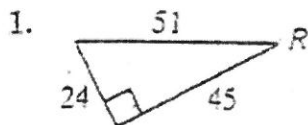


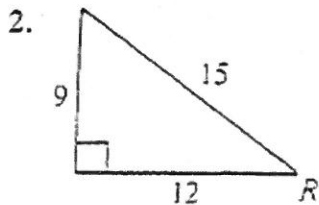
9.6 Practice Problems

Express the sine and cosine of  $\angle R$  as ratios.



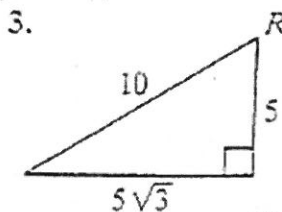
$$\sin R = \frac{24}{51}$$

$$\cos R = \frac{45}{51}$$



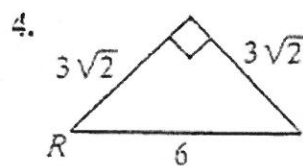
$$\sin R = \frac{9}{15}$$

$$\cos R = \frac{12}{15}$$



$$\sin R = \frac{5\sqrt{3}}{10}$$

$$\cos R = \frac{5}{10}$$



$$\sin R = \frac{3\sqrt{2}}{6}$$

$$\cos R = \frac{3\sqrt{2}}{6}$$

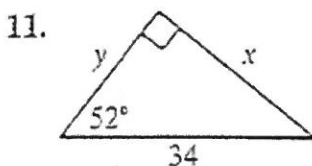
Complete.

5.  $\cos 22^\circ = \underline{\quad? \quad}$   
 $\quad \quad \quad .9272$

6.  $\sin 79^\circ \approx \underline{\quad? \quad}$   
 $\quad \quad \quad .9816$

7.  $\cos \underline{\quad? \quad} = 0.7771$   
 $\quad \quad \quad 39^\circ$

Find the values of  $x$  and  $y$  to the nearest integer.

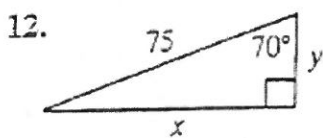


$$\sin 52 = \frac{x}{34}$$

$$x = 26.7$$

$$\cos 52 = \frac{y}{34}$$

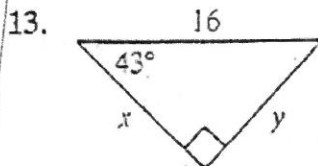
$$y = 63.3$$



$$\sin 70 = \frac{x}{75}$$

$$x = 70.5$$

$$y = 19.5$$

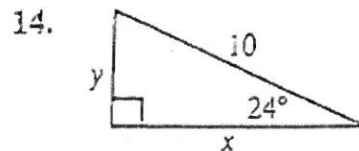


$$\sin 43 = \frac{y}{16}$$

$$y = 10.9$$

$$\cos 43 = \frac{x}{16}$$

$$x = 11.7$$



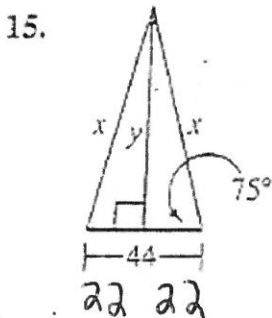
$$\sin 24 = \frac{y}{10}$$

$$y = 4.1$$

$$\cos 24 = \frac{x}{10}$$

$$x = 9.1$$

Find the values of  $x$  and  $y$  to the nearest integer.

