

Name Key

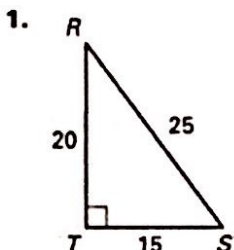
Date \_\_\_\_\_

**LESSON**  
**7.6**

**Practice**

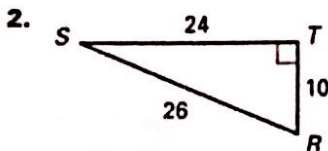
For use with the lesson "Apply the Sine and Cosine Ratios"

Find  $\sin R$  and  $\sin S$ . Write each answer as a fraction and as a decimal. Round to four decimal places, if necessary.



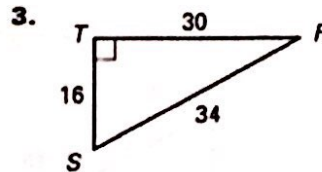
$$\sin R = \frac{15}{25} \approx 0.6$$

$$\sin S = \frac{20}{25} \approx 0.8$$



$$\sin R = \frac{24}{26} \approx 0.9231$$

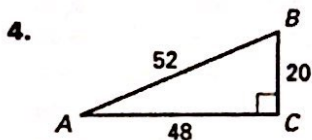
$$\sin S = \frac{10}{26} \approx 0.3841$$



$$\sin R = \frac{16}{34} \approx 0.4706$$

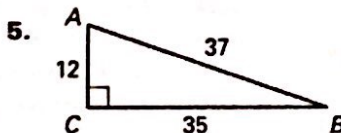
$$\sin S = \frac{30}{34} \approx 0.8824$$

Find  $\cos A$  and  $\cos B$ . Write each answer as a fraction and as a decimal. Round to four decimal places, if necessary.



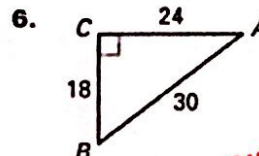
$$\cos A = \frac{48}{52} \approx 0.9231$$

$$\cos B = \frac{20}{52} \approx 0.3841$$



$$\cos A = \frac{12}{37} \approx 0.3243$$

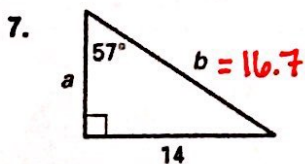
$$\cos B = \frac{35}{37} \approx 0.9459$$



$$\cos A = \frac{24}{30} \approx 0.8$$

$$\cos B = \frac{18}{30} \approx 0.6$$

Use a cosine or sine ratio to find the value of each variable. Round decimals to the nearest tenth.



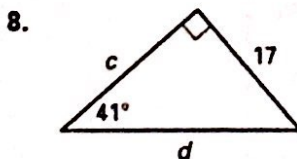
$$\sin 57^\circ = \frac{14}{b}$$

$$b = \frac{14}{\sin 57^\circ} = 16.7 = b$$

$$\cos 57^\circ = \frac{a}{16.7}$$

$$a = 16.7 \cdot \cos 57^\circ$$

$$a = 9.1$$



$$\sin 41^\circ = \frac{17}{d}$$

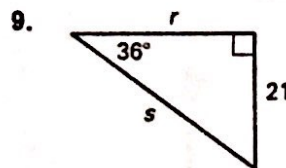
$$d = \frac{17}{\sin 41^\circ}$$

$$d = 25.9$$

$$\cos 41^\circ = \frac{c}{25.9}$$

$$c = 25.9 \cdot \cos 41^\circ$$

$$c = 19.6$$



$$\sin 36^\circ = \frac{21}{s}$$

$$s = \frac{21}{\sin 36^\circ}$$

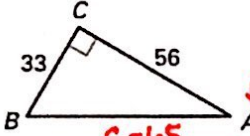
$$s = 35.7$$

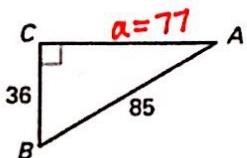
$$\cos 36^\circ = \frac{r}{35.7}$$

$$r = 35.7 \cdot \cos 36^\circ$$

$$r = 28.9$$

Find the unknown side length. Then find  $\sin A$  and  $\cos A$ . Write each answer as a fraction in simplest form and as a decimal. Round to four decimal places, if necessary.

