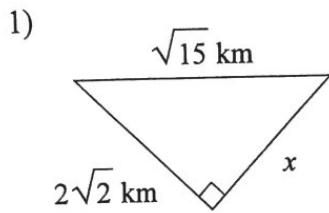


Ch. 8 Study Guide

Find the missing side of each triangle. Leave your answers in simplest radical form.



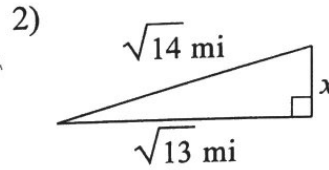
$$a^2 + b^2 = c^2$$

$$2^2 \cdot (\sqrt{2})^2 + x^2 = (\sqrt{15})^2$$

$$8 + x^2 = 15$$

$$\sqrt{x^2} = \sqrt{7}$$

$$x = \sqrt{7}$$

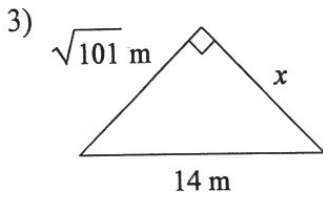


$$x^2 + (\sqrt{13})^2 = (\sqrt{14})^2$$

$$x^2 + 13 = 14$$

$$\sqrt{x^2} = \sqrt{1}$$

$$x = 1$$

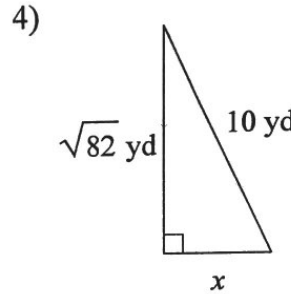


$$(\sqrt{101})^2 + x^2 = 14^2$$

$$101 + x^2 = 196$$

$$\sqrt{x^2} = \sqrt{95}$$

$$x = \sqrt{95}$$



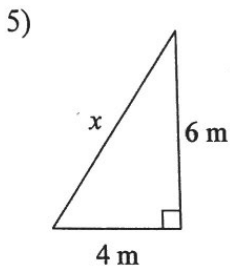
$$(\sqrt{82})^2 + x^2 = 10^2$$

$$82 + x^2 = 100$$

$$\sqrt{x^2} = \sqrt{18}$$

$$x = \sqrt{9 \cdot 2}$$

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



$$4^2 + 6^2 = x^2$$

$$16 + 36 = x^2$$

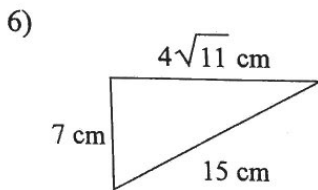
$$\sqrt{52} = \sqrt{x^2}$$

$$x = \sqrt{52}$$

$$x = \sqrt{4 \cdot 13}$$

$$x = 2\sqrt{13}$$

State if each triangle is acute, obtuse, or right.

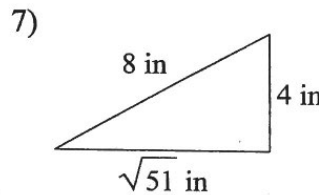


$$7^2 + (4\sqrt{11})^2 = 15^2$$

$$49 + 176 = 225$$

$$225 = 225$$

$$\text{RIGHT}$$

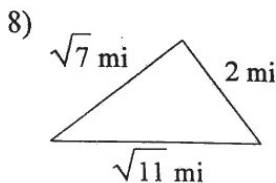


$$4^2 + (\sqrt{51})^2 = 8^2$$

$$16 + 51 = 64$$

$$67 > 64$$

$$\text{ACUTE}$$



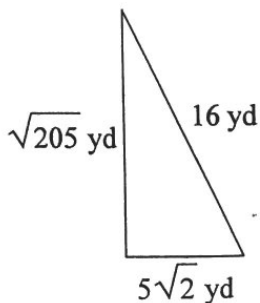
$$2^2 + (\sqrt{7})^2 = (\sqrt{11})^2$$

$$4 + 7 = 11$$

$$11 = 11$$

$$\text{RIGHT}$$

9)

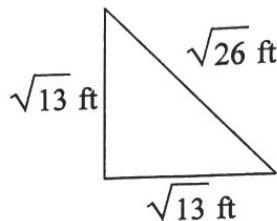


$$\frac{5^2 \cdot (\sqrt{2})^2}{25 \cdot 2} \quad (5\sqrt{2})^2 + (\sqrt{205})^2 \quad 16^2 \cdot 10)$$

$$50 + 205 \quad 256$$

$$255 < 256$$

**OBTUSE**



$$(\sqrt{13})^2 + (\sqrt{13})^2 \quad (\sqrt{26})^2$$

$$13 + 13 \quad 26$$

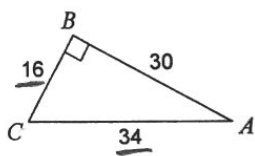
$$26 = 26$$

**RIGHT**

Find the value of each trigonometric ratio.

