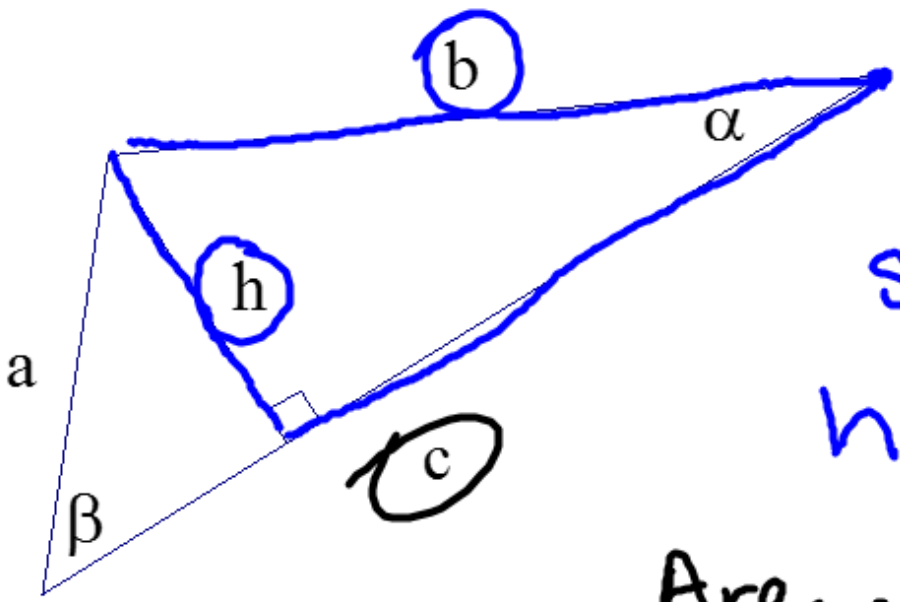
Lesson 7.6: Finding Area of a Triangle



$A = \frac{1}{2} b h$

$\sin\alpha = \frac{h}{b}$

$h = \boxed{b\sin\alpha}$

Area: $\frac{1}{2} \cdot c \cdot b\sin\alpha$

<u>Area Formula (SAS)</u>

$$A = \frac{1}{2}ab\sin(\gamma)$$

$$A = \frac{1}{2}ac\sin(\beta)$$

$$A = \frac{1}{2}bc\sin(\alpha)$$

<u>Area Formula (SSS)</u>

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

$$\text{where } s = \frac{1}{2}(a+b+c)$$

Find the area of the triangle with the following information: $\underline{a = 2, b = 5, \gamma = 55°}$

Area Formula (SAS)

$$A = \frac{1}{2}ab\sin(\gamma)$$

$$A = \frac{1}{2}ac\sin(\beta)$$

$$A = \frac{1}{2}bc\sin(\alpha)$$

$$A = \frac{1}{2}(2)(5)\sin(55°)$$

sides

angle between

$$A \approx \boxed{4.10 \text{ un}^2}$$

Find the area of the triangle with the following information: $a = 9,\ b = 4,\ c = 6$

Area Formula (SSS)

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

where $s = \frac{1}{2}(a+b+c)$

$$s = \frac{1}{2}(9+4+6)$$

$$s = 9.5$$

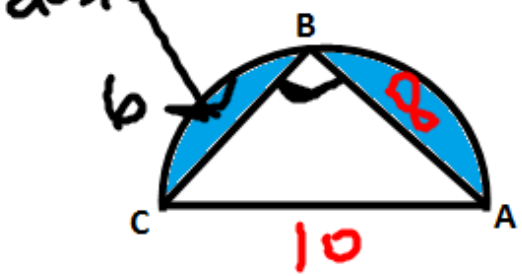
$$\text{Area} = \sqrt{9.5(9.5-9)(9.5-4)(9.5-6)}$$

$$\approx \boxed{9.56 \text{ un}^2}$$

Find the area of the shaded region enclosed in a semicircle of diameter 10 inches. The length of the chord AB is 8 inches. (Note: Triangle ABC is a right triangle).

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

$a^2+8^2=10^2$



$A=\frac{1}{2}bh$

$A=\frac{1}{2}(6)(8)$

$=24\ in^2$

Semi circle: $\frac{\pi r^2}{2}$

$\frac{\pi \cdot 5^2}{2}=\frac{25\pi}{2}\ in^2$

Shaded: $\frac{25\pi}{2}-24\approx \boxed{15.3\ in^2}$