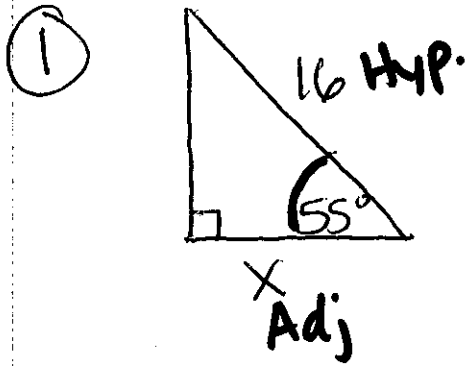


Day 86

Use Trig to Find missing sides when you know at least one side and an acute  $\angle$ .



$$\cancel{\cos 55^\circ = \frac{X}{16}}$$

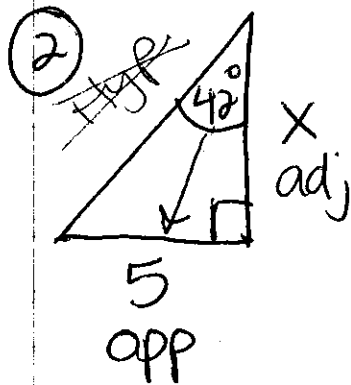
$$X = \cos(55) * 16$$

$$X = 9.2$$

$$\sin = \frac{O}{H}$$

$$\cos = \frac{A}{H}$$

$$\tan = \frac{O}{A}$$



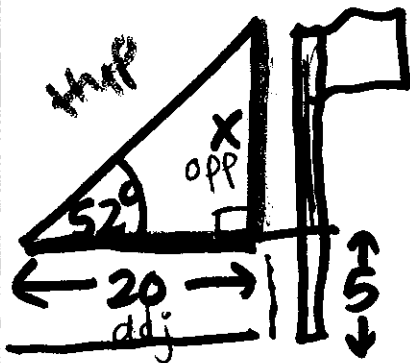
$$\cancel{\tan(42^\circ) = \frac{5}{X}}$$

$$\frac{\tan(42) \cdot X}{\tan(42)} = \frac{5}{\tan(42)}$$

$$X = 5.6$$

calculator:  $5 / \tan(42)$   
( $\div$ )

④ WKst



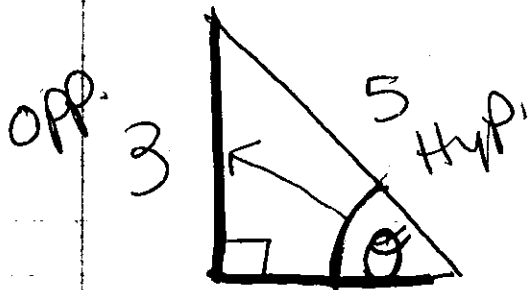
$$\cancel{\tan(52^\circ) = \frac{X}{20}}$$

$$X = 25.6$$

$$+ 5$$

$$\boxed{30.6 \text{ ft}}$$

Finding missing acute  $\angle$ 's  
when you know at least 2 sides.



use the  
inverse buttons.

$\sin^{-1}$	$\frac{O}{H}$
$\cos^{-1}$	$\frac{A}{H}$
$\tan^{-1}$	$\frac{O}{A}$

$$\theta = \sin^{-1}\left(\frac{3}{5}\right)$$

$$\theta = 37^\circ \leftarrow 36.8$$

sine  
cosine  
tangent

# What Do You Get

1 When 2 you <sup>3</sup> cross 4. A <sup>5</sup> Baseball <sup>6</sup> Player <sup>7</sup> with <sup>8</sup> a <sup>9</sup> Frog?

Find the measure of the side or angle labeled  $x$ , or solve the problem. Write the word next to your answer in the corresponding box above.

① **Hyp.** 18 cm **opp.**  $x$   $\angle = 29^\circ$   
 $x = 8.7 \text{ cm}$   
 $\sin(29^\circ) = \frac{x}{18}$

② **opp.** 32 in. **adj.**  $x$   $\angle = 60^\circ$   
 $x = 18.6 \text{ in}$   
 $\tan(60^\circ) = \frac{32}{x}$

③ **adj.** 83 mm **hyp.** 175 mm  $\angle = x$   
 $x = \cos^{-1}\left(\frac{83}{175}\right)$   
 $x = 62^\circ$

4. A telescope is mounted on a tripod 5 ft above the ground and 20 ft from a flagpole. The telescope must be rotated  $52^\circ$  from horizontal to see the top of the flagpole. How tall is the flagpole?  
 $30.6 \text{ ft}$

5. An Olympic ski jumper drops 51 m vertically while skiing down a 120-meter ramp. What is the angle of elevation of the ramp?  
 $x = \sin^{-1}\left(\frac{51}{120}\right)$   
 $x = 25^\circ$

7. A submarine dives at an angle of  $13^\circ$  to the surface of the water. The submarine travels at a speed of 720 feet per minute. About how deep is the sub after 5 min?  
 $8000 \text{ ft}$   
 $x = \tan^{-1}\left(\frac{8000}{158400}\right)$

8. The roof of a ski cabin has a steep pitch to help a snow slide off. What angle does the roof make with the horizontal?  
 $158400 \text{ ft}$   
 $30 \text{ mi} \times 5280$

