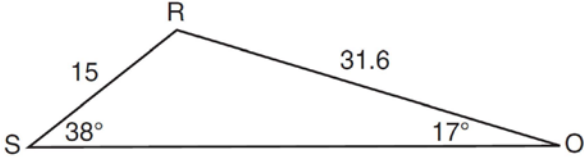
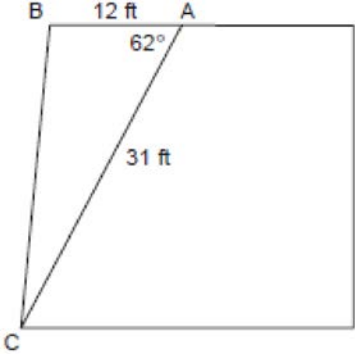


**A2.A.74: Using Trigonometry to Find Area 4: Determine the area of a triangle or a parallelogram, given the measure of two sides and the included angle**

- 1 In  $\triangle ABC$ ,  $m\angle A = 120$ ,  $b = 10$ , and  $c = 18$ . What is the area of  $\triangle ABC$  to the *nearest square inch*?
  - 1) 52
  - 2) 78
  - 3) 90
  - 4) 156
- 2 What is the best approximation for the area of a triangle with consecutive sides of 4 and 5 and an included angle of  $59^\circ$ ?
  - 1) 5.0
  - 2) 8.6
  - 3) 10.0
  - 4) 17.1
- 3 Two sides of a triangular-shaped sandbox measure 22 feet and 13 feet. If the angle between these two sides measures  $55^\circ$ , what is the area of the sandbox, to the *nearest square foot*?
  - 1) 82
  - 2) 117
  - 3) 143
  - 4) 234
- 4 In parallelogram  $BFLO$ ,  $OL = 3.8$ ,  $LF = 7.4$ , and  $m\angle O = 126$ . If diagonal  $BL$  is drawn, what is the area of  $\triangle BLF$ ?
  - 1) 11.4
  - 2) 14.1
  - 3) 22.7
  - 4) 28.1
- 5 The area of triangle  $ABC$  is 42. If  $AB = 8$  and  $m\angle B = 61$ , the length of  $BC$  is approximately
  - 1) 5.1
  - 2) 9.2
  - 3) 12.0
  - 4) 21.7
- 6 Determine the area, to the *nearest integer*, of  $\triangle SRO$  shown below.
 


- 7 Find, to the *nearest tenth*, the area of  $\triangle ABC$  if  $a = 6$ ,  $b = 10$ , and  $m\angle C = 18$ .
- 8 In  $\triangle DEF$ ,  $m\angle D = 40$ ,  $DE = 12$  meters, and  $DF = 8$  meters. Find the area of  $\triangle DEF$  to the *nearest tenth of a square meter*.
- 9 In  $\triangle ABC$ ,  $a = 12$ ,  $b = 20.5$ , and  $m\angle C = 73$ . Find the area of  $\triangle ABC$ , to the *nearest tenth*.
- 10 The accompanying diagram shows the floor plan for a kitchen. The owners plan to carpet all of the kitchen except the “work space,” which is represented by scalene triangle  $ABC$ . Find the area of this work space to the *nearest tenth of a square foot*.
 


- 11 Two sides of a triangular-shaped pool measure 16 feet and 21 feet, and the included angle measures  $58^\circ$ . What is the area, to the *nearest tenth of a square foot*, of a nylon cover that would exactly cover the surface of the pool?
- 12 A landscape architect is designing a triangular garden to fit in the corner of a lot. The corner of the lot forms an angle of  $70^\circ$ , and the sides of the garden including this angle are to be 11 feet and 13 feet, respectively. Find, to the *nearest integer*, the number of square feet in the area of the garden.

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**Answer Section**

1 ANS: 2 REF: fall0907a2

2 ANS: 2 REF: 010219siii

3 ANS: 2

$$\frac{1}{2}(22)(13)\sin 55 \approx 117$$

REF: 061403a2

4 ANS: 1

$$\frac{1}{2}(7.4)(3.8)\sin 126 \approx 11.4$$

REF: 011218a2

5 ANS: 3

$$42 = \frac{1}{2}(a)(8)\sin 61$$

$$42 \approx 3.5a$$

$$12 \approx a$$

REF: 011316a2

6 ANS:

$$\frac{1}{2} \cdot 15 \cdot 31.6 \sin 125 \approx 194$$

REF: 011633a2

7 ANS:

$$9.3$$

REF: 088909siii

8 ANS:

$$30.9$$

REF: 080216siii

9 ANS:

$$K = \frac{1}{2}(12)(20.5)\sin 73 \approx 117.6$$

REF: 061022b

10 ANS:

$$164.2$$

REF: 010225b

11 ANS:  
142.5

REF: 080226b

12 ANS:  
67

REF: 060525b