

Key

S O C A T O  
H H H A

Geometry PAP Homework Trigonometry Day 1

Use the diagram to express the ratio as a fraction

1.  $\sin A = \frac{6}{10} \frac{3}{5}$

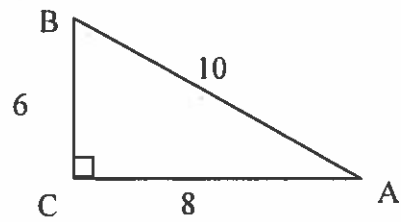
2.  $\cos A = \frac{8}{10} \frac{4}{5}$

3.  $\cos B = \frac{6}{10} \frac{3}{5}$

4.  $\tan A = \frac{6}{8} \frac{3}{4}$

5.  $\tan B = \frac{8}{6} \frac{4}{3}$

6.  $\sin B = \frac{8}{10} \frac{4}{5}$



Complete. Round to the nearest thousandth.

7.  $\sin 3^\circ \approx .052$

8.  $\cos 30^\circ \approx .866$

9.  $\tan 48^\circ \approx 1.111$

10.  $\sin 79^\circ \approx .982$

11.  $\cos 19.003^\circ \approx 0.9455$

12.  $\sin 60.998^\circ \approx 0.8746$

13.  $\tan 68.000^\circ \approx 2.4751$

14.  $\cos 49.999^\circ \approx 0.6428$

Find the values of the variables. Find lengths to the nearest integer and angles to the nearest degree. *whole #*

15.  $\tan 38^\circ = \frac{x}{46}$   
  
 $x \approx 36$

16.  $\sin 55^\circ = \frac{x}{48}$   
  
 $x \approx 39$

17.  $\cos 58^\circ = \frac{6.2}{x}$   
  
 $x \approx 12$

18.  $\sin x = \frac{n}{3n}$   
  
 $x \approx 19^\circ$   
 $\sin^{-1}(\frac{1}{3}) = x$

19.  $\cos x = \frac{8}{12}$   
  
 $x \approx 48^\circ$

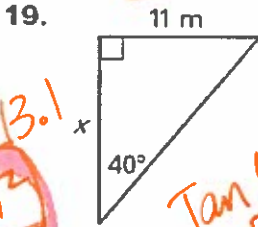
20.  $\tan 65^\circ = \frac{x}{16}$   
  
 $x \approx 34$

21.  $\sin 38^\circ = \frac{x}{72}$   
  
 $x \approx 44$

22.  $\sin 58^\circ = \frac{x}{20}$   
  
 $x \approx 17$

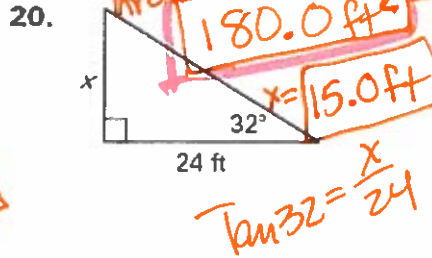
Watch for units & Rounding!

Find the **area** of the triangle. Round your answer to the nearest tenth.

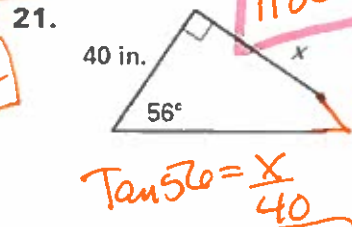


Area  $72.1 \text{ m}^2$   
3.1

$\tan 40 = \frac{11}{x}$   
 $x = 13.1 \text{ m}$



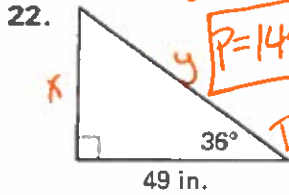
$\tan 32 = \frac{x}{24}$   
 $x = 15.0 \text{ ft}$



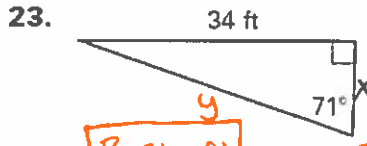
$\tan 56 = \frac{x}{40}$   
 $x = 59.3 \text{ in}$

Area  $1186.0 \text{ in}^2$

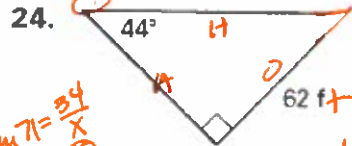
Find the **perimeter** of the triangle. Round to the nearest tenth.



$\tan 36 = \frac{x}{49}$   
 $x \approx 35.6$   
 $\cos 36 = \frac{49}{y}$   
 $y \approx 60.6$



$\sin 71 = \frac{34}{y}$   
 $y \approx 35.957$   
 $\cos 71 = \frac{x}{34}$   
 $x \approx 11.7$

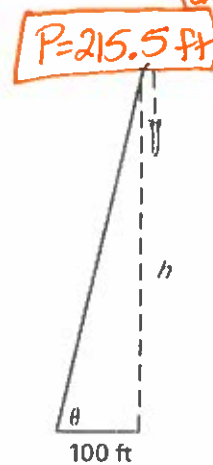


$\sin 44 = \frac{62}{H}$   
 $H \approx 89.3$   
 $\tan 44 = \frac{A}{62}$   
 $A \approx 64.2$

25. **Model Rockets** To calculate the height  $h$  reached by a model rocket, you move 100 feet from the launch point and record the angle of elevation  $\theta$  to the rocket at its highest point. The values of  $\theta$  for three flights are given below. Find the rocket's height to the nearest foot for the given  $\theta$  in each flight.

