

Area of Triangles

Name: _____ Date: _____ Score: _____ / 24

Q Quick Review

The **area** of a triangle is the amount of flat space inside it. Every triangle has a **base** and a matching **height** — the height is always measured straight up from the base, forming a right angle. The formula is $A = \frac{1}{2} \times b \times h$. A handy way to think about it: a triangle is exactly *half* of a rectangle with the same base and height. So multiply the base by the height, then take half. Area is always measured in **square units**, like square inches (in²) or square centimeters (cm²).

◊ **Example:** Find the area of a triangle with a base of 12 cm and a height of 7 cm.
 ⇒ Start with the formula $A = \frac{1}{2} \times b \times h$. We know the base is 12 and the height is 7. First multiply the base and height together: $12 \times 7 = 84$. Now take half of that, since a triangle is half of a rectangle: $\frac{1}{2} \times 84 = 42$. Don't forget the units — because we measured in centimeters, the area is in square centimeters.

Answer: 42 cm²

PRACTICE

Find the area of each triangle. Include square units where given.

- | | | | |
|---------------------------------|-------|-----------------------------------|-------|
| 1. Triangle: base 6, height 4 | _____ | 11. Triangle: base 16, height 9 | _____ |
| 2. Triangle: base 8, height 3 | _____ | 12. Triangle: base 13, height 10 | _____ |
| 3. Triangle: base 10, height 5 | _____ | 13. Triangle: base 18, height 7 | _____ |
| 4. Triangle: base 12, height 4 | _____ | 14. Triangle: base 22, height 5 | _____ |
| 5. Triangle: base 7, height 6 | _____ | 15. Triangle: base 24, height 10 | _____ |
| 6. Triangle: base 9, height 8 | _____ | 16. Triangle: base 25, height 8 | _____ |
| 7. Triangle: base 14, height 5 | _____ | 17. Triangle: base 30, height 12 | _____ |
| 8. Triangle: base 20, height 6 | _____ | 18. Triangle: base 4.5, height 6 | _____ |
| 9. Triangle: base 11, height 4 | _____ | 19. Triangle: base 8.5, height 4 | _____ |
| 10. Triangle: base 15, height 8 | _____ | 20. Triangle: base 12.4, height 5 | _____ |

◆ Word Problems

21. A sailboat has a triangular sail with a base of 9 feet and a height of 12 feet. What is the area of the sail? _____
22. Maya is planting a triangular flower garden. The base measures 14 meters and the height measures 6 meters. How many square meters of soil will she need to cover the garden? _____
23. A school banner is shaped like a triangle with a base of 18 inches and a height of 10 inches. What is the area of the banner? _____
24. A stained-glass window is made of 5 identical triangular panes. Each pane has a base of 4 inches and a height of 3 inches. What is the total area of all 5 panes? _____



Answer Keys

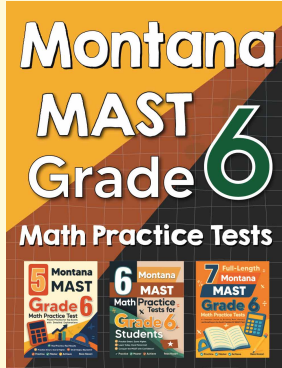
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| 1. <input type="text" value="12"/> | 13. <input type="text" value="63"/> |
| 2. <input type="text" value="12"/> | 14. <input type="text" value="55"/> |
| 3. <input type="text" value="25"/> | 15. <input type="text" value="120"/> |
| 4. <input type="text" value="24"/> | 16. <input type="text" value="100"/> |
| 5. <input type="text" value="21"/> | 17. <input type="text" value="180"/> |
| 6. <input type="text" value="36"/> | 18. <input type="text" value="13.5"/> |
| 7. <input type="text" value="35"/> | 19. <input type="text" value="17"/> |
| 8. <input type="text" value="60"/> | 20. <input type="text" value="31"/> |
| 9. <input type="text" value="22"/> | 21. <input type="text" value="54 ft<sup>2</sup>"/> |
| 10. <input type="text" value="60"/> | 22. <input type="text" value="42 m<sup>2</sup>"/> |
| 11. <input type="text" value="72"/> | 23. <input type="text" value="90 in<sup>2</sup>"/> |
| 12. <input type="text" value="65"/> | 24. <input type="text" value="30 in<sup>2</sup>"/> |

Step-by-Step Explanations

- | | |
|---|--|
| <p>1. Multiply $6 \times 4 = 24$, then take half: $\frac{1}{2} \times 24 = 12$.</p> <p>2. Multiply $8 \times 3 = 24$, then half of 24 is 12.</p> <p>3. Multiply $10 \times 5 = 50$, then take half: $\frac{1}{2} \times 50 = 25$.</p> <p>4. Multiply $12 \times 4 = 48$, then half of 48 is 24.</p> <p>5. Multiply $7 \times 6 = 42$, then take half: $\frac{1}{2} \times 42 = 21$.</p> <p>6. Multiply $9 \times 8 = 72$, then half of 72 is 36.</p> <p>7. Multiply $14 \times 5 = 70$, then take half: $\frac{1}{2} \times 70 = 35$.</p> <p>8. Multiply $20 \times 6 = 120$, then half of 120 is 60.</p> <p>9. Multiply $11 \times 4 = 44$, then take half: $\frac{1}{2} \times 44 = 22$.</p> <p>10. Multiply $15 \times 8 = 120$, then half of 120 is 60.</p> <p>11. Multiply $16 \times 9 = 144$, then take half: $\frac{1}{2} \times 144 = 72$.</p> <p>12. Multiply $13 \times 10 = 130$, then half of 130 is 65.</p> <p>13. Multiply $18 \times 7 = 126$, then take half: $\frac{1}{2} \times 126 = 63$.</p> | <p>14. Multiply $22 \times 5 = 110$, then half of 110 is 55.</p> <p>15. Multiply $24 \times 10 = 240$, then take half: $\frac{1}{2} \times 240 = 120$.</p> <p>16. Multiply $25 \times 8 = 200$, then half of 200 is 100.</p> <p>17. Multiply $30 \times 12 = 360$, then take half: $\frac{1}{2} \times 360 = 180$.</p> <p>18. Multiply $4.5 \times 6 = 27$, then take half: $\frac{1}{2} \times 27 = 13.5$.</p> <p>19. Multiply $8.5 \times 4 = 34$, then half of 34 is 17.</p> <p>20. Multiply $12.4 \times 5 = 62$, then take half: $\frac{1}{2} \times 62 = 31$.</p> <p>21. Use $A = \frac{1}{2} \times b \times h$. Multiply $9 \times 12 = 108$, then take half: $\frac{1}{2} \times 108 = 54$ square feet.</p> <p>22. Multiply the base and height: $14 \times 6 = 84$. Then take half, because a triangle is half a rectangle: $\frac{1}{2} \times 84 = 42$ square meters.</p> <p>23. Multiply $18 \times 10 = 180$, then take half: $\frac{1}{2} \times 180 = 90$ square inches.</p> <p>24. First find one pane: $\frac{1}{2} \times 4 \times 3 = 6$ square inches. Then multiply by 5 panes: $6 \times 5 = 30$ square inches.</p> |
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