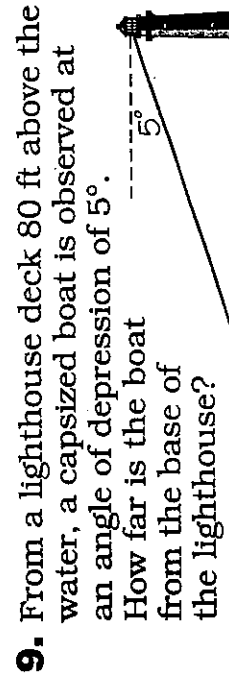
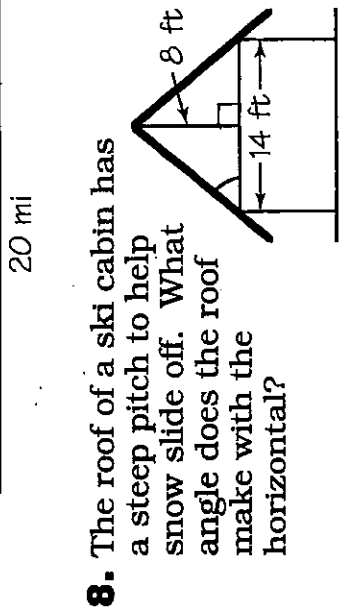
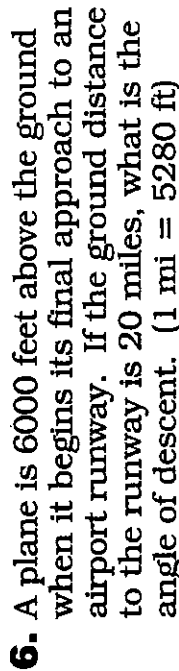
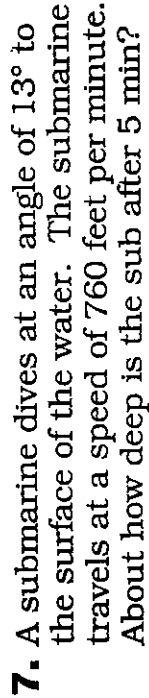
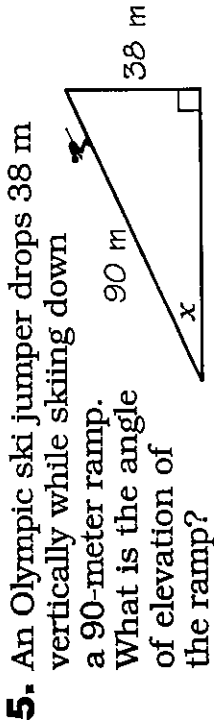
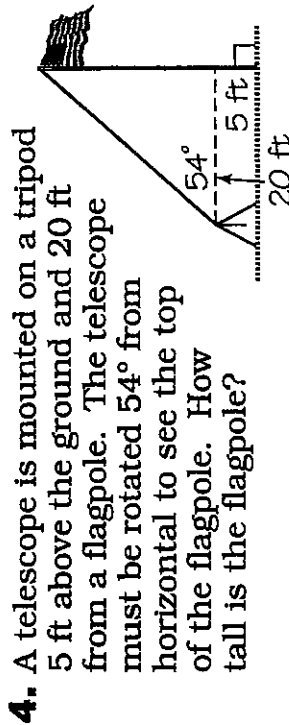
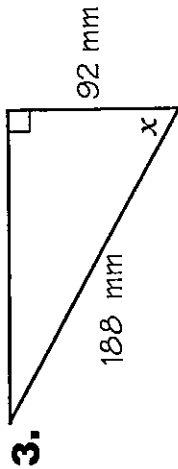
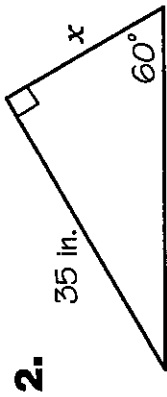
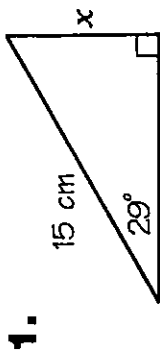
9. From a lighthouse deck 90 ft above the water, a capsized boat is observed at an angle of depression of  $7^\circ$ . How far is the boat from the base of the lighthouse?  
 $x$

- Answers**
- 810 ft WITH
  - 5° GAME
  - 25° BASEBALL
  - 8.4 cm ON
  - 18.5 in. YOU
  - 50° BIG
  - 30.6 ft A
  - 825 ft WHO
  - 8.7 cm WHEN
  - 733 ft FROG
  - 3° PLAYER
  - 17.8 in. SMOKE
  - 23° HIT
  - 680 ft UNICORN
  - 48° A
  - 62° CROSS
  - 28.5 ft OVER

# What You Get Is . . .

<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>	<b>5.</b>	<b>6.</b>	<b>7.</b>	<b>8.</b>	<b>9.</b>
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Find the measure of the side or angle labeled  $x$ , or solve the problem. Write the word next to your answer in the corresponding box above.



**Answers**

19.5 in. **ELEPHANT**

3° **AND**

32.5 ft **CATCHES**

27° **BALLS**

892 ft **PEANUTS**

49° **EATS**

7.3 cm **AN**

840 ft **RUNS**

25° **FLIES**

47° **HITS**

20.2 in. **OUTFIELDER**

7.8 cm **SOME**

855 ft **THEN**

33.8 ft **PLAYS**

914 ft **THEM**

61° **WHO**

5° **WITH**