Name: _____   Date: _____

Learning Goal 2.2	Using trigonometric ratios and solving simple trigonometric equations.

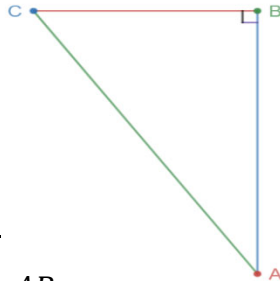**Example** Find the length of AB (round to nearest hundredth).

a. $AC = 8$ cm
    $\angle A = 18°$

$$\cos A = \frac{AB}{AC}$$
$$\cos 18° = \frac{AB}{8}$$
$$8 \times \cos 18° = AB$$
$$AB \approx 5.28 \text{ cm}$$

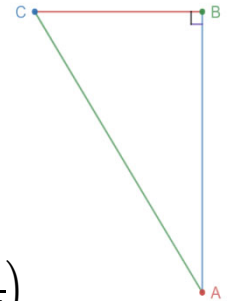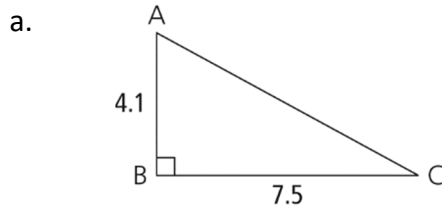**Example** Find the measure of angle A (round to the nearest degree).

a. $AC = 10.6$ ft
    $BC = 7.2$ ft

$$\sin A = \frac{BC}{AC}$$
$$\sin A = \frac{7.2}{10.6}$$
$$A = \sin^{-1}\left(\frac{7.2}{10.6}\right)$$
$$A \approx 43°$$

Example Solve ΔABC. Round lengths to nearest hundredth and angles to the nearest degree.

a.

$$AB^2 + BC^2 = AC^2$$
$$4.1^2 + 7.5^2 = AC^2$$
$$16.81 + 56.25 = AC^2$$
$$73.06 = AC^2$$
$$AC = \sqrt{73.06}$$
$$AC \approx 8.55$$

$$\tan A = \frac{BC}{AB}$$
$$\tan A = \frac{7.5}{4.1}$$
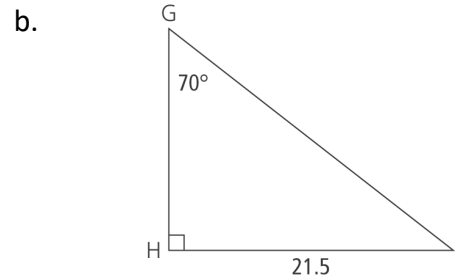$$A = \tan^{-1}\left(\frac{7.5}{4.1}\right)$$
$$A \approx 61°$$

$$\angle A + \angle B + \angle C = 180°$$
$$61° + 90° + \angle C \approx 180°$$
$$\angle C \approx 180° - 61° - 90°$$
$$\angle C \approx 29°$$

b.

$$\tan G = \frac{HI}{GH}$$
$$\tan 70 = \frac{21..5}{GH}$$
$$GH \times \tan 70 = 21.5$$
$$GH = \frac{21.5}{\tan 70}$$
$$GH \approx 7.83$$

$$\sin G = \frac{GI}{HI}$$
$$\sin 70 = \frac{GI}{21.5}$$
$$21.5 \times \sin 70 = GI$$
$$GI \approx 20.20$$

$$\angle G + \angle H + \angle I = 180°$$
$$70° + 90° + \angle C = 180°$$
$$\angle C = 180° - 70° - 90°$$
$$\angle C = 20°$$