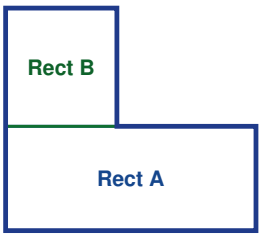
CCSS • 7.G.6

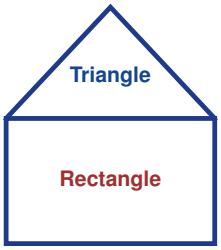
Area of Composite Figures

Name: _____	Date: _____	Score: _____ / 17

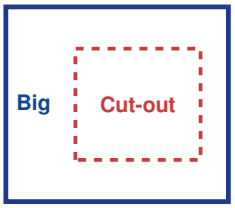
A **composite figure** is a shape built by sticking simpler shapes together—or by cutting one shape out of another. The strategy is to break the figure into parts you already know (rectangles, triangles, trapezoids, semicircles), find each area, and then *add* them up—or *subtract* if a piece has been removed. The trickiest step is deciding *how* to split the figure, so always look for familiar shapes and label the dimensions you need. You will use this skill constantly in real life: flooring, paint coverage, oddly shaped yards—it all starts here!



L-shape: Add two rectangles



House shape: Rect + Tri



Subtract: Big − cut-out

Key Concepts & Quick Review

Add method: split into non-overlapping pieces $\Rightarrow A_{\text{total}} = A_1 + A_2 + \cdots$
Subtract method: start with an enclosing shape, remove the cut-out $\Rightarrow A = A_{\text{big}} - A_{\text{hole}}$

Tip: label all dimensions carefully before computing — shared sides often provide the missing measurement.

Examples

① An L-shaped room: the large rectangle is $10\,m \times 6\,m$ and a $4\,m \times 3\,m$ rectangle is cut from one corner. Find the floor area.

Think It Through: This shape is easiest with subtraction. First find the area of the full outer rectangle: $10 \times 6 = 60\,m^2$. Then find the cut-out rectangle: $4 \times 3 = 12\,m^2$. Subtract the missing part from the whole shape, $60 - 12 = 48\,m^2$. Subtraction works well when the missing part has simple dimensions.

Answer: $48\,m^2$

② A house-shaped figure has a rectangle $8\,m \times 5\,m$ and a triangular roof with base $8\,m$ and height $3\,m$. Find the total area.

Think It Through: Split the composite figure into two familiar parts: a rectangle and a triangle. The rectangle has area $8 \times 5 = 40\,m^2$. The roof triangle has area $\frac{1}{2}(8)(3) = 12\,m^2$. Add the two parts because they do not overlap: $40 + 12 = 52\,m^2$. This is the addition method for composite area.

Answer: $52\,m^2$

Practice Problems

Find the area of each composite figure using addition or subtraction.

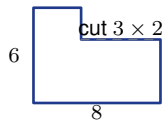
1. Rectangle 10×8 plus rectangle 4×3 _____

2. Rectangle 12×6 plus triangle with base 12 and height 4 _____

3. Large rectangle 9×7 minus a rectangular hole 3×2 _____

4. Rectangle 15×10 minus triangle with base 5 and height 6 _____

5. L-shape: outer 8×6; cut 3×2 _____



6. T-shape: 12×3 top, 4×8 stem _____

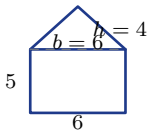
7. Rectangle 6×4 plus trapezoid with bases $6, 10$ and height 3 _____

8. House shape: rectangle 10×6 plus triangular roof with base 10 and height 5 _____

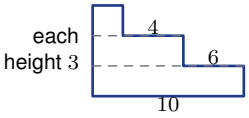
9. Large rectangle 20×12 minus inner rectangle 8×6 _____

10. Two rectangles, 5×8 and 5×6, side by side _____

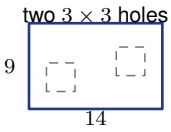
11. Pentagon shape: rectangle 6×5 plus triangle with base 6 and height 4 _____



