

Area Theorems (Proof and Use)

Chapter 16: Area Theorems (Proof and Use) · Topic 1

Key Concept

Triangles with the same base and lying between the same parallel lines have equal areas, regardless of their exact shape.

A parallelogram and a triangle sharing the same base and lying between the same parallels have the parallelogram's area equal to twice the triangle's area.

These theorems can be proven using properties of congruent triangles and are useful for solving complex area problems.

Understanding area theorems helps us calculate and compare areas without needing all specific measurements of a figure.

Quick Revision Notes

- Same base, same parallels: triangles have equal area.
- This applies regardless of exact shape.
- Parallelogram area = $2 \times$ triangle area (same base, same parallels).
- These theorems use congruent triangle properties.
- They're proven through geometric reasoning.
- They help solve complex area problems.
- They allow area comparison without all measurements.
- These are fundamental geometry theorems.

Practice Questions

- 1 Draw two triangles with the same base and parallels, verify equal area.
- 2 Draw a parallelogram and triangle sharing a base, verify the area relationship.
- 3 Discuss how these theorems are proven.
- 4 Solve a problem using an area theorem.
- 5 Explain why area theorems are useful.
- 6 Research another related area theorem.