Answers

1. Basic Concepts in Geometry

Practice set 1.1

1. (i) 3 (ii) 3 (iii) 7 (iv) 1
(v) 3 (vi) 5 (vii) 2 (viii) 7

2. (i) 6 (ii) 8 (iii) 10 (iv) 1 (v) 3 (vi) 12

3. (i) P-R-Q (ii) Non collinear (iii) A-C-B (iv) Non collinear
(v) X-Y-Z (vi) Non collinear

4. 18 and 2 **5.** 25 and 9 **6.** (i) 4.5 (ii) 6.2 (iii) $2\sqrt{7}$ **7.** Triangle

Practice set 1.2

1. (i) No (ii) No (iii) Yes **2.** 4 **3.** 5 **4.** BP < AP < AB

5. (i) Ray RS or Ray RT (ii) Ray PQ (iii) Seg QR (iv) Ray QR and Ray RQ etc.
(v) Ray RQ and Ray RT etc.. (vi) Ray SR , Ray ST etc.. (vii) Point S

6. (i) Point A & Point C, Point D & Point P (ii) Point L & Point U, Point P & Point R
(iii) d (U,V) = 10, d (P,C) = 6 , d (V,B) = 3 , d (U,L) = 2

Practice set 1.3

1. (i) If a quadrilateral is a parallelogram then opposite angles of that quadrilateral are congruent.
(ii) If quadrilateral is a rectangle then diagonals are congruent.
(iii) If a triangle is an isosceles then segment joining vertex of a triangle and mid point of the base is perpendicular to the base.

2. (i) If alternate angles made by two lines and its transversal are congruent then the lines are parallel.
(ii) If two parallel lines are intersected by a transversal the interior angles so formal are supplementary.
(iii) If the diagonals of a quaddrilateral are congruent then that quadrilateral is rectangle.

Problem set 1

1. (i) A (ii) C (iii) C (iv) C (v) B
2. (i) False (ii) False (iii) True (iv) False
3. (i) 3 (ii) 8 (iii) 9 (iv) 2 (v) 6 (vi) 22 (vii) 165
4. –15 and 1 **5.** (i) 10.5 (ii) 9.1 **6.** –6 and 8

2. Parallel Lines

Practice set 2.1

1. (i) 95° (ii) 95° (iii) 85° (iv) 85°

2. $\angle a = 70^\circ, \angle b = 70^\circ, \angle c = 115^\circ, \angle d = 65^\circ$

3. $\angle a = 135^\circ, \angle b = 135^\circ, \angle c = 135^\circ$

5. (i) 75° (ii) 75° (iii) 105° (iv) 75°

Practice set 2.2

1. No. **4.** $\angle ABC = 130^\circ$

Problem set 2

1. (i) C (ii) C (iii) A (iv) B (v) C **4.** $x = 130^\circ$ $y = 50^\circ$

5. $x = 126^{0^\circ}$ **6.** $f = 100^\circ$ $g = 80^\circ$

3. Triangles

Practice set 3.1

1. 110° **2.** 45° **3.** $80^\circ, 60^\circ, 40^\circ$ **4.** $30^\circ, 60^\circ, 90^\circ$

5. $60^\circ, 80^\circ, 40^\circ$ **6.** $\angle DRE = 70^\circ, \angle ARE = 110^\circ$

7. $\angle AOB = 125^\circ$ **9.** $30^\circ, 70^\circ, 80^\circ$

Practice set 3.2

1. (i) SSC Test (ii) SAS Test (iii) ASA Test (iv) Hypotenuse Side Test.

2. (i) ASA Test, $\angle BAC \cong \angle QPR$,side AB $\cong$ side PQ, side AC $\cong$ side PR
(ii) SAS Test, $\angle TPQ \cong \angle TSR$, $\angle TQP \cong \angle TRS$, side PQ $\cong$ side SR

3. Hypotenuse Side Test, $\angle ACB \cong \angle QRP$, $\angle ABC \cong \angle QPR$, side AC $\cong$ side QR

4. SSS Test, $\angle MLN \cong \angle MPN$, $\angle LMN \cong \angle MNP$,$\angle LNM \cong \angle PMN$

Practice set 3.3

1. $x = 50^\circ$, $y = 60^\circ$, $m\angle ABD = 110^\circ$, $m\angle ACD = 110^\circ$.