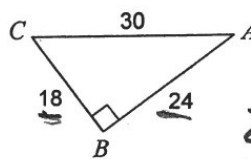
11)  $\cos C$

$$\frac{S}{H} \quad \frac{C}{H} \quad \frac{T}{A}$$



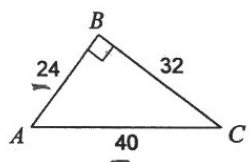
$$\frac{16}{34}$$

12)  $\tan C$



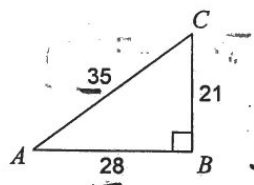
$$\frac{24}{18}$$

13)  $\cos A$



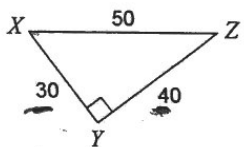
$$\frac{24}{40}$$

14)  $\sin C$



$$\frac{28}{35}$$

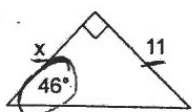
15)  $\tan X$



$$\frac{40}{30}$$

Find the missing side. Round to the nearest tenth.

16)

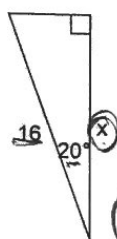


$$\tan 46 = \frac{11}{x}$$

$$1.036 = \frac{11}{x}$$

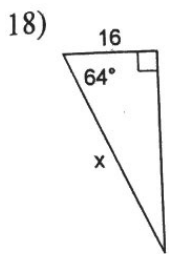
$$x = \frac{11}{1.036} = 10.6$$

17)



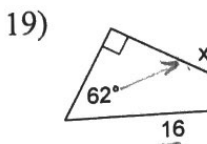
$$16 \cdot \cos 20 = \frac{x}{16} \cdot 16$$

$$15.0 = x$$



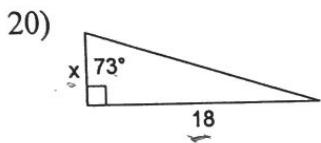
$$\cos 64 = \frac{16}{x}$$

$$x = \frac{16}{\cos 64} \approx 36.5$$



$$16 \cdot \sin 62 = \frac{x}{16} \cdot 16$$

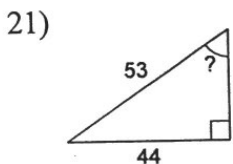
$$14.1 = x$$



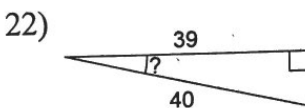
$$\tan 73 = \frac{18}{x}$$

$$x = \frac{18}{\tan 73} \approx 5.5$$

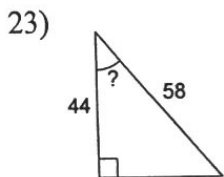
Find the measure of the indicated angle to the nearest degree.



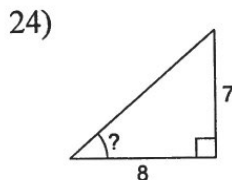
$$\sin^{-1}\left(\frac{44}{53}\right) \approx 56^\circ$$



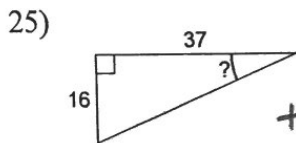
$$\cos^{-1}\left(\frac{39}{40}\right) \approx 13^\circ$$



$$\cos^{-1}\left(\frac{44}{58}\right) \approx 41^\circ$$



$$\tan^{-1}\left(\frac{7}{8}\right) \approx 41^\circ$$

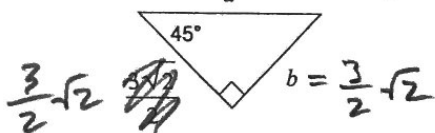


$$\tan^{-1}\left(\frac{16}{37}\right) \approx 23^\circ$$

Find the missing side lengths. Leave your answers as radicals in simplest form.

