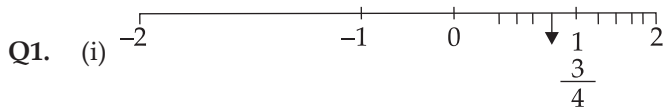
(vi) $\frac{-5}{8}$ **Q6.** (i) $\frac{-9}{12}$ (ii) $\frac{9}{-12}$

Q7. (i) $\frac{-12}{17}$ (ii) $\frac{-1}{2}$ (iii) $\frac{8}{19}$ (iv) $\frac{-11}{6}$

Q8. (i) $\frac{5}{7}$ (ii) $\frac{2}{-9}$ (iii) $\frac{-3}{5}$ (iv) $\frac{2}{7}$ (v) $\frac{-7}{-6}$

(vi) $\frac{-4}{7}$ (vii) $\frac{-3}{4}$ (viii) Do it yourself

Exercise 4.2



Q2. (i) $\frac{3}{5}$ (ii) $-\frac{1}{12}$ (iii) $\frac{2}{3}$ (iv) $\frac{6}{7}$

Q3. Do it yourself.

Q4. (i) $-\frac{2}{11}$ (ii) $\frac{2}{5}$ (iii) 0 (iv) $\frac{1}{4}$ (v) $-3\frac{2}{7}$

Q5. (i) $\frac{11}{12}, \frac{-3}{4}, \frac{-1}{3}, \frac{7}{9}, \frac{5}{6}$ (ii) $\frac{-3}{4}, \frac{5}{8}, \frac{2}{3}, \frac{5}{6}, \frac{11}{12}$

(iii) $\frac{2}{-3}, \frac{-4}{9}, \frac{5}{-12}, \frac{7}{-18}$ (iv) $\frac{-11}{20}, \frac{7}{-15}, \frac{-3}{10}, \frac{17}{30}$

Q6. (i) $\frac{5}{6}, \frac{7}{19}, \frac{17}{30}, \frac{1}{3}, \frac{-11}{12}$ (ii) $\frac{3}{5}, \frac{7}{12}, \frac{6}{15}, \frac{-13}{20}, \frac{-9}{10}$

(iii) $\frac{5}{-8}, \frac{2}{-3}, \frac{-7}{10}$ (iv) $\frac{53}{12}, \frac{-15}{-4}, \frac{-25}{6}, \frac{-17}{4}$

Q7. $\frac{-39}{56}, \frac{-38}{56}, \frac{-37}{56}, \frac{-36}{56}, \frac{-35}{56}$

Q8. (i) $-\frac{5}{8}$ (ii) $-\frac{9}{-17}$ (iii) $\frac{19}{-5}$

Q9. $\frac{-14}{65}, \frac{-15}{65}, \frac{-16}{65}, \frac{-17}{65}$

Exercise 4.3

Q1. (i) $-\frac{3}{2}$ (ii) $\frac{34}{15}$ (iii) $\frac{17}{30}$ (iv) $\frac{82}{99}$ (v) $-\frac{2}{3}$

(vi) $\frac{34}{15}$ (vii) $2\frac{4}{15}$

Q2. (i) $\frac{3}{20}$ (ii) $-\frac{25}{27}$ (iii) $\frac{1}{10}$ (iv) $1\frac{13}{24}$ (v) -1

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

Q3. (i) $\frac{1}{15}$ (ii) $\frac{13}{30}$ (iii) $\frac{7}{3}$ (iv) $\frac{43}{45}$ (v) $\frac{11}{9}$
(vi) $\frac{19}{15}$ or $1\frac{4}{15}$

Q4. (i) $\boxed{4}$ (ii) $\boxed{3}$ Q5. (i) $\frac{34}{9} = 3\frac{7}{9}$

Q6. (i) $\frac{22}{35}$ (ii) $-\frac{145}{26} = -5\frac{11}{26}$

Q7. (i) $\frac{11}{120}$ (ii) $-\frac{6}{216}$ (iii) $-\frac{6}{5}$ (iv) $\frac{3}{4}$ (v) $-\frac{389}{168}$

(vi) $\frac{11}{24}$

Q8. $-\frac{43}{30}$ Q9. $\frac{145}{24}$ Q10. $\frac{89}{30}$

Q11. $\frac{155}{48}$

Exercise 4.4

Q1. (i) $\frac{12}{5} = 2\frac{2}{5}$ (ii) $\frac{5}{6}$ (iii) $-\frac{2}{3}$ (iv) $-\frac{6}{35}$