2. 7.5 Units **3.** 6.5 Units **4.** $l(PG) = 5$ cm , $l(PT) = 7.5$ cm

Practice set 3.4

1. 2 cm **2.** 28° **3.** $\angle QPR, \angle PQR$ **4.** greatest side NA, smallest side FN

Practice set 3.5

1. $\frac{XY}{LM} = \frac{YZ}{MN} = \frac{XZ}{LN}$, $\angle X \cong \angle L$, $\angle Y \cong \angle M$, $\angle Z \cong \angle N$

2. $l(QR) = 12$ cm, $l(PR) = 10$ cm

Problem set 3

1. (i) D (ii) B (iii) B

5. Quadrilaterals

Practice set 5.1

1. m∠XWZ = 135°, m∠YZW = 45° , l (WY) = 10 cm

2. x = 40° , ∠C = 132° , ∠D = 48°

3. 25 cm, 50 cm, 25 cm, 50 cm

4. 60°, 120°, 60°, 120°

6. ∠A = 70° , ∠B = 110° , ∠C = 70° , ∠R = 110°

Practice set 5.3

1. BO = 4 cm, ∠ACB = 35°

2. QR = 7.5 cm, ∠PQR = 105°, ∠SRQ = 75°

3. ∠IMJ = 90°, ∠JIK = 45°, ∠LJK = 45°

4. side = 14.5 cm, Perimetere = 58 cm

5. (i) False (ii) False (iii) True (iv) True (v) True (vi) False

Practice set 5.4

1. ∠J = 127°, ∠L = 72° **2.** ∠B = 108°, ∠D = 72°

Practice set 5.5

1. XY = 4.5 cm,, YZ = 2.5 cm,, XZ = 5.5 cm

Problem set 5

1. (i) D (ii) C (iii) D **2.** 25 cm, **3.** $6.5\sqrt{2}$ cm

4. 24 cm, 32 cm, 24 cm, 32 cm **5.** PQ = 26 cm **6.** ∠MPS = 65°

6. Circle

Practice set 6.1

1. 20 cm **2.** 5 cm **3.** 32 unit **4.** 9 unit

Practice set 6.2

1. 12 cm **2.** 24 cm

Problem set 6

1. (i) A (ii) C (iii) A (iv) B (v) D (vi) C (vii) D or B **2.** 2:1 **4.** 24 units

7. Co - ordinate Geometry

Practice set 7.1

1. point A : Quadrant II, point B : Quadrant III, point K : Quadrant I, point D : Quadrant I
point E : Quadrant I, point F : Quadrant IV, point G : Quadrant IV, point H : Y-Axis.
point M : X-Axis, point N : Y-Axis, point P : Y-Axis, point Q : Quadrant III

2. (i) Quadrant I (ii) Quadrant III (iii) Quadrant IV (iv) Quadrant II

Practice set 7.2

1. Square **2.** $x = -7$ **3.** $y = -5$ **4.** $x = -3$ **5.** 4

6. (i) Y-Axis, (ii) X-axis, (iii) Y-axis, (iv) X-axis,

7. To X-axis (5,0) , To Y-axis (0,5)

8. (-4,1), (-1.5, 1), (-1.5,5), (-4,5)

Problem set 7

1. (i) C (ii) A (iii) B (iv) C (v) C (vi) B

2. (i) Q (– 2,2), R(4,–1) (ii) T(0,–1), M(3,0) (iii) point S (iv) point O

3. (i) Quadrant IV (ii) Quadrant III
(iii) Quadrant II (iv) Quadrant II (v) Y-axis (vi) X-axis

5. (i) 3 (ii) P(3,2), Q(3,-1), R (3,0) (iii) 0 **6.** . $y = 5, y = -5$ **7.** $|a|$

