

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

◆ 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

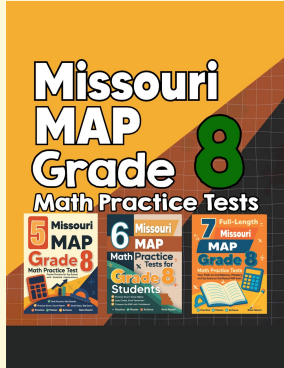
- | | |
|-----------|-------------------------|
| 1. 55 | 13. 24 |
| 2. 55 | 14. 108 |
| 3. 88 | 15. 56 |
| 4. 23 | 16. 175 |
| 5. 84 | 17. 32 |
| 6. 74 | 18. 28 |
| 7. 72 | 19. 150 |
| 8. 80 | 20. 60 |
| 9. 48 | 21. 270 ft ² |
| 10. 60 | 22. 116 in ² |
| 11. 48 | 23. 116 ft ² |
| 12. 74.13 | 24. 225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

Step-by-Step Explanations

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| <p>1. $40 + \frac{1}{2}(10)(3) = 40 + 15 = 55$.</p> <p>2. $30 + 25 = 55$.</p> <p>3. $64 + \frac{1}{2}(8)(6) = 64 + 24 = 88$.</p> <p>4. $15 + 8 = 23$.</p> <p>5. $100 - 16 = 84$.</p> <p>6. $84 - 10 = 74$.</p> <p>7. $54 + 18 = 72$.</p> <p>8. $\frac{1}{2}(10)(8) + 40 = 40 + 40 = 80$.</p> <p>9. $36 + \frac{1}{2}(6)(4) = 36 + 12 = 48$.</p> <p>10. $70 - \frac{1}{2}(4)(5) = 70 - 10 = 60$.</p> <p>11. $64 - 16 = 48$.</p> <p>12. $60 + \frac{1}{2}(3.14)(9) = 60 + 14.13 = 74.13$.</p> <p>13. Each is $\frac{1}{2}(6)(4) = 12$; total $12 + 12 = 24$.</p> <p>14. $144 - \frac{1}{2}(12)(6) = 144 - 36 = 108$.</p> | <p>15. $28 + 28 = 56$.</p> <p>16. $200 - 25 = 175$.</p> <p>17. Add all outside edges: $10 + 6 + 4 + 2 + 6 + 4 = 32$.</p> <p>18. $2(9) + 2(5) = 18 + 10 = 28$.</p> <p>19. $120 + \frac{1}{2}(15)(4) = 120 + 30 = 150$.</p> <p>20. $64 - 4(1) = 64 - 4 = 60$.</p> <p>21. Rectangle area = $20 \times 12 = 240$ ft². Triangle area = $\frac{1}{2}(12)(5) = 30$ ft². Total = $240 + 30 = 270$ ft².</p> <p>22. Whole sheet = $14 \times 10 = 140$ in². Hole = $6 \times 4 = 24$ in². Remaining = $140 - 24 = 116$ in².</p> <p>23. The two rectangles have areas $12 \times 8 = 96$ ft² and $5 \times 4 = 20$ ft². Together that is $96 + 20 = 116$ ft².</p> <p>24. Total area = $25 \times 15 = 375$ ft². Pool area = $15 \times 10 = 150$ ft². Deck = $375 - 150 = 225$ ft².</p> |
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