(v) $\frac{6}{55}$ (vi) 48 (vii) 18 (viii) $-\frac{1}{2}$ (ix) $6\frac{2}{9}$

(x) $\frac{7}{20}$ (xi) 8 (xii) 1

Q2. (i) $1\frac{1}{27}$ (ii) $-409\frac{1}{2}$ (iii) -4 (iv) $\frac{11}{51}$

Q3. (i) $-1\frac{1}{13}$ (ii) $-3\frac{3}{4}$ (iii) 2 (iv) $\frac{32}{75}$ (v) $-1\frac{1}{15}$

(vi) $\frac{4}{15}$ (vii) 0 (viii) $6\frac{1}{4}$ (ix) $\frac{5}{9}$ (x) $1\frac{5}{6}$

(xi) $\frac{32}{75}$ (xii) $-1\frac{1}{8}$

Q4. $\frac{62}{105}$ Q5. ₹ $\frac{4}{15}$ Q6. $-\frac{3}{4}$

Q7. $-\frac{8}{13}$ Q8. $-\frac{5}{4}$

Chapter : 5

Exercise 5.1

Q1. (i) 81 (ii) 216 (iii) 1024 (iv) 14641 (v) 6561

Q2.

	Expression	Meaning	Exponent	Base	Value
(i)	3^3	$3 \times 3 \times 3$	3	3	27
(ii)	4^4	$4 \times 4 \times 4 \times 4$	4	4	256
(iii)	2^6	$2 \times 2 \times 2 \times 2 \times 2 \times 2$	6	2	64
(iv)	$\left(\frac{-3}{4}\right)^4$	$\frac{-3}{4} \times \frac{-3}{4} \times \frac{-3}{4} \times \frac{-3}{4}$	4	$\left(\frac{-3}{4}\right)$	$\frac{81}{256}$

Q3. (i) $\left(\frac{4}{5}\right)^4$ (ii) x^7 (iii) $\left(\frac{-1}{3}\right)^{-6}$ (iv) $\left(\frac{5}{7}\right)^4$

(v) a^3c^3d (vi) 2^3a^2bc

Q4. (i) $\left(\frac{-1}{4}\right)^3$ (ii) $\left(\frac{-3}{5}\right)^3$ (iii) $(7)^3$ (iv) $(5)^5$ (v) $(2)^8$

(vi) $\left(\frac{2}{3}\right)^6$ (vii) $\left(\frac{-1}{11}\right)^3$ (viii) $\left(\frac{-2}{3}\right)^5$

Q5. (i) $\left(\frac{5}{2}\right)^6$ (ii) $\left(\frac{7}{-4}\right)^{91}$ (iii) $\left(\frac{-1}{6}\right)^{11}$ (iv) $\left(\frac{1}{15}\right)^5$

Q6. (i) 196 (ii) 144 (iii) 225 (iv) -64
(v) 90000 (vi) $\frac{-147}{125}$

Exercise 5.2

Q1. (i) a^7 (ii) $\left(\frac{2}{5}\right)^0$ (iii) 6^6 (iv) $\left(\frac{-2}{3}\right)$ (v) $(-3)^3$

(vi) a^{10} (vii) 2^{-2} (viii) 8^{-1}

Q2. (i) -32 (ii) -1 (iii) 2^6 (iv) $\left(\frac{1}{5}\right)^{20}$ (v) 96

(vi) 2 (vii) a^{10} (viii) $(-7)^{18}$ (ix) a^3b (x) $\left(\frac{5}{3}\right)^4$

Q3. (i) $\frac{-128}{19683}$

Q4. (i) $2 \times 3^3 \times 5$ (ii) $3^6 \times 2^6$ (iii) $2^8 \times 3^4$ (iv) $2^8 \times 3$

Q5. 2^{10}

Q6. (i) 6 (ii) 6 (iii) 3

Q7. 4^6 Q8. 3^{-1} Q9. $\frac{-4}{5}$

Q10. (i) 29 (ii) $\frac{369}{4}$

Exercise 5.3

Q1. (i) $4 \times 100000 + 2 \times 10000 + 0 \times 1000 + 6 \times 100 + 2 \times 10 + 1$

(ii) $3 \times 1000000 + 6 \times 1000 + 1 \times 100 + 9 \times 10 + 4$

(iii) $6 \times 1000000 + 3 \times 100000 + 6 \times 1000 + 1 \times 100 + 7 \times 10 + 3$

(iv) $2 \times 10000 + 6 \times 10 + 8$

(v) $2 \times 100000 + 7 \times 10000 + 9 \times 1000 + 4 \times 100 + 4 \times 1$

