



Class 9 Maths – Chapter 6



Exercise 6.2 – Questions with Answer Key

Ganita Manjari | New Syllabus 2026–27

Exercise Set 6.2 contains **8 questions**, covering areas of triangles, trapeziums, Heron's formula, rhombuses, parallelograms and area-based proofs.

1. ▲ Area of Triangle

Question: Find the area of triangle ADE in Fig. 6.31.

Given:

Base AD = 8 cm

Height = 10 cm

Area = $\frac{1}{2} \times \text{base} \times \text{height}$

= $\frac{1}{2} \times 8 \times 10$

= **40 cm²**



Answer: 40 cm²

2. ◆ Area of a Trapezium

Question: The parallel sides of a trapezium are 40 cm and 20 cm. Its equal non-parallel sides are 26 cm each. Find its area.

Difference between parallel sides:

$40 - 20 = 20 \text{ cm}$

Since the trapezium is isosceles:

Half difference = $20/2 = 10 \text{ cm}$

Using Pythagoras:

$$\text{Height}^2 = 26^2 - 10^2$$

$$= 676 - 100$$

$$= 576$$

$$\text{Height} = \mathbf{24\text{ cm}}$$

$$\text{Area} = 1/2 \times (\text{sum of parallel sides}) \times \text{height}$$

$$= 1/2 \times (40 + 20) \times 24$$

$$= \mathbf{720\text{ cm}^2}$$

 **Answer: 720 cm²**

3. Heron's Formula

Question: Find the area of a triangle whose two sides are 8 cm and 11 cm and whose perimeter is 32 cm.

Third side:

$$= 32 - 8 - 11$$

$$= \mathbf{13\text{ cm}}$$

Semi-perimeter:

$$s = 32/2 = \mathbf{16\text{ cm}}$$

Using Heron's formula:

$$\text{Area} = \sqrt{[s(s - a)(s - b)(s - c)]}$$

$$= \sqrt{[16 \times 8 \times 5 \times 3]}$$

$$= \sqrt{1920}$$

$$= \mathbf{8\sqrt{30\text{ cm}^2}}$$

$$\approx \mathbf{43.82\text{ cm}^2}$$

✓ **Answer:** $8\sqrt{30} \text{ cm}^2 \approx 43.82 \text{ cm}^2$

4. Triangular Plot

Question: The sides of a triangular plot are in the ratio **3 : 5 : 7** and its perimeter is **300 m**. Find its area.

Let sides be:

3x, 5x and 7x

$$3x + 5x + 7x = 300$$

$$15x = 300$$

$$x = 20$$

Therefore, sides are:

60 m, 100 m and 140 m

Semi-perimeter:

$$s = 300/2 = \mathbf{150 \text{ m}}$$

Using Heron's formula:

$$\text{Area} = \sqrt{[150 \times 90 \times 50 \times 10]}$$

$$= \sqrt{6,750,000}$$

$$= \mathbf{1500\sqrt{3} \text{ m}^2}$$

$$\approx \mathbf{2598.08 \text{ m}^2}$$

✓ **Answer:** $1500\sqrt{3} \text{ m}^2 \approx 2598.08 \text{ m}^2$

5. Rhombus Diagonals

Question: One diagonal of a rhombus is twice the other. Its area is 128 cm^2 . Find the shorter diagonal.

Let shorter diagonal = **d cm**

Longer diagonal = **2d cm**

Area of rhombus:

$$= \frac{1}{2} \times d_1 \times d_2$$

$$128 = \frac{1}{2} \times d \times 2d$$

$$128 = d^2$$

$$d = 8\sqrt{2} \text{ cm}$$

$$\approx 11.31 \text{ cm}$$

✓ **Answer:** $8\sqrt{2} \text{ cm} \approx 11.31 \text{ cm}$

6. Parallelogram – Equal Areas

Question: ABCD is a parallelogram. P and Q are any two points on side AB. Find:

Area($\triangle PCD$) : Area($\triangle QCD$)

Both triangles have:

- The same base **CD**
- Their third vertices P and Q lie on **AB**
- $AB \parallel CD$

Therefore, they have the same height.

So their areas are equal.

✓ **Answer:**

Area($\triangle PCD$) : Area($\triangle QCD$) = 1 : 1

7. Equal Areas in a Parallelogram

Question: O is any point on the diagonal PR of parallelogram PQRS. Prove that:

Area($\triangle PSO$) = Area($\triangle PQO$)

 Proof:

Triangles **PSO** and **PQO** have the same base **PO**.

Since **PQ** // **SR** and **PS** // **QR**, the vertices S and Q are at equal perpendicular distances from diagonal PR.

Therefore, the two triangles have:

Same base + equal heights

Hence:

$$\text{Area}(\triangle PSO) = \text{Area}(\triangle PQO)$$

 Answer:

Proved.

8. Midpoint Parallelogram

Question: The midpoints of the sides of a quadrilateral are joined in order. Prove that the area of the resulting parallelogram is half the area of the original quadrilateral.

 Proof:

Let ABCD be the original quadrilateral.

Let P, Q, R and S be the midpoints of:

AB, BC, CD and DA

When these midpoints are joined, **PQRS** forms a parallelogram.

The four corner triangles formed around PQRS combine to give the remaining half of the quadrilateral's area.

Therefore:

$$\text{Area}(PQRS) = 1/2 \times \text{Area}(ABCD)$$

 Answer:

Area of midpoint parallelogram = 1/2 × area of original quadrilateral

The textbook explicitly asks this midpoint-area result as Question 8.



COMPLETE ANSWER KEY

Q.	Answer
1	40 cm^2
2	720 cm^2
3	$8\sqrt{30} \text{ cm}^2 \approx 43.82 \text{ cm}^2$
4	$1500\sqrt{3} \text{ m}^2 \approx 2598.08 \text{ m}^2$
5	$8\sqrt{2} \text{ cm} \approx 11.31 \text{ cm}$
6	$1 : 1$
7	$\text{Area}(\triangle PSO) = \text{Area}(\triangle PQO)$
8	Area of midpoint parallelogram = $\frac{1}{2}$ area of quadrilateral

★ Chapter 6.2 Must-Remember

▲ Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height}$

◆ Area of trapezium = $\frac{1}{2} \times (\text{sum of parallel sides}) \times \text{height}$

📐 Heron's Formula = $\sqrt{[s(s - a)(s - b)(s - c)]}$

◆ Area of rhombus = $\frac{1}{2} \times d_1 \times d_2$

★ Median divides a triangle into two equal-area triangles.

★ Triangles on the same base and between the same parallels have equal areas.

The exercise set and its sequence of topics are confirmed by the 2026–27 Ganita Manjari Chapter 6 sources.