

# 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 (in<sup>2</sup>) or square centimeters (cm<sup>2</sup>).

◇ **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 cm<sup>2</sup>

## 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

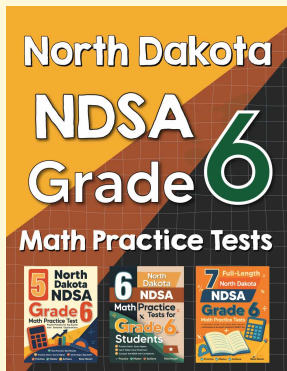
- |                                     |  |
|-------------------------------------|--|
| 1. <input type="text" value="12"/>  | 13. <input type="text" value="63"/>                            |
| 2. <input type="text" value="12"/>  | 14. <input type="text" value="55"/>                            |
| 3. <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&lt;sup&gt;2&lt;/sup&gt;"/> |
| 10. <input type="text" value="60"/> | 22. <input type="text" value="42 m&lt;sup&gt;2&lt;/sup&gt;"/>  |
| 11. <input type="text" value="72"/> | 23. <input type="text" value="90 in&lt;sup&gt;2&lt;/sup&gt;"/> |
| 12. <input type="text" value="65"/> | 24. <input type="text" value="30 in&lt;sup&gt;2&lt;/sup&gt;"/> |

### Step-by-Step Explanations

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



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