Q2. (i) 7.03×10^6 (ii) 6.0808×10^7

(iii) 7.5×10^{11} (iv) 3.1865×10^9

(v) 5.0×10^7 (vi) 3.908×10^4

Q3. (i) 600000 (ii) 4670000

(iii) 8600 (iv) 3500

Q4. (i) 86045 (ii) 405302

(iii) 30705 (iv) 900230

Q5. (i) $1.353 \times 10^9 \text{ km}^3$ (ii) $1.6 \times 10^9 \text{ km}$

(iii) $3 \times 10^8 \text{ m/s}$ (iv) $1.2756 \times 10^7 \text{ m}$

(v) $1.4 \times 10^9 \text{ m}$ (vi) 1.027×10^9

Chapter : 6

Exercise 6.1

Q1. Constants $-7, 0, ab, 4\frac{3}{7}$, Variables : $8x, \frac{bx}{y}, \frac{3x^2}{22}, -8y$

Q2. (i) Binomial (ii) Monomial (iii) Monomial

(iv) Binomial (v) Trinomial (vi) Binomial

Q3. (i) $x^5, -3xy, -y^2, 8$ (ii) $y^2, -y, 1$

(iii) $7y^3, -3z^3, 5x^3y, -9xyz$ (iv) $3a^5, 5b^4, -7a^2b, 9$

Q4. (i) 7 (ii) 8 (iii) -9 (iv) -2

Q5. (i) $9 \times y \times y \times z$ (ii) $-6, x, y^2, +3, x^2, y^2$

(iii) $\frac{5}{7}, a \times a, b \times b \times b - 4, p \times p, q$

Q6. (i) $a^2, 2a^2$ (ii) $\frac{2yz}{7}$ (iii) $8m^2n, -m^2n$

(iv) $cab^2, b^2ac,$

Q7. (ii) Unlike terms (v) Unlike terms.

Q8. (i) $x, -xy$ (ii) $6ab^2, 9a^2b$ (iii) $-pq+3q^2, -3b^2$

Exercise 6.2

Q1. (i) $3mn$ (ii) $9x^2y-2xy^2$ (iii) $7x-4xy+5$

(iv) $-5tz$ (v) $12mn-4$ (vi) $(a+b)+3$

(vii) $2m-4n-3mn-3$

Q2. (i) $6x$ (ii) $3P$ (iii) $4a$ (iv) $4r^3$

- Q3. (i) $15abc + 14a^2bc + 12ab^2c$ (ii) 0
 (iii) $14xy + 9yz + 3xz$ (iv) $6a^2 - b^2$
 (v) $6ax - 9b + 6c$ (vi) $8m^2 - 6m - 12$
- Q4. (i) $12a^3 - 5b^3$ (ii) $2x^2 + 2z^2 - 2xyz - 2y^2$
 (iii) $15a^2 + 9b - c^2$ (iv) $-8ab^3 - a^2b + 2$
- Q5. $-3x^3 + 8x^2 - 12x + 13$ Q6. $2a + 3b + c$
- Q7. $ab^2 - 2a^2b - a^3$
- Q8. (i) $8xy$ (ii) $-4x^2$ (iii) $5y - 6x$
 (iv) $a - 4b$ (v) $4ab + 2b^2$ (vi) $-2x - 2y - z$
 (vii) $2x^3 + 5x^2 - 2x + 1$ (viii) $x^2 - 2y^2 + 6xy$

Q9. Do it yourself.

- Q10. (i) $12x - 10y$ (ii) $-2x^2 - 2x + 3$ (iii) $14 - 8x + 7y$
 (iv) $-y^2 - y + 6$ (v) $-3a - 10b$

Q11. $-y + 11$ Q12. $6x^2 + x + 11$

Q13. $x^2 + 4xy - 2y^2$ Q14. $28a + 10b$

Q15. $10x - 4y$

Exercise 6.3

- Q1. $24a^6$ Q2. $-30x^4$
- Q3. $-40y^6$ Q4. $20x^5$
- Q5. $\frac{-10}{9}x^3y^3$ Q6. $-15x^3z^3y$
- Q7. $\frac{-4}{7}a^5b^6$ Q8. $\frac{-3}{2}m^7n^7$
- Q9. $-72x^3y^3z^2$
- Q10. (i) $9x^2 + 36x + 35$ (ii) $20x^2 + 12xy$
 (iii) $6x^2 + 19xy + 15y^2$ (iv) $56p^4 + 86p^2q^2 + 18q^4$
 (v) $12x^2 - 25xy + 12y^2$ (vi) $18a^3 - 12a^2b - 14b^2 + 21ab$
- Q11. $\frac{4}{5}a^5b^3$
- Q12. (i) $-x^2 + 10x + 8$ (ii) $-8x^2 + 10xy + 17y^2$
 (iii) $8x^2 + xy + 11y^2$ (iv) $11x^2 + 5x - 20$
- Q13. (i) 27 (ii) 6 (iii) 5 (iv) 69 (v) 166
- Q14. (i) 33 (ii) 10 (iii) 9 (iv) 25
- Q15. $a = \frac{11}{2}$ Q16. 2500
- Q17. (i) $3a^3b^3c^3$ (ii) $\frac{-8}{9}a^3b^3c^3$