8. Trigonometry

Practice set 8.1

1. (i) $\frac{QR}{PQ}$ (ii) $\frac{QR}{PQ}$ (iii) $\frac{QR}{PR}$ (iv) $\frac{PR}{QR}$

2. (i) $\frac{a}{c}$ (ii) $\frac{b}{a}$ (iii) $\frac{b}{c}$ (iv) $\frac{a}{b}$

3. (i) $\frac{MN}{LN}$ (ii) $\frac{LM}{LN}$ (iii) $\frac{LM}{MN}$ (iv) $\frac{MN}{LN}$

4. (i) $\frac{PQ}{PR}, \frac{RQ}{PR}, \frac{PQ}{RQ}$ (ii) $\frac{QS}{PS}, \frac{PQ}{PS}, \frac{QS}{PQ}$

Practice set 8.2

1. $\sin\theta : \frac{12}{37}, \frac{1}{\sqrt{2}}, \frac{\sqrt{2}}{\sqrt{3}}, \frac{21}{29}, \frac{8}{17}, \frac{1}{3}$; $\cos\theta : \frac{60}{61}, \frac{1}{\sqrt{2}}, \frac{\sqrt{3}}{2}, \frac{20}{29}, \frac{15}{17}, \frac{4}{5}, \frac{2\sqrt{2}}{3}$

$\tan\theta : \frac{12}{35}, \frac{11}{60}, \frac{1}{\sqrt{3}}, \sqrt{2}, \frac{3}{4}$

2. (i) $\frac{11}{2}$ (ii) $\frac{93}{20}$ (iii) 5 (iv) $\frac{2\sqrt{3}}{\sqrt{3}+1}$ (v) $\frac{3}{4}$ (vi) $\frac{\sqrt{3}}{2}$ **3.** $\frac{3}{5}$ **4.** $\frac{8}{17}$

Problem set 8

1. (i) A (ii) D (iii) C (iv) D

2. $\sin T = \frac{12}{13}, \cos T = \frac{5}{13}, \tan T = \frac{12}{5}, \sin U = \frac{5}{13}, \cos U = \frac{12}{13}, \tan U = \frac{5}{12}$

3. $\sin Y = \frac{8}{17}, \cos Y = \frac{15}{17}, \tan Y = \frac{8}{15}, \sin Z = \frac{15}{17}, \cos Z = \frac{8}{17}, \tan Z = \frac{15}{8}$

4. $\sin \theta = \frac{7}{25}, \tan \theta = \frac{7}{24}, \sin^2 \theta = \frac{49}{625}, \cos^2 \theta = \frac{576}{625}$

5. (i) 70 (ii) 60 (iii) 50

9. Surface Area and Volume

Practice set 9.1

1. 640 sq.cm, 1120 sq.cm. **2.** 20 Unit **3.** 81 sq.cm, 121.50 sq.cm.

4. 3600 sq.cm. **5.** 20 m **6.** 421.88 cubic cm

7. 1632.80 sq.cm, 4144.80 sq.cm. **8.** 21 cm

Practice set 9.2

1. 5 cm **2.** 36960 cubic cm. **3.** 10 cm, 6 cm **4.** ₹ 2640

5. 15 cm **6.** 8 cm **7.** 550 sq.cm **8.** 2816 sq.cm, 9856 cubic cm

9. 600 cubic metre **10.** 28.51 cubic metre, 47.18 sq.m.

Practice Set 9.3

1. (i) 200.96 sq.cm, 267.95 cubic cm. (ii) 1017.36 sq.cm, 3052.08 cubic cm.
(iii) 153.86 sq.m, 179.50 cubic cm.

2. 157 sq.cm, 235.5 sq.cm. **3.** 14130 cubic cm. **4.** 5544 sq.cm. **5.** 60 cm

Problem set 9

1. 1980 sq.m. **2.** 96801.6 cubic cm. **3.** 12 m, 13 m

4. 6 cm **5.** 1728 cubic cm. **6.** 179.67 cubic cm.

7. 21 cm **8.** 132 sq.m., ₹ 6864 **9.** 4620 sq.m, ₹ 32340