

# Advanced Functions – 7.3 WS: Area of a Triangle

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Directions: Find the area of each given triangle. Round to tenth place. Must show work!

<p>1.)</p> <p> <math>A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (13)(12) \sin 105</math>  <math>A = 75.3 \text{ km}^2</math> </p>	<p>2.)</p> <p> <math>A = \frac{1}{2} b h</math>  <math>A = \frac{1}{2} (11)(8.2)</math>  <math>A = 45.1 \text{ yd}^2</math> </p>	<p>3.)</p> <p> <math>\textcircled{1} B = 180 - 84 - 59</math>  <math>B = 37^\circ</math>  <math>\textcircled{2} \frac{4}{\sin 37} = \frac{c}{\sin 59} \rightarrow c = 6.6</math>  <math>\textcircled{3} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (4)(6.6) \sin 59</math>  <math>A = 11.3 \text{ yd}^2</math> </p>	<p>4.)</p> <p> <math>\textcircled{1} 15^2 = 14^2 + 9^2 - 2(14)(9) \cos C</math>  <math>C = 78.1^\circ</math>  <math>\textcircled{2} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (14)(9) \sin 78.1</math>  <math>A = 61.6 \text{ mi}^2</math> </p>
<p>5.)</p> <p> <math>\textcircled{1} \tan 25 = \frac{h}{20}</math>  <math>h = 23</math>  <math>\textcircled{2} \tan 25 = \frac{a}{23}</math>  <math>a = 10.7</math>  <math>\textcircled{3} A = \frac{1}{2} b h</math>  <math>A = \frac{1}{2} (20.7)(23)</math>  <math>A = 353.1 \text{ unit}^2</math> </p>	<p>6.)</p> <p> <math>\textcircled{1} \frac{11}{\sin 92} = \frac{b}{\sin B}</math>  <math>B = 33^\circ</math>  <math>\textcircled{2} A = 180 - 92 - 33 \rightarrow A = 55</math>  <math>\textcircled{3} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (6)(11) \sin 55</math>  <math>A = 27 \text{ in}^2</math> </p>	<p>7.)</p> <p> <math>A = \frac{1}{2} b h</math>  <math>A = \frac{1}{2} (6)(7.1)</math>  <math>A = 21.3 \text{ m}^2</math> </p>	<p>8.)</p> <p> <math>\textcircled{1} X = 180 - 34 - 113</math>  <math>X = 33^\circ</math>  <math>\textcircled{2} \frac{13}{\sin 113} = \frac{x}{\sin 33} \rightarrow x = 7.7</math>  <math>\textcircled{3} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (13)(7.7) \sin 34</math>  <math>A = 28.4 \text{ ft}^2</math> </p>
<p>9.)</p> <p> <math>\textcircled{1} 14^2 = 8^2 + 12.6^2 - 2(8)(12.6) \cos P</math>  <math>P = 82.4^\circ</math>  <math>\textcircled{2} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (8)(12.6) \sin 82.4</math>  <math>A = 50 \text{ m}^2</math> </p>	<p>10.)</p> <p> <math>A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (10)(9) \sin 54</math>  <math>A = 36.4 \text{ yd}^2</math> </p>	<p>11.)</p> <p> <math>\textcircled{1} \cos 32 = \frac{h}{33}</math>  <math>h = 28</math>  <math>\textcircled{2} a^2 + 28^2 = 33^2 \rightarrow a = 17.5</math>  <math>\textcircled{3} \tan 42 = \frac{28}{b} \rightarrow b = 31.1</math>  <math>\textcircled{4} A = \frac{1}{2} b h</math>  <math>A = \frac{1}{2} (31.1)(28)</math>  <math>A = 680.4 \text{ unit}^2</math> </p>	<p>12.)</p> <p> <math>\textcircled{1} \frac{13}{\sin 50} = \frac{12}{\sin E} \rightarrow E = 45^\circ</math>  <math>\textcircled{2} D = 180 - 50 - 45 \rightarrow D = 85</math>  <math>\textcircled{3} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (12)(13) \sin 85</math>  <math>A = 77.7 \text{ cm}^2</math> </p>
<p>13.)</p> <p> <math>\textcircled{1} R = 180 - 83 - 34 \rightarrow R = 63</math>  <math>\textcircled{2} \frac{7}{\sin 63} = \frac{8}{\sin 34} \rightarrow S = 7.8</math>  <math>\textcircled{3} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (7)(7.8) \sin 74</math>  <math>A = 15.3 \text{ in}^2</math> </p>	<p>14.)</p> <p> <math>\textcircled{1} 16^2 = 7^2 + 14^2 - 2(7)(14) \cos R</math>  <math>R = 97.2^\circ</math>  <math>\textcircled{2} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (7)(14) \sin 97.2</math>  <math>A = 48.9 \text{ cm}^2</math> </p>	<p>15.)</p> <p> <math>\textcircled{1} P = 180 - 42 - 66 \rightarrow P = 72</math>  <math>\textcircled{2} \frac{7.1}{\sin 66} = \frac{h}{\sin 42} \rightarrow h = 5.2</math>  <math>\textcircled{3} A = \frac{1}{2} ab \sin \theta</math>  <math>A = \frac{1}{2} (7.1)(5.2) \sin 72</math>  <math>A = 17.6 \text{ cm}^2</math> </p>	<p>16.)</p> <p> <math>\textcircled{1} \tan 58 = \frac{h}{8} \rightarrow h = 12.8</math>  <math>\textcircled{2} A = \frac{1}{2} b h</math>  <math>A = \frac{1}{2} (15)(12.8)</math>  <math>A = 96 \text{ m}^2</math> </p>