Book - 7

Chapter : 7

Exercise 7.1

- Q1. 10 : 1 Q2. 35, 49
- Q3. (i) $\frac{1}{8}$ (ii) $\frac{4}{9}$ (iii) $\frac{3}{10}$ (iv) $\frac{1}{15}$ (v) $\frac{7}{15}$
 (vi), (vii) and (viii) Do it yourself.
- Q4. (i) 2 : 5 (ii) 1 : 15 (iii) 2 : 5 (iv) 2 : 7 (v) 2 : 45
- Q5. 320 and 416 Q6. 10 : 5 : 4
- Q7. 160, 240, 320 Q8. 110, 143
- Q9. 2 : 5 Q10. 8 : 3

Exercise 7.2

- Q1. (i) 6 : 8, 9 : 12 (ii) 4 : 6, 6 : 9 (iii) 12 : 14, 18 : 21
 (iv) 8 : 10, 12 : 15
- Q2. 9, 40 Q3. 7 : 10, 11 : 15, 23 : 30, 4 : 5
- Q4. 8 : 9, 5 : 6, 11 : 18

Exercise 7.3

- Q1. (i) 15 (ii) 20 (iii) 15 (iv) $\frac{2}{65}$ (v) $\frac{5}{2}$
 (vi) 4.5
- Q2. (i) 16 (ii) 4 (iii) 27 (iv) 42 (v) $\frac{3}{35}$
- Q3. (i) 8 (ii) 48 (iii) 9 Q4. ₹ 11700
- Q5. (i) 5 : 14 (ii) 10 : 15 : 21,
- Q6. $22 \times 63 = 33 \times 42$ Q7. 2 Q8. ₹ 300
- Q9. 2 Q10. 3.75 hours

Exercise 7.4

- Q1. 75 km Q2. 48 litres Q3. ₹ 3960
- Q4. 100 Q5. ₹ 135 ; 46 articles
- Q6. 1042 kg Q7. 15 m Q8. 100 men

Chapter : 8

Exercise 8.1

- Q1. (i) 33% (ii) 53% (iii) 160% (iv) 120% (v) $27\frac{1}{2}\%$
 (vi) 775%
- Q2. (i) $\frac{49}{100}$ (ii) $\frac{3}{8}$ (iii) $\frac{55}{100}$ (iv) $\frac{227}{100}$ (v) $\frac{72}{100}$
 (vi) $\frac{250}{100} = \frac{5}{2}$
- Q3. (i) $\frac{7}{50}$ (ii) 0.14 (iii) 7:50 Q4. (i) 12
- Q5. Do it yourself.

- Q6. (i) $16\frac{2}{3}\%$ (ii) $2\frac{1}{2}\%$ (iii) $5\frac{5}{9}\%$ (iv) 15%
 Q7. (i) 300 Q8. (i) 200
 Q9. (i) 200 (ii) 23 (iii) ₹10.80 (iv) 5 m (v) 6 kg
 Q10. 3000 km

Exercise 8.2

- Q1. $33\frac{1}{3}\%$ Q2. ₹ 1,00,000 Q3. 1%
 Q4. 20% Q5. $91\frac{2}{3}\%$ Q6. 315 eggs
 Q7. 126 Q8. 6 kg Q9. 112000
 Q10. 76% Q11. ₹ 1350 Q12. 12.5% decrease
 Q13. ₹ 1422000 Q14. 4% decrease.

Exercise 8.3

- Q1. (i) ₹ 22 (ii) ₹ 1478.40 (iii) ₹ 775.50 (iv) ₹ 7560
 Q2. (i) ₹ 10 (ii) ₹ 300 (iii) ₹ 9250 (iv) ₹ 1560
 Q3. (i) Loss = $\frac{100}{9}\%$ Q4. (i) ₹ 11880
 Q5. ₹ 22500 Q6. ₹ 2400 Q7. ₹ 20
 Q8. ₹ 7000 Q9. ₹ 12500 Q10. ₹ 24000

Exercise 8.4

- Q1. (i) ₹. 585 (ii) ₹ 375 (iii) ₹ 180 (iv) ₹ 768
 Q2. ₹ 300 Q3. 10% Q4. 3 years
 Q5. ₹ 11200 Q6. 10 years Q7. 5% p.a.
 Q8. 0.25% Q9. ₹ 500 Q10. ₹ 2500
 Q11. $16\frac{2}{3}\%$ Q12. ₹ 7200, 8%

Chapter : 9

Exercise 9.1

- Q1. (i) $\angle 1$ and $\angle 3$,
 (ii) $\angle 1$ and $\angle 4$, $\angle 1$ and $\angle 2$, $\angle 2$ and $\angle 3$, $\angle 3$ and $\angle 4$
 (iii) $\angle 1$ and $\angle 3$, $\angle 2$ and $\angle 4$
 Q2. (i) 55° (ii) 43° (iii) 30° (iv) 17°
 Q3. (i) 101° (ii) 123° (iii) 65° (iv) 18°
 Q4. 90° Q5. 36° Q6. $x = 116^\circ$
 Q7. (i) 30° (ii) 58°
 Q8. (i) 81° (ii) 108°
 Q9. (i) $\angle POX$ and $\angle XOQ$, $\angle XOQ$ and $\angle QOY$, $\angle QOY$ and $\angle YOP$, $\angle YOP$ and $\angle POX$
 Q10. Less than 45° .