12. Step shape: $10 \times 3 + 6 \times 3 + 4 \times 3$ (stacked) _____



13. Rectangle 14×9 minus two square holes, each 3×3 _____



14. Arrowhead shape: rectangle 8×4 plus triangle with base 4 and height 5 _____

15. Parallelogram with base 10 and height 6 plus triangle with base 5 and height 6 _____

Study Tips

- **Sketch first, split second.** Draw the dividing line(s) on the figure before writing any formula.
- Missing side lengths can often be **calculated** from given dimensions — look for what cancels or combines to give you what you need.
- For a frame or border, the **subtract method** is usually faster: outer area minus inner area, with no need to split the border into strips.

Word Problems

16. A swimming pool deck has an L-shape. The full outer rectangle is $20\ m$ by $12\ m$. A rectangular pool area of $14\ m$ by $8\ m$ is cut into one corner. Deck tiles cost $\$18.50$ per square metre. Find the deck area and the total tiling cost. _____

17. A neighbourhood park is designed in a cross shape. A horizontal rectangle $30\ m$ by $8\ m$ overlaps a vertical rectangle $8\ m$ by $30\ m$ at their centres. The overlapping square is $8\ m$ by $8\ m$. Find the total park area. Grass seed costs $\$2.40$ per m^2. How much does seeding the whole park cost? _____

Answer Keys

1) 92
2) 96
3) 57
4) 135
5) 42
6) 68
7) 88
8) 85
9) 192
10) 70
11) 42
12) 60
13) 108
14) 42
15) 90
16) $128\ m^2$; cost \$2,368
17) $416\ m^2$; cost \$998.40

Step-by-Step Explanations

Strategy: For Angle Relationships with Parallel Lines and Transversals, name the angle pair first, then decide whether the angles are equal or supplementary. The important angle habit is naming the relationship before setting equal or adding to 180^{circ}.

Practice 1: Two corresponding angles are formed by parallel lines and a transversal. One angle is $55°$. Find the other angle. **Answer:** $55°$

In the opening example, identify the angle pair first; corresponding and alternate angles are equal, while same-side interior angles are supplementary.

Practice 15: Two alternate exterior angles measure $(4x - 8)°$ and $(2x + 16)°$. Find each angle measure. **Answer:** $40°$ each

For the end-of-set item, identify the angle pair first; corresponding and alternate angles are equal, while same-side interior angles are supplementary.

Word-problem notes:

16. Answer: $5x + 12 = 8x - 15 \Rightarrow x = 9$; angle $= 57°$; parallel tracks require equal corresponding angles.

If the tracks are parallel, corresponding angles created by the same transversal must be equal. Set the expressions equal: $5x + 12 = 8x - 15$. Solving gives $27 = 3x$, so $x = 9$. Substitute into either expression to get the angle measure: $5(9) + 12 = 57°$. Equal corresponding angles are one of the standard tests for parallel lines, so this confirms the tracks are parallel.

17. Answer: $(3k + 20) + (5k - 12) = 180 \Rightarrow k = 21.5$; angles: $84.5°$ and $95.5°$; brace leans slightly past perpendicular.

Co-interior angles on parallel lines are supplementary, so they add to $180°$. Write $(3k + 20) + (5k - 12) = 180$. Simplifying gives $8k + 8 = 180$, so $8k = 172$ and $k = 21.5$. The two angles are then $3(21.5) + 20 = 84.5°$ and $5(21.5) - 12 = 95.5°$. Since they add to $180°$, the relationship checks out. One angle is slightly more than $90°$, so the brace leans a little past perpendicular.

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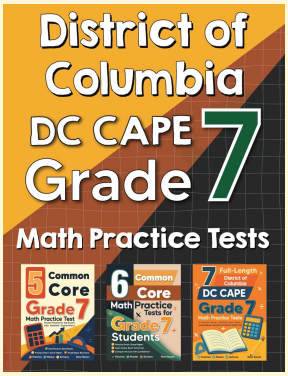

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