

Chapter 5 Composite 2D Shapes

Teacher Guide and Diagnostic Answer Key

Teacher Guide

Teacher Chapter-at-a-Glance

None required

Spend the most time on the add-versus-subtract judgment. Once students can name the strategy, the arithmetic itself is familiar from earlier chapters.

Ask: is this part included in the final shape, or is it missing from it?

Mastery Decision Guide

What a missed Tripwire item actually means, and what to do about it before moving on.

Confirmation and Fresh Recheck

Confirm with: Ask the student to shade the region that remains and cross out any cut-out before choosing add or subtract.

Fresh recheck: Use a new L-shape with a missing corner; require the student to decide add-versus-subtract before calculating.

Decision rule: Move forward only when the fresh response is secure and the reasoning survives the changed representation or context.

Missed Tripwire #1 → Adding a part that is missing (Mistake 1). Adds cut-out to the large rectangle. Review before the next chapter.

Ready to Learn Check

Quick check before starting. A wrong answer below points to a specific gap worth closing first, not just a miss to shrug off.

1. Two rectangles have areas 25 cm^2 and 15 cm^2 . Find their combined area.

Correct answer: 40 cm^2

Likely wrong answer: 10 cm^2 (subtracting instead of adding)

Misconception: Not yet recognizing that combining two included regions means adding them.

Next move: Review adding two given areas together before starting the chapter.

2. A 45 cm^2 rectangle has a 15 cm^2 section removed. Find the remaining area.

Correct answer: 30 cm^2

Likely wrong answer: 60 cm^2 (adding instead of subtracting)

Misconception: Not yet recognizing that a removed section means subtracting it.

Next move: Review subtracting a smaller area from a larger one before starting the chapter.

3. A bite-shaped piece is missing from the corner of a cookie shaped like a rectangle. Should you add or subtract to find the remaining area?

Correct answer: subtract

Likely wrong answer: add

Misconception: Defaulting to addition without first checking whether the piece is included or missing.

Next move: Preview the idea that a missing piece is always subtracted before starting the chapter.

Practice

Assign the full set or select items for targeted review. Teacher solutions follow each question.

1. Two included areas are 24 cm^2 and 17 cm^2 . Find total.

Solution: 1. 41 cm^2

2. A 15 m^2 section is removed from 96 m^2 . Find remaining.

Solution: 2. 81 m^2

3. Rectangles 9 cm by 4 cm and 5 cm by 3 cm form one shape. Find total.

Solution: 3. 51 cm^2

4. A 4 m by 3 m corner is removed from a 15 m by 8 m rectangle. Find remaining.

Solution: 4. 108 m^2

5. Full width 18 cm ; one section 11 cm . Find missing width.

Solution: 5. 7 cm

6. A rectangle area is 40 cm^2 and triangle area is 18 cm^2 . Find total.

Solution: 6. 58 cm^2

7. A 22 m^2 section is cut from 150 m^2 . Find remaining.

Solution: 7. 128 m^2

8. Explain why different correct splits of one L-shape give the same area.

Solution: 8. Both cover same shape once.

9. Explain why overlapping parts are a problem.

Solution: 9. Overlap counts space twice.

10. A 5 m by 4 m sandpit is not covered in a 25 m by 12 m playground. Find grass area.

Solution: 10. 280 m^2

Chapter Answer Key

Tripwire Check

1. No. Subtract: $20 \times 12 - 7 \times 4 = 212 \text{ m}^2$.

Exit Ticket

1. 57 cm^2

2. 102 m^2

3. Both cover the same figure once.

Worksheet 1: Guided Practice

1. 42 cm^2

2. 74 cm^2

3. add	4. 5 cm
5. subtract	6. 44 cm ²
7. add	8. 62 m ²
9. subtract	10. 5 m
11. m ²	12. No part left out.
13. No part counted twice.	14. 80 cm ²
15. 42 cm ²	

Worksheet 2: Independent Practice

1. 29 cm ²	2. 78 cm ²
3. 104 m ²	4. 63 m ²
5. 140 m ²	6. 8 cm
7. 69 cm ²	8. 198 cm ²
9. 69 cm ²	10. 11 m
11. 65 cm ²	12. 300 m ²
13. Removed area is not part of final shape.	14. Overlap double-counts area.
15. 156 m ²	

Worksheet 3: Mixed Practice & Application

Item 14 (Non-Routine)

Correct answer: Method A: $54 + 30 = 84 \text{ cm}^2$. Method B: $108 - 24 = 84 \text{ cm}^2$. They agree because both methods cover the exact same figure once, just split or framed differently.

Likely wrong answer: Assuming only one method can be correct.

Misconception: Believing a composite shape has only one valid way to be decomposed.

Next move: Have the student sketch both methods on the same figure to see that each covers identical space.

Item 15 (Non-Routine)

Correct answer: The student added the pond instead of subtracting it. The pond is removed from the playground, not included. Correct: $24 \times 16 - 7 \times 6 = 384 - 42 = 342 \text{ m}^2$.

Likely wrong answer: 426 m^2 (adding $384 + 42$ instead of subtracting).

Misconception: Defaulting to addition for every composite problem without checking whether the region is included or removed.

Next move: Have the student shade the pond and identify it as excluded space before choosing an operation.

1. 500 m^2	2. 66 m^2
3. 150 m^2	4. 278 m^2
5. 7 cm	6. 83 m^2
7. 102 m^2	8. 904 m^2
9. Removed area makes final smaller.	10. 72 cm^2 ; both cover same figure.
11. 83 m^2	12. 252 cm^2
13. 8 cm	14. (see diagnostic above)
15. (see diagnostic above)	

Variation Lab — Expected Ideas

1. Both decompositions must cover the same region exactly once, so totals must agree.
2. Added region → add its area. Removed/cut-out region → subtract its area.
3. Any valid construction is acceptable if both methods give the same total and no region is omitted or double-counted.

Transfer Check — Suggested Responses

Familiar: 53 m^2 . Altered: $150 - 12 = 138 \text{ m}^2$. Non-routine: 7 cm . Repair: a removed region is not part of the final shape, so subtract it from the containing area.