- Q11. (i) $\angle AOD$, $\angle BOC$ (ii) $\angle EOA$, $\angle AOB$,
 (iii) $\angle EOB$, $\angle EOD$ (iv) $\angle EOA$, $\angle EOC$
 (v) $\angle AOB$, $\angle AOE$, $\angle AOE$, $\angle EOD$, $\angle EOD$, $\angle COD$
 Q12. (i) $\angle POR = 66^\circ$ (ii) $\angle ROQ = 114^\circ$
 (iii) $\angle QOS = 66^\circ$
 Q13. (i) $\angle AOD = 138^\circ$ (ii) $\angle BOD = 42^\circ$
 (iii) $\angle COB = 138^\circ$
 Q14. Yes other \angle will decreased.
 Q15. $\angle AOC = \angle BOD = 133^\circ$, $\angle BOC = \angle AOD = 47^\circ$

Exercise 9.2

- Q1. (i) Corresponding angle property.
 (ii) Alternate interior angle property.
 (iii) Interior angles on the same side of the transversal are supplementary.
 Q2. $80^\circ, 100^\circ, 80^\circ, 100^\circ$
 Q3. (i) $\angle 1, \angle 5, \angle 2, \angle 6, \angle 3, \angle 7, \angle 4, \angle 8$
 (ii) $\angle 2, \angle 8, \angle 3$ and $\angle 5, \angle 4$, and $\angle 6$
 (iii) $\angle 2, \angle 5, \angle 3, \angle 8, \angle 4$, and $\angle 5, \angle 3$, and $\angle 6$
 (iv) $\angle 1, \angle 3, \angle 2, \angle 4, \angle 5, \angle 7, \angle 6, \angle 8$
 Q4. (i) 53° (ii) 127°
 Q5. Do it yourself.
 Q6. $a = 70^\circ; b = 60^\circ; c = 60^\circ$
 Q7. $\angle AOP = \angle DPO$ (Alternate angles)
 Q8. $122^\circ, 58^\circ, 122^\circ$ Q9. Do it yourself.
 Q10. $x = 40^\circ$ Q11. $x = 40^\circ, y = 3^\circ$
 Q12. $\angle BOD = 90^\circ$

Chapter : 10

Exercise 10.1

- Q1. (i) $x = 60^\circ$ (ii) $a = 50^\circ$ (iii) $x = 60^\circ$
 Q2. Do it yourself. Q3. 45°
 Q4. $80^\circ, 60^\circ, 40^\circ$ Q5. $30^\circ, 60^\circ, 90^\circ$
 Q6. (i) 55° (ii) 60° (iii) 60°
 Q7. (i) No (ii) No (iii) Yes, (iv) No
 (v) No (vi) Yes
 Q8. $\angle x = 30^\circ; \angle y = 50^\circ$ Q9. $\angle LAD = 10^\circ$
 Q10. (i) 70° (ii) 100° (iii) 90° (iv) 76° (v) 29°

Q11. (i) 65° (ii) 65° (iii) 65° (iv) 50°

Q12. 30° each

Exercise 10.2

Q1. (i) 120° (ii) 110° (iii) 70° (iv) 85°
(v) 30°

Q2. (i) 65° (ii) 110° (iii) 45° (iv) 40°
(v) 60°

Q3. (i) $44^\circ, 66^\circ, 70^\circ$ Q4. (i) $50^\circ, 50^\circ, 80^\circ$

Q5. (i) 70° (ii) 110°

Q6. (i) 25° (ii) $x = 25^\circ$ (iii) $x = 20^\circ$
(iv) Do it yourself.

Exercise 10.3

Q1. (i) 10 (ii) 12 (iii) 7 (iv) 15
(v) 34 (vi) 4

Q2. (i) 5 (ii) 17 (iii) 20 (iv) 12

Q3. (i) 15 cm Q4. (i) $152 + 362 = 39^2$

Q5. (i) 9 m Q6. (i) $52m$

Q7. (i) Do it yourself. Q8. (i) Do it yourself.

