

Geometry (H)

chapter: Special Right Triangles

PRACTICE: Areas, Laws of Sines and Cosines

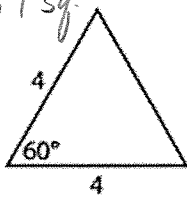
date KEY

1. In  $\triangle PQR$ ,  $PR = 23$  mm,  $QR = 39$  mm, and  $m\angle R = 163^\circ$ .

$A \approx 131.1$  sq mm

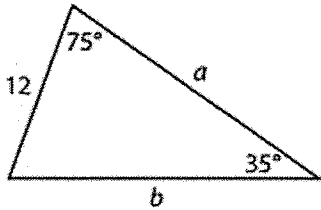
2. Find the area of the triangle. Round to the nearest tenth.

$A \approx 6.9$  sq



FIND THE UNKNOWN MEASUREMENTS. Round to the nearest tenth.

- 3.

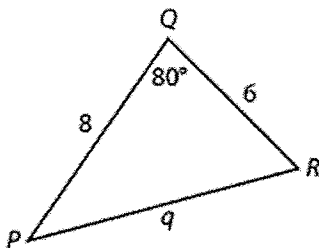


$m\angle A = 70^\circ$

$b \approx 20.2$

$a \approx 19.7$

- 4.



$q \approx 9.1$

$m\angle P \approx 40.5^\circ$

$m\angle R = 60$

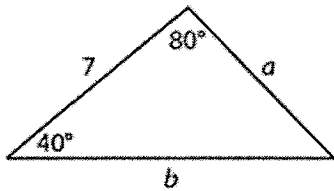
5.  $m\angle A = 120^\circ$ ,  $b = 16$ ,  $c = 20$

$$a \approx 31.2$$

$$m\angle B \approx 25.8^\circ$$

$$m\angle C = 34.2^\circ$$

6.



$$m\angle C = 60^\circ$$

$$a \approx 5.2 \text{ units}$$

$$c \approx 8.0 \text{ units}$$

7. **Critical Thinking** Use the Law of Cosines to explain why  $c^2 = a^2 + b^2$  for  $\triangle ABC$ , where  $\angle C$  is a right angle.  $C = 90$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$c^2 = a^2 + b^2 - 2ab \cos(90)$$

$$c^2 = a^2 + b^2$$

8. A graphic artist is asked to draw a triangular logo with sides measuring 15 cm, 18 cm, and 20 cm. If she draws the triangle correctly, what will be the measures of its angles to the nearest degree?

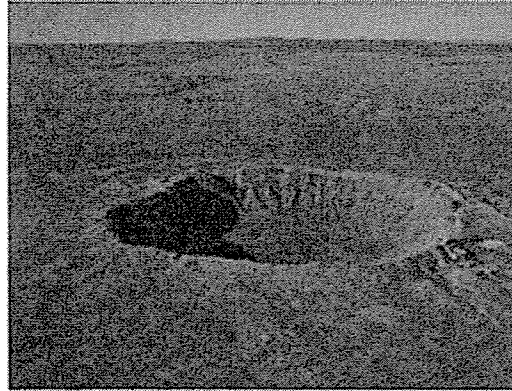
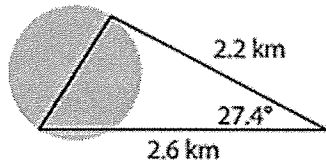
$$m\angle A \approx 46^\circ$$

$$m\angle C \approx 74^\circ$$

$$m\angle B \approx 60^\circ$$

9. Barrington Crater in Arizona was produced by the impact of a meteorite. Based on the measurements shown, what is the diameter  $d$  of Barrington Crater to the nearest tenth of a kilometer?

Ans: 1.2 km



10. **Analyze Relationships** What are the angle measures of an isosceles triangle whose base is half as long as its congruent legs? Round to the nearest tenth.

$$d^2 = b^2 + c^2 - 2bc \cos A$$

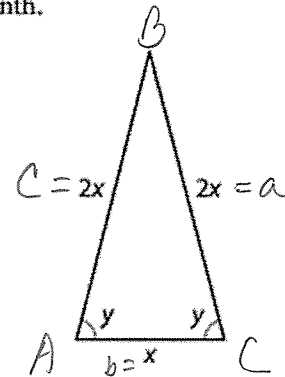
$$(2x)^2 = x^2 + (2x)^2 - 2(x)(2x) \cos y$$

$$4x^2 = x^2 + 4x^2 - 4x^2 \cos y$$

$$\frac{-x^2}{-4x^2} = \cos y$$

$$\cos y = \frac{1}{4}$$

$$m\angle y \approx 75.5^\circ$$



Ans: 75.5, 75.5, 29°

11. **CHALLENGE Critical Thinking** Find the length of  $\overline{AE}$ .

$$AC \approx 13.9$$

$$(AC)^2$$

$$AD \approx 12.9$$

$$AE \approx 9.9$$