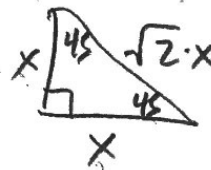
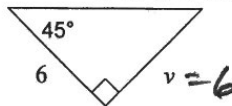
26)

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



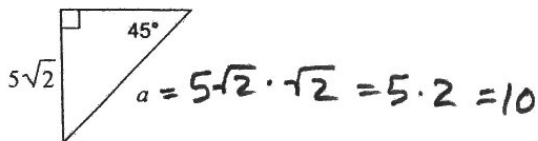
27)

$$u = 6\sqrt{2}$$

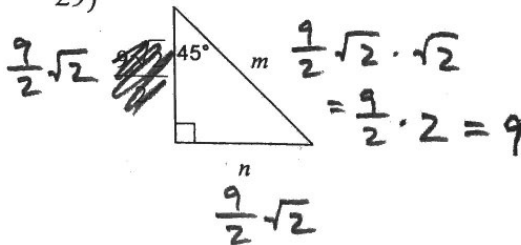


28)

$$b = 5\sqrt{2}$$

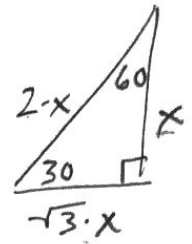


29)



30)  $= 4\sqrt{2} \cdot \sqrt{2} = 4 \cdot 2 = 8$

31)



32)  $4\sqrt{3}$

33)  $6 \cdot 2 = 12$

34)  $\frac{5}{2} \sqrt{3}$

35)  $7 \cdot 2 = 14$

36)  $\frac{\sqrt{3}}{\sqrt{3}} = 1$

37)  $\frac{1}{3} \sqrt{6} \cdot \sqrt{3} = \frac{1}{3} \sqrt{18} = \frac{1}{3} \cdot 3\sqrt{2} = 1\sqrt{2}$

38)  $9\sqrt{3}$

39)  $\frac{8}{5} \sqrt{5}$

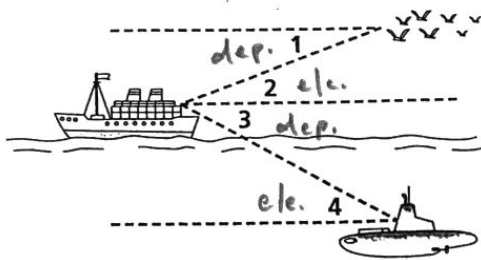
40)  $8\sqrt{3}$

# Practice 8-5

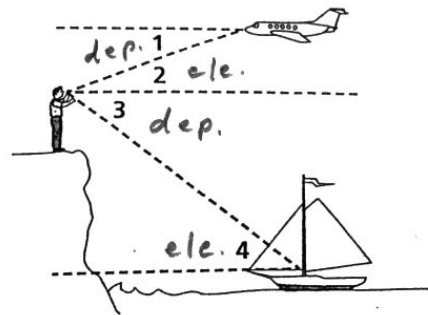
## Angles of Elevation and Depression

Describe each angle as it relates to the diagram.

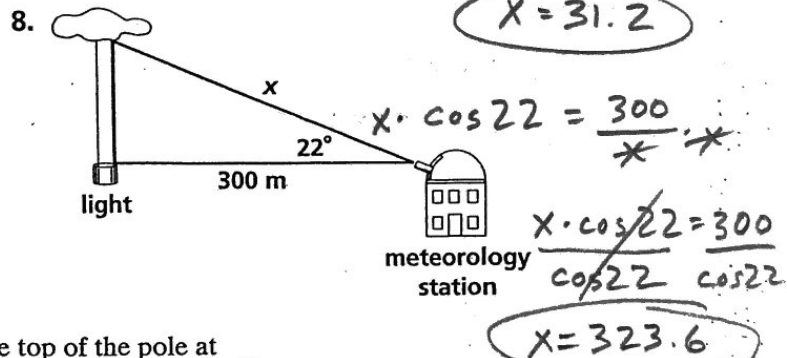
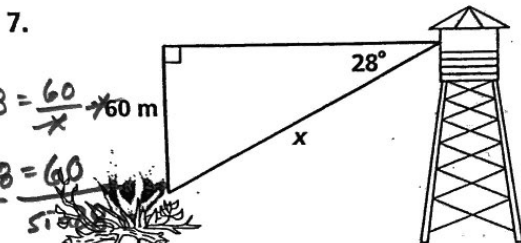
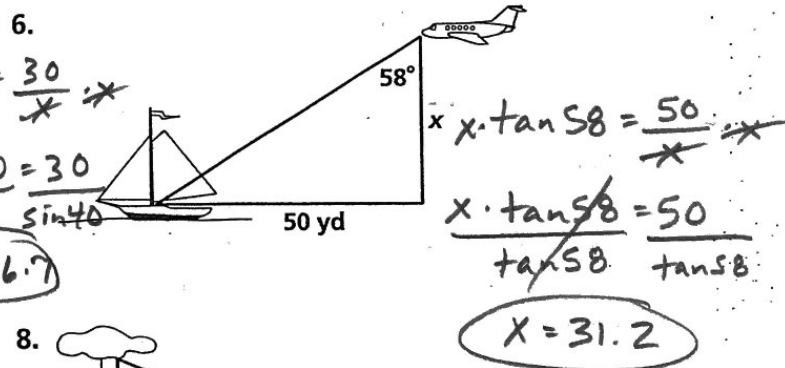