Q9. (i) 18 m Q10. (i) 68 cm

Q11. (i) 98 cm Q11. (i) Do it yourself.

Chapter : 11

Exercise 11.1

Q1. (a) \cong (b)

Q2. (a) SAS, $\triangle ACB \cong \triangle DEF$ (b) RHS, $\triangle PQR \cong \triangle NMP$
(c) ASA, $\triangle DEF \cong \triangle PNM$ (d) ASA, $\triangle ACB \cong \triangle ACD$

Q3. (a) 5.6 cm

Q4. (i) $\triangle ABD \cong \triangle ACD$ (By S.S.S. Congruency Rule)
(ii) Yes, $\angle BAD = \angle CAD$ (By c.p.c.t)

Q5. (d) $\triangle RQP \cong \triangle DEF$

Q6. (i) Yes, by ASA (By S.S.S. Congruency Rule)

Q7. (i) yes, (R.H.S. Congruency Rule)
(ii) $\triangle ADC \cong \triangle ABC$ (By A.S.A. Congruency Rule)
 $\therefore AB = DC$ (By c.p.c.t)

Q8. (a) $\triangle ABD \cong \triangle ACD$ (b) $\triangle ABC \cong \triangle RQP$

Q9. (i) Yes

(ii) $AD = DC, BD = BD, AB = AC$, (S.S.S. Congruency Rule)

Q10. $\triangle ABC \cong \triangle DCB$, $\angle A = \angle D$, $BC = BC$, $AC = DB$
(By R.H.S Congruency Rule)

Q11. (a) $A \leftrightarrow E, B \leftrightarrow F, C \leftrightarrow D, AB = EF, BC = FD, AC = ED$,
 $\angle A = \angle E, \angle B = \angle F, \angle C = \angle D$.

(b) $X \leftrightarrow Q, Y \leftrightarrow P, Z \leftrightarrow R, XY = QP, ZY = PR, XZ = QR$,
 $\angle X = \angle Q, \angle Y = \angle P, \angle Z = \angle R$.

(c) $M \leftrightarrow S, P \leftrightarrow Q, N \leftrightarrow R, MP = SQ, PN = QR, MN = SR$,
 $\angle M = \angle S, \angle P = \angle Q, \angle N = \angle R$.

(d) $C \leftrightarrow Q, A \leftrightarrow R, B \leftrightarrow P, CA = QR, AB = RP, BC = PQ$.
 $\angle C = \angle Q, \angle A = \angle R, \angle B = \angle P$.

Q12. In $\triangle PBC \cong \triangle QBC$ (by SAS criterion of congruency
side $BQ = CP$ (by CPCT)

Q13. (d) R.H.S. (Congruency Rule)

Q14. Two sides and the included angle of one must
be equal to the corresponding two sides and the
included angle of the other.

Q15. Together, we get $AB = BC = AC$ or $\triangle ABC$ is
equilateral.

Chapter : 12

Exercise 12.1

Q1. (i) no (ii) no (iii) yes (iv) no

Q2. (iii) $x^2 = 24$ Q3. (iv) 3

Q4. (i) $m - 8 = 12$ (ii) $3y + (-4) = 15$ (iii) $x \times x = 9$

(iv) $10\frac{7P}{8} = 20$ (v) $2x + 4 = 15$ (vi) $2 + 3x = 21$

Q5. (i) Seven subtracted from a number gives 10.

(ii) Four times a number is 28.

(iii) Seven added to half a number is 11.

(iv) Fifteen divided by a number is 4.

(v) Seven times a number is five more than thrice the
same number.

Q6. (i) $x = 4$ (ii) $a = 2$ (iii) $x = 5$ (iv) $n = 1.2$

(v) $x = 11$ (vi) $a = 11$ (vii) 18

Q7. (i) 10 (ii) 15 (iii) 4 (iv) -9

(v) -10 (vi) -4

Q8. (i) **Step 1** : Add 2 to both sides

Step 2 : Divide both sides by 3, $n = 16$

(ii) **Step 1** : Subtract 7 from both sides

Step 2 : Divide both sides by 5, $m = 2$

(iii) **Step 1** : Multiply both sides by 3

Step 2 : Divide both sides by 20, $P = 6$

Q9. (i) $n = 48$ (ii) $n = \frac{1}{6}$ (iii) $n = -1$ (iv) $m = \frac{35}{22}$

Q10. (i) 4.24 Q11. Do it yourself.

Q11. (i) $x = 5$ (ii) $y = 6$ (iii) $x = 2$ (iv) $a = -1$ (v) $a = 4$
 (vi) $x = 6$ (vii) Do it yourself.

