

# 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.

- |  |  |
|--|--|
| 1. Rectangle $10 \times 4$ plus triangle base 10, $h = 3$ _____  | 12. Rectangle $10 \times 6$ plus semicircle, $r = 3$ (use $\pi \approx 3.14$ ) _____ |
| 2. Rectangle $6 \times 5$ plus square side 5 _____               | 13. Two triangles: each base 6, $h = 4$ _____  |
| 3. Rectangle $8 \times 8$ plus triangle base 8, $h = 6$ _____    | 14. Square side 12 minus triangle base 12, $h = 6$ _____                             |
| 4. Two rectangles: $5 \times 3$ and $4 \times 2$ _____           | 15. Rectangle $7 \times 4$ plus rectangle $7 \times 4$ _____                         |
| 5. Square side 10 minus square side 4 _____                      | 16. Rectangle $20 \times 10$ minus square side 5 _____                               |
| 6. Rectangle $12 \times 7$ minus rectangle $5 \times 2$ _____    | 17. Perimeter of an L-shape: outer sides 10, 6, 4, 2, 6, 4 _____                     |
| 7. Rectangle $9 \times 6$ plus rectangle $3 \times 6$ _____      | 18. Perimeter of a $9 \times 5$ rectangle _____                                      |
| 8. Triangle base 10, $h = 8$ plus rectangle $10 \times 4$ _____  | 19. Rectangle $15 \times 8$ plus triangle base 15, $h = 4$ _____                     |
| 9. Square side 6 plus triangle base 6, $h = 4$ _____             | 20. Square side 8 minus four corners, each $1 \times 1$ _____                        |
| 10. Rectangle $14 \times 5$ minus triangle base 4, $h = 5$ _____ |  |
| 11. L-shape: $8 \times 8$ minus $4 \times 4$ _____               |  |

## ◆ Word Problems

21. 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? \_\_\_\_\_
22. 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? \_\_\_\_\_
23. 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? \_\_\_\_\_
24. 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. <input type="text" value="55"/>     | 13. <input type="text" value="24"/>                             |
| 2. <input type="text" value="55"/>     | 14. <input type="text" value="108"/>                            |
| 3. <input type="text" value="88"/>     | 15. <input type="text" value="56"/>                             |
| 4. <input type="text" value="23"/>     | 16. <input type="text" value="175"/>                            |
| 5. <input type="text" value="84"/>     | 17. <input type="text" value="32"/>                             |
| 6. <input type="text" value="74"/>     | 18. <input type="text" value="28"/>                             |
| 7. <input type="text" value="72"/>     | 19. <input type="text" value="150"/>                            |
| 8. <input type="text" value="80"/>     | 20. <input type="text" value="60"/>                             |
| 9. <input type="text" value="48"/>     | 21. <input type="text" value="270 ft&lt;sup&gt;2&lt;/sup&gt;"/> |
| 10. <input type="text" value="60"/>    | 22. <input type="text" value="116 in&lt;sup&gt;2&lt;/sup&gt;"/> |
| 11. <input type="text" value="48"/>    | 23. <input type="text" value="116 ft&lt;sup&gt;2&lt;/sup&gt;"/> |
| 12. <input type="text" value="74.13"/> | 24. <input type="text" value="225 ft&lt;sup&gt;2&lt;/sup&gt;"/> |

### Step-by-Step Explanations

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



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