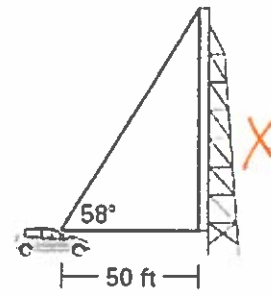
- a.  $\theta = 77^\circ$   $100 \tan 77 = 433 \text{ ft}$
- b.  $\theta = 81^\circ$   $100 \tan 81 = 631 \text{ ft}$
- c.  $\theta = 83^\circ$   $100 \tan 83 = 814 \text{ ft}$

$\tan \theta = \frac{h}{100}$   
 $100 \tan \theta = h$



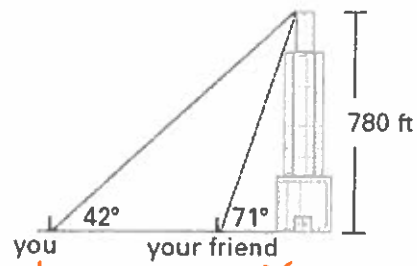
26. **Drive-in Movie** You are 50 feet from the screen at a drive-in movie. Your eye is on a horizontal line with the bottom of the screen and the angle of elevation to the top of the screen is  $58^\circ$ . How tall is the screen?

$\tan 58 = \frac{x}{50}$   
 $50 \tan 58 = x$   
 $x = 80 \text{ ft}$



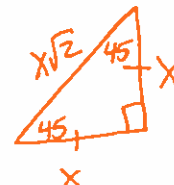
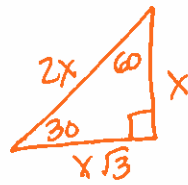
27. **Skyscraper** You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is  $42^\circ$ . The angle of elevation from your friend's position to the top of the skyscraper is  $71^\circ$ . To the nearest foot, how far are you from your friend?

$598 \text{ ft}$



$\tan 71 = \frac{780}{x}$   
 $x = 268.5755 \dots$   
 $\tan 42 = \frac{780}{y}$   
 $y = 866.277 \dots$

**LESSON 7.6 Practice B** *continued*  
For use with pages 473-480



Use the 45°-45°-90° Triangle Theorem or the 30°-60°-90° Triangle Theorem to find the sine and cosine of the angle.

$$\frac{x\sqrt{3}}{2x} = \frac{\sqrt{3}}{2}$$

19. a 30° angle  $\frac{x}{2x} = \frac{1}{2}$  *sin*

20. a 45° angle  $\frac{x}{x\sqrt{2}} = \frac{\sqrt{2}}{2}$  *sin*

21. a 60° angle

$$\frac{\sin x\sqrt{3}}{2x} = \frac{\sqrt{3}}{2}$$

$$\cos 60 = \frac{x}{2x} = \frac{1}{2}$$

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.

22.  $33^2 + 56^2 = c^2$   
 $\sin A = \frac{33}{65} = .5077$   
 $\cos A = \frac{56}{65} = .8615$

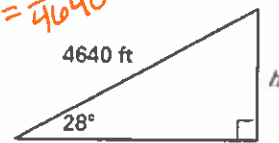
23.  $\sin A = \frac{36}{85} = .4235$   
 $\cos A = \frac{77}{85} = .9059$

24.  $\sin A = \frac{2\sqrt{7}}{8} = \frac{\sqrt{7}}{4} = .6614$   
 $\cos A = \frac{6}{8} = \frac{3}{4} = .7500$

25.  $\sin A = \frac{9}{12} = \frac{3}{4} = .7500$   
 $\cos A = \frac{3\sqrt{7}}{12} = \frac{\sqrt{7}}{4} = .6614$

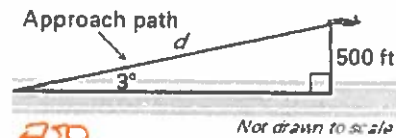
26. Ski Lift A chair lift on a ski slope has an angle of elevation of 28° and covers a total distance of 4640 feet. To the nearest foot, what is the vertical height  $h$  covered by the chair lift?

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



27. Airplane Landing You are preparing to land an airplane. You are on a straight line approach path that forms a 3° vertical 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.

$$9554 \text{ ft}$$



28. Extension Ladders You are using extension ladders to paint a chimney that is 33 feet tall. The length of an extension ladder ranges in one-foot increments from its minimum length to its maximum length. For safety, you should always use an angle of about 75.5° between the ground and the ladder.

a. Your smallest extension ladder has a maximum length of 17 feet. How high does this ladder safely reach on a vertical wall?  $16.5 \text{ ft}$

b. You place the base of the ladder 3 feet from the chimney. How many feet long should the ladder be?  $12.0 \text{ ft}$

c. To reach the top of the chimney, you need a ladder that reaches 30 feet high. How many feet long should the ladder be?  $31.0 \text{ ft}$



$$\sin 75.5 = \frac{h}{17}$$

$$\cos 75.5 = \frac{3}{x}$$

$$\sin 75.5 = \frac{30}{x}$$