Q12. (i) $x = 2$ (ii) $n = 12$ (iii) $x = 12$ (iv) $x = -4$ (v) $x = 0$

Q13. (i) $p = \frac{14}{15}$ (ii) $P = \frac{6}{5}$ (iii) $E = 2$ (iv) $P = 7$ (v) $m = 2$

Q14. (i) 2 (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 12.3

- | | | |
|---|--------------------------------|---------------------|
| Q1. 13 | Q2. 26 | Q3. 13 years |
| Q4. 3 | Q5. 35 years | Q6. 78 |
| Q7. 48, 50 | Q8. 19, 95 | Q9. 5 |
| Q10. ₹ 45 | Q11. 35 years, 25 years | |
| Q12. 50 m, 25 m | Q13. 500 | Q14. 180, 60 |
| Q15. 12 years, 9 years, 36 years respectively. | | |
| Q16. 80 km | Q17. 30 | Q18. 23 m |

Chapter : 13

Exercise 13.1

- Q1.** Q1. to Q4. Do it yourself.
- | | | |
|------------------|--------------------|-------------------|
| Q5. 2 | Q6. 50 | Q7. 129 g |
| Q8. 17.5 | Q9. 62.6 cm | Q10. 65 kg |
| Q11. 8.43 | Q12. 3.65 | Q13. 13 |
- Q14.** 10

Exercise 13.2

- Q1.** (i) 9 (ii) 1 (iii) 8
- Q2.** (i) Highest marks = 95, lowest marks = 39
 (ii) 56
- | | | |
|-----------------|-----------------|---------------|
| Q3. 4 | Q4. 2 | Q5. 6 |
| Q6. 22 | Q7. 32.5 | Q8. 39 |
| Q9. ₹ 71 | Q10. 62 | |

Exercise 13.3

- Q1.** (i) 3 (ii) 44 (iii) 2 (iv) 15
- Q2.** 2
- Q3.** Median = 59.5 kg, Mean = 58.7 kg, Mode = 61.1 kg
- Q4.** Median = 50 kg, Mean = 51 kg, Mode = 48 kg.
- Q5.** 3

Exercise 13.4

- Q1.** and 2 Draw it yourself.
- Q3.** (a) (i) Vidhi (ii) Vidhi (b) (i) Vidhi
- Q4.** (a) Amritsar (b) August
- Q5.** (i) Term 4, 85 (ii) 55, Term 3
 (iii) Scale - 1 unit = 10 marks
- Q6.** Draw it yourself. (ii) 1995
- Q7.** Q7. to Q10. Draw it yourself.

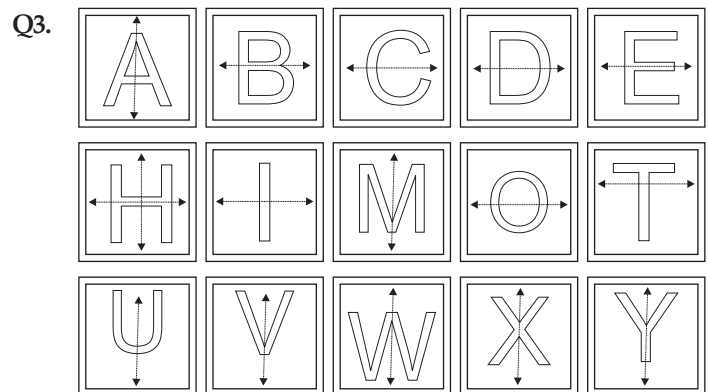
Exercise 13.5

- Q1.** (i) 0.55, (ii) 0.45
- Q2.** (i) $\frac{1}{6}$ (ii) $\frac{1}{6}$
- Q3.** (i) 0.36 (ii) 0.64
- Q4.** (i) $\frac{1}{4}$ black (ii) $\frac{3}{4}$ red
- Q5.** (a) $\frac{1}{4}$ (b) $\frac{3}{8}$ (c) $\frac{1}{4}$ (d) $\frac{1}{8}$
- Q6.** $\frac{1}{5}$
- Q7.** (a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{0}{6}$
- Q8.** (a) $\frac{1}{2}$ (b) $\frac{9}{13}$

Chapter : 14

Exercise 14.1

- Q1.** (i) and 2 : Do it yourself.
- Q2.** (i) and 2 : Do it yourself.



- Q4.** Do it yourself.
- Q5.** Do it yourself.
- Q6.** (a) 3 (b) 1 (c) 0 (d) 4 (e) 2 (f) 2
 (g) 0 (h) 0 (i) 6 (j) many

- Q7. (a) A, H, t M, 0, T, U, V, W, X, Y (b) H,1,O,X
 Q8. Scalene Triangle, Quadrilateral, Parallelogram
 Q9. (a) Axis of Symmetry (b) Rotational Symmetry
 Q10. Do it yourself.

Exercise 14.2

- Q1. Do it yourself.
 Q2. Order 4, angle 90°
 Q3. H,N,S
 Q4. Centre of Regular Hexagon.