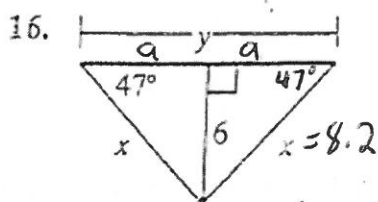


$$\tan 75 = \frac{y}{22}$$

$$y = 82.1$$

$$\sqrt{22^2 + 82.1^2} = x$$

$$x = 85$$



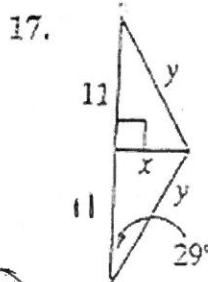
$$\sin 47 = \frac{6}{x}$$

$$x = \frac{6}{\sin 47} = 8.2$$

$$6^2 + a^2 = 8.2^2$$

$$a^2 = 31.24$$

$$a = 5.6$$

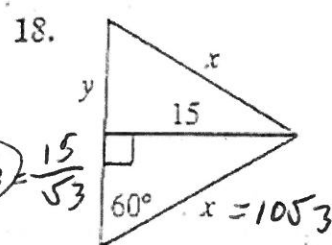


$$\tan 29 = \frac{y}{11}$$

$$y = 6.1$$

$$\sqrt{11^2 + 6.1^2} = x$$

$$12.6 = x$$

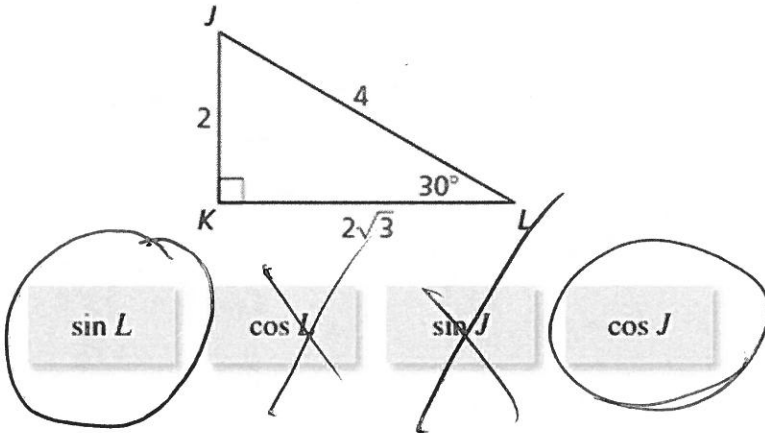


$$5\sqrt{3} = \frac{15}{\sqrt{3}}$$

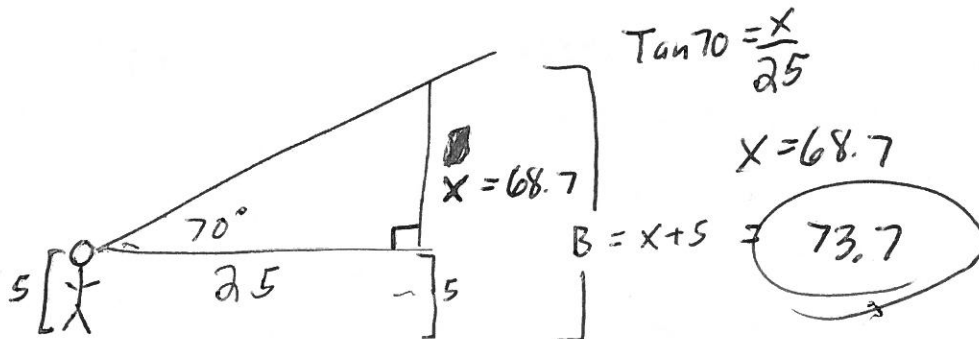
$$y = 5\sqrt{3}$$

$$x = 10\sqrt{3}$$

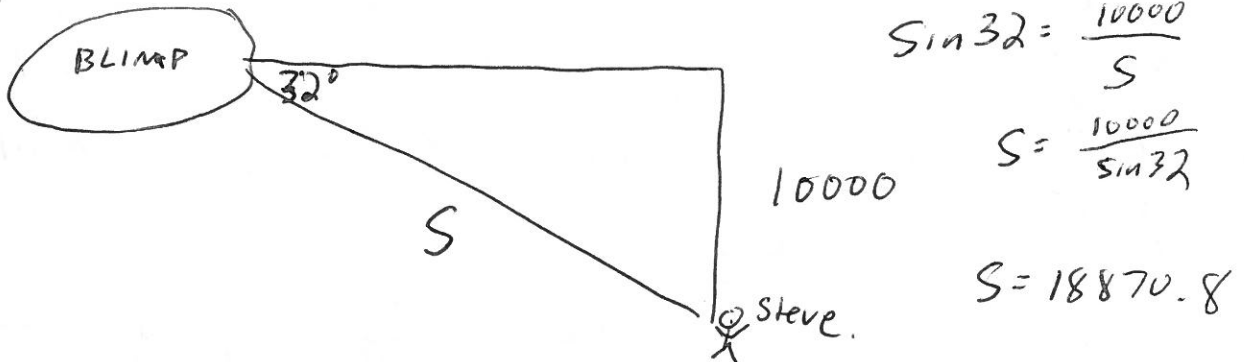
19. **REASONING** Which ratios are equal to  $\frac{1}{2}$ ? Select all that apply. (See Example 5.)



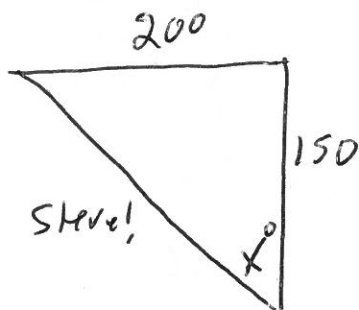
20. You look up to the top of a building with an angle of elevation of 70 degrees which you measured with your iPhone. You are standing 25 feet from the building. If your eyes are 5 feet off the ground, how tall is the building?



21. You look down from a blimp at an angle of depression of 32 degrees at Steve. You measured the angle with a crude instrument made of a protractor, string and a straw. If you know the blimp is 10000 feet off the ground, how far are you from Steve?



22. You walk north 150 feet down a street in a major city and then turn west and walk 200 more feet. Steve, who started at the same point, uses his jet pack to fly above the buildings in a straight line and ends in the same place where you ended. What is the angle formed by the two paths? How far did Steve have to fly his jet pack?



$$\tan X = \frac{200}{150}$$

$$X = \tan^{-1}\left(\frac{200}{150}\right)$$

$$X = 53.1^\circ$$