

# Composite Figures: Area and Perimeter

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 24

## Q Quick Review

A **composite figure** is made of simpler shapes joined together — rectangles, triangles, semicircles, and so on. To find its **area**, break the figure into pieces you recognize, find each area, and then *add* them (or *subtract* when a piece is cut out). Useful formulas: rectangle =  $l \times w$ , triangle =  $\frac{1}{2}bh$ , circle =  $\pi r^2$ . For the **perimeter**, walk around the *outside* edge and add up only the boundary lengths — inner cut lines don't count. Take your time and label each piece.

◇ **Example:** A figure is a 12 m by 8 m rectangle with a triangle on top. The triangle has base 12 m and height 6 m. Find the total area.

⇒ Split the figure into the two shapes you know. The rectangle's area is length times width:  $12 \times 8 = 96$  square meters. The triangle's area is  $\frac{1}{2}$  base times height:  $\frac{1}{2} \times 12 \times 6 = 36$  square meters. Since the triangle sits *on top of* the rectangle, add the two areas:  $96 + 36 = 132$  square meters.

**Answer:**  $A = 132 \text{ m}^2$

## PRACTICE

Find the area of each composite figure.

- Rectangle  $10 \times 4$  plus triangle base 10,  $h = 3$  \_\_\_\_\_
- Rectangle  $6 \times 5$  plus square side 5 \_\_\_\_\_
- Rectangle  $8 \times 8$  plus triangle base 8,  $h = 6$  \_\_\_\_\_
- Two rectangles:  $5 \times 3$  and  $4 \times 2$  \_\_\_\_\_
- Square side 10 minus square side 4 \_\_\_\_\_
- Rectangle  $12 \times 7$  minus rectangle  $5 \times 2$  \_\_\_\_\_
- Rectangle  $9 \times 6$  plus rectangle  $3 \times 6$  \_\_\_\_\_
- Triangle base 10,  $h = 8$  plus rectangle  $10 \times 4$  \_\_\_\_\_
- Square side 6 plus triangle base 6,  $h = 4$  \_\_\_\_\_
- Rectangle  $14 \times 5$  minus triangle base 4,  $h = 5$  \_\_\_\_\_
- L-shape:  $8 \times 8$  minus  $4 \times 4$  \_\_\_\_\_
- Rectangle  $10 \times 6$  plus semicircle,  $r = 3$  (use  $\pi \approx 3.14$ ) \_\_\_\_\_
- Two triangles: each base 6,  $h = 4$  \_\_\_\_\_
- Square side 12 minus triangle base 12,  $h = 6$  \_\_\_\_\_
- Rectangle  $7 \times 4$  plus rectangle  $7 \times 4$  \_\_\_\_\_
- Rectangle  $20 \times 10$  minus square side 5 \_\_\_\_\_
- Perimeter of an L-shape: outer sides 10, 6, 4, 2, 6, 4 \_\_\_\_\_
- Perimeter of a  $9 \times 5$  rectangle \_\_\_\_\_
- Rectangle  $15 \times 8$  plus triangle base 15,  $h = 4$  \_\_\_\_\_
- Square side 8 minus four corners, each  $1 \times 1$  \_\_\_\_\_

## ◆ Word Problems

- A garden is shaped like a 20 ft by 12 ft rectangle with a triangular flower bed on one end. The triangle has base 12 ft and height 5 ft. What is the total area of the garden? \_\_\_\_\_
- A rectangular sheet of metal is 14 in by 10 in. A rectangular hole 6 in by 4 in is cut from the middle. What area of metal remains? \_\_\_\_\_
- A room floor is L-shaped. It can be split into a 12 ft by 8 ft rectangle and a 5 ft by 4 ft rectangle. How many square feet of carpet are needed? \_\_\_\_\_
- A swimming pool deck is a 25 ft by 15 ft rectangle. The pool itself, a 15 ft by 10 ft rectangle, sits inside it. How much deck area surrounds the pool? \_\_\_\_\_



## Answer Keys

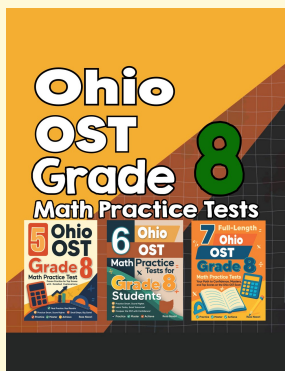
- |           |                         |
|-----------|-------------------------|
| 1. 55     | 13. 24                  |
| 2. 55     | 14. 108                 |
| 3. 88     | 15. 56                  |
| 4. 23     | 16. 175                 |
| 5. 84     | 17. 32                  |
| 6. 74     | 18. 28                  |
| 7. 72     | 19. 150                 |
| 8. 80     | 20. 60                  |
| 9. 48     | 21. 270 ft <sup>2</sup> |
| 10. 60    | 22. 116 in <sup>2</sup> |
| 11. 48    | 23. 116 ft <sup>2</sup> |
| 12. 74.13 | 24. 225 ft <sup>2</sup> |

### Step-by-Step Explanations

- |   |  |
|---|--|
| 1. $40 + \frac{1}{2}(10)(3) = 40 + 15 = 55$ .                 | 15. $28 + 28 = 56$ .   |
| 2. $30 + 25 = 55$ .   | 16. $200 - 25 = 175$ .   |
| 3. $64 + \frac{1}{2}(8)(6) = 64 + 24 = 88$ .                  | 17. Add all outside edges: $10 + 6 + 4 + 2 + 6 + 4 = 32$ .   |
| 4. $15 + 8 = 23$ .  | 18. $2(9) + 2(5) = 18 + 10 = 28$ .   |
| 5. $100 - 16 = 84$ .  | 19. $120 + \frac{1}{2}(15)(4) = 120 + 30 = 150$ .  |
| 6. $84 - 10 = 74$ .   | 20. $64 - 4(1) = 64 - 4 = 60$ .  |
| 7. $54 + 18 = 72$ .   | 21. Rectangle area = $20 \times 12 = 240$ ft <sup>2</sup> . Triangle area = $\frac{1}{2}(12)(5) = 30$ ft <sup>2</sup> . Total = $240 + 30 = 270$ ft <sup>2</sup> . |
| 8. $\frac{1}{2}(10)(8) + 40 = 40 + 40 = 80$ .                 | 22. Whole sheet = $14 \times 10 = 140$ in <sup>2</sup> . Hole = $6 \times 4 = 24$ in <sup>2</sup> . Remaining = $140 - 24 = 116$ in <sup>2</sup> .                 |
| 9. $36 + \frac{1}{2}(6)(4) = 36 + 12 = 48$ .                  | 23. The two rectangles have areas $12 \times 8 = 96$ ft <sup>2</sup> and $5 \times 4 = 20$ ft <sup>2</sup> . Together that is $96 + 20 = 116$ ft <sup>2</sup> .    |
| 10. $70 - \frac{1}{2}(4)(5) = 70 - 10 = 60$ .                 | 24. Total area = $25 \times 15 = 375$ ft <sup>2</sup> . Pool area = $15 \times 10 = 150$ ft <sup>2</sup> . Deck = $375 - 150 = 225$ ft <sup>2</sup> .              |
| 11. $64 - 16 = 48$ .  |  |
| 12. $60 + \frac{1}{2}(3.14)(9) = 60 + 14.13 = 74.13$ .        |  |
| 13. Each is $\frac{1}{2}(6)(4) = 12$ ; total $12 + 12 = 24$ . |  |
| 14. $144 - \frac{1}{2}(12)(6) = 144 - 36 = 108$ .             |  |



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