Q5.

Shape	Centre of Rotation	Order	Angle of Rotation
Square	Print joining the midpt of opponk sider	4	90°
Rectangle	Print joining mid print of opp sider	2	180°
Equilatual	Centroid	3	120°
Rhombus	Print of Inter Section of diagcnlals	2	180°
Regular Hexagon	Centre	6	60°
Circle	Centre	Unlimited	Any angle

- Q6. Do it yourself.

Exercise 14.3

- Q1. Yes, Q.2 Do it your self.

Q3.

Letter	Line of Symmetry	No. of line symmetry	Rotational symmetry	Order of R. symmetry
Z	No	0	Yes	2
S	No	0	Yes	2
H	Yes	2	Yes	2
O	Yes	4	Yes	2
E	Yes	1	No	0
C	Yes	1	No	0

- Q4. It has only one line of symmetry. It is symmetric along the perpendicular bisector of the diameter, No-rotational symmetry

- Q5. 120° Q6. No, only Isosceles trapezium
 Q7. Scalene triangle
 Q8. Any angle, unlimited

Chapter : 15

Exercise 15.1

- Q1. (a) Triangle (b) Square (c) Hexagon
 (d) Triangular Prism (e) Pyramid (f) Circle
 (g) cone (h) Cylinder (i) Pyramid
 Q2. (i) b (ii) d (iii) a (iv) c (v) f (vi) e

Q3.

Shape	No. of faces	No. of Vertices	No. of Edges	F + V - E
Cube	6	8	12	6 + 8 - 12 = 2
Cuboid	6	8	12	6 + 8 - 12 = 2
Triangular Prism	5	6	9	5 + 6 - 9 = 2
Square Pyramid	5	5	8	5 + 5 - 8 = 2
Rectangular Pyramid	5	5	8	5 + 5 - 8 = 2
Triangular Pyramid	4	4	6	4 + 4 - 6 = 2

- Q4. (i) False (ii) False (iii) True (iv) True

Exercise 15.2

- Q1. Q1., Q2., and Q3. Draw it yourself.
 Q4. (a) ii (b) iii (c) iv (d) i
 Q5. (i) (iii) (v)

Exercise 15.3 and Exercise 15.4-Do it yourself.

Chapter : 16

Exercise 16.1

- Q1. Q1. to Q4. Draw it yourself.

Exercise 16.2

- Q1. Q1. to Q8. Draw it yourself.

Exercise 16.3

- Q1. Q1. to Q8. Draw it yourself.

- Q9. – Measure of 3 sides is given.
 – Measure of 2 sides and included angle is given.
 – Measure one side and two angle is given.
 – One right angle, and measure of hypotenuse and one side is given.

Q10. (i) No, Sum of three angles of a triangle is 180°

Q11. (i) False (ii) True (iii) False

Q12. 35° .

Chapter : 17

Exercise 17.1

Q1. (i) 0.7 cm (ii) 8.4 cm (iii) 70 cm (iv) 14 cm
 (v) 0.28 cm

Q2. (i) 35.2 cm (ii) 30.8 cm (iii) 39.6 cm (iv) 52.8 cm
 (v) 26.4 cm

Q3. (i) 264 cm (ii) 286 cm (iii) 132 cm (iv) 66 cm
 (v) 176 cm

Q4. 120 cm Q5. 90 cm Q6. 49 cm

Q7. 1 : 3 Q8. 176, 4224 cm

Q9. 8 cm Q10. 188 m Q11. 3.2 m

Q12. 943 mm Q13. 20 cm Q14. 110 m

Q15. 218 m

Q16. 4 : 3 Q17. 1.05 m Q18. 3.08 km

Q19. 34 units Q20. 1275 m

Exercise 17.2

Q1. 650 sq. cm Q2. ₹ 960 Q3. 3600 sq. cm

Q4. ₹5841 for the roads; ₹37,345 for the garden;
 Total = ₹43,186

Q5. 84.75 m^2 Q6. 1200 cm^2 Q7. ₹260.19

Q8. Length = 60 m; cost ₹900

Q9. Area of border = 3.35 m^2 , area of remaining floor
 = 9.45 m^2

Q10. 1376 cm^2 of raw silk; 2576 cm^2

Q11. 0.0189 m^2 Q12. 600 cm^2 Q13. 1 : 9

Q14. 900 tiles Q15. 8 cm, 4 cm

Exercise 17.3

Q1. PM = 8 cm; SM = 6 cm

Q2. PS = 6.56 cm Q3. 9.3 cm

Q4. Half Q5. PM = 5 cm; QR = 7.5 cm

Q6. 5 cm Q7. 10.5 cm^2

Q8. 60 cm, 90 cm Q9. 2.8 cm

Q10. 18 cm