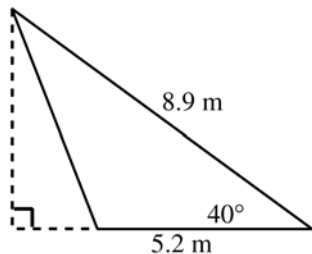


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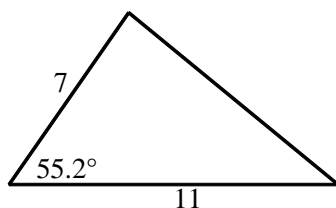
*P.I. A2.A.74: Determine the area of a triangle given the measure of two sides and the included angle*

1. Find the area of this triangle.



- [A]  $46.28 \text{ m}^2$       [B]  $14.87 \text{ m}^2$   
[C]  $29.75 \text{ m}^2$       [D]  $23.14 \text{ m}^2$

2. When constructing a sail, a team put fabric in this triangular shape and measured two adjacent sides in feet and the included angle. What is the area of the sail?



3. A gardener needs to cultivate a triangular plot of land. One angle of the garden is  $26^\circ$ , and the sides that surround it are 72 ft and 56 ft. What is the area of the plot of land?

- [A]  $1812.0 \text{ ft}^2$       [B]  $907.4 \text{ ft}^2$   
[C]  $1767.5 \text{ ft}^2$       [D]  $883.8 \text{ ft}^2$

4. Two sides of a triangular plot of land are 100 ft and 80 ft, and the angles between those two sides is  $88^\circ$ . Find the area of the plot of land.

5. Use the theorem that the area of a triangle is half the product of two side lengths and the sine of the included angle to show the area of a right triangle is half the product of the legs.

6.  $\triangle ABC$  has vertices at  $A(0, 0)$ ,  $B(4, 4)$ , and  $C(10, 0)$ . Find the area of the triangle in two different ways.

[1] B

[2] 31.6 ft<sup>2</sup>

[3] D

[4] 3997.6 ft<sup>2</sup>

The sine of  $90^\circ$  is 1, so

$\frac{1}{2} \times \text{side length} \times \text{side length} \times \text{sine of the}$   
included angle becomes

$\frac{1}{2} \times \text{side length} \times \text{side length}$  or  $\frac{1}{2}$  the product

[5] of the two legs.

Use the area of a triangle given SAS or find  
that the base is 10 and the height is 4; the area

[6] is 20 units<sup>2</sup>.