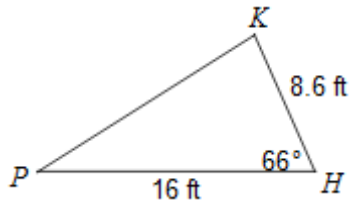


SM3 8.1 Area of a Triangle Using Trig

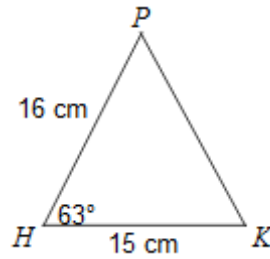
Find the area of each triangle to the nearest tenth.

1)



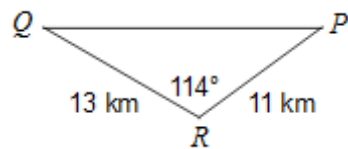
$$A \approx 62.9 \text{ ft}^2$$

2)



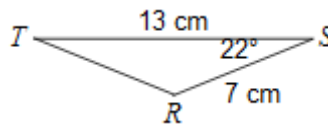
$$A \approx 106.9 \text{ cm}^2$$

3)



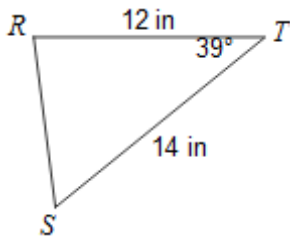
$$A \approx 65.3 \text{ km}^2$$

4)



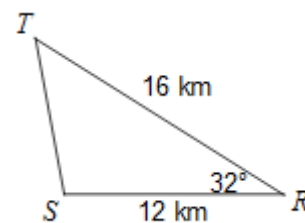
$$A \approx 17.0 \text{ cm}^2$$

5)



$$A \approx 52.9 \text{ in}^2$$

6)



$$A \approx 50.9 \text{ km}^2$$

7) In $\triangle ABC$, $AB = 10$, $AC = 8$, and $m\angle A = 45^\circ$

$$A = 20\sqrt{2} \approx 28.3 \text{ units}^2$$

8) In an isosceles triangle, the two equal sides each measure 24 meters, and they include an angle of 30° .

$$A = 144 \text{ m}^2$$

Solve each problem.

- 9) In $\triangle ABC$, $AB = 12$ meters and $AC = 20$ meters. If the area of the triangles is 77 m^2 find the measure of $\angle A$ to the nearest degree.

$$m\angle A = 40^\circ, 140^\circ$$

- 10) In a rhombus (each side is the same length, but the angles are not all 90°), each side is 15 and one angles is 130° . Find the area of the rhombus to the nearest square unit.

$$A = 172 \text{ units}^2$$

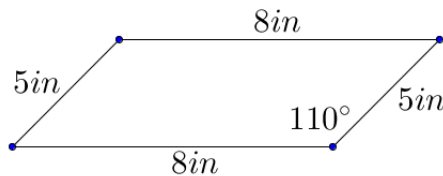
- 11) A farmer has a triangular field where two sides measure 450 yards and 320 yards. The angle between the two sides is 80° . The farmer wishes to use an insecticide that costs \$4.50 per bottle and each bottle covers 100 sq. yards. What will it cost to use this insecticide on this field?

$$\$3195$$

- 12) A triangle has two sides of 30 meters and 26 meters, and the angles between them is an obtuse angle. If the area of the triangle is 300 sq. meters, find the measure of the obtuse angle to the nearest degree.

$$m\angle A = 130^\circ$$

- 13) Samuel has decided to use stamped concrete for his packyard patio. He has chosen to make his design out of parallelograms and has designed the parallelogram pattern shown to the right. Find the area of Samuel's design to the nearest tenth of a sq. foot.



$$A \approx 37.6 \text{ in}^2 \approx 0.3 \text{ ft}^2$$

- 14) The Art Guild is painting a mural in the shape of an isosceles triangle on their building at the State Fair. The equal sides of the triangle will each be 12 yds in length, and the area of the triangular mural will be 55 sq. yards. Find the measures of the three angles of the triangle to the nearest hundredth degree.

$$49.81^\circ, 65.1^\circ, 65.1^\circ$$

or

$$130.19^\circ, 24.9^\circ, 24.9^\circ$$