10.   $C^2 = 33^2 + 56^2$   
 $C^2 = 4225$   
 $C = \sqrt{4225}$   
 $C = 65$   
 $\sin A = \frac{33}{65} = 0.5077$   
 $\cos A = \frac{56}{65} \approx 0.8615$

11.   $85^2 = 36^2 + a^2$   
 $85^2 - 36^2 = a^2$   
 $5929 = a^2$   
 $\sqrt{5929} = \sqrt{a^2}$   
 $a = 77$   
 $\sin A = \frac{36}{85} \approx 0.4235$   
 $\cos A = \frac{77}{85} \approx 0.9059$

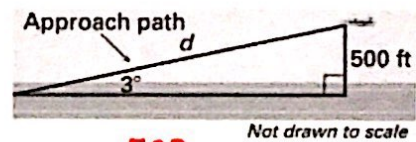
12. **Ski Lift** A chair lift on a ski slope has an angle of elevation of  $28^\circ$  and covers a total distance of 4640 feet. To the nearest foot, what is the vertical height  $h$  covered by the chair lift?

$$\sin 28^\circ = \frac{h}{4640}$$

$$h = 4640 \cdot \sin 28^\circ$$

$$h = 2178 \text{ ft}$$

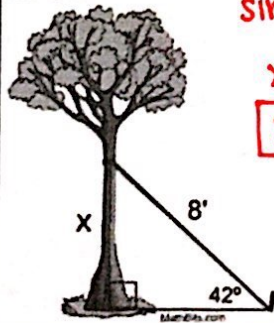
13. **Airplane Landing** You are preparing to land an airplane. You are on a straight line approach path that forms a  $3^\circ$  angle with the runway. What is the distance  $d$  along this approach path to your touchdown point when you are 500 feet above the ground? Round your answer to the nearest foot.



$$\sin 3^\circ = \frac{500}{d}$$

$$d = \frac{500}{\sin 3^\circ} = 9554 \text{ ft}$$

A nursery plants a new tree and attaches a guy wire to help support the tree while its roots take hold. An eight foot wire is attached to the tree and to a stake in the ground. From the stake in the ground the angle of elevation of the connection with the tree is  $42^\circ$ . Find to the nearest tenth of a foot, the height of the connection point on the tree.

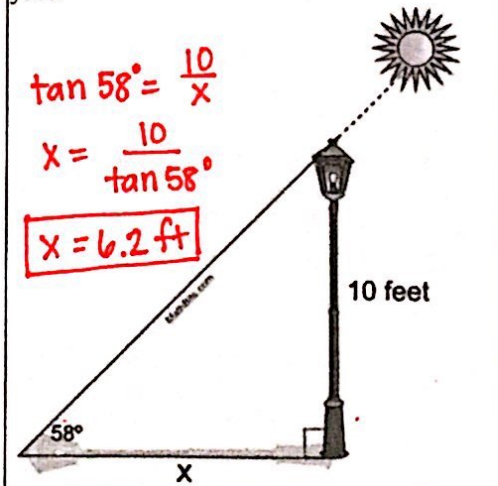


$$\sin 42^\circ = \frac{x}{8}$$

$$x = 8 \cdot \sin 42^\circ$$

$$x = 5.4 \text{ ft}$$

Find the shadow cast by a 10 foot lamp post when the angle of elevation of the sun is  $58^\circ$ . Find the length to the nearest tenth of a foot.



$$\tan 58^\circ = \frac{10}{x}$$

$$x = \frac{10}{\tan 58^\circ}$$

$$x = 6.2 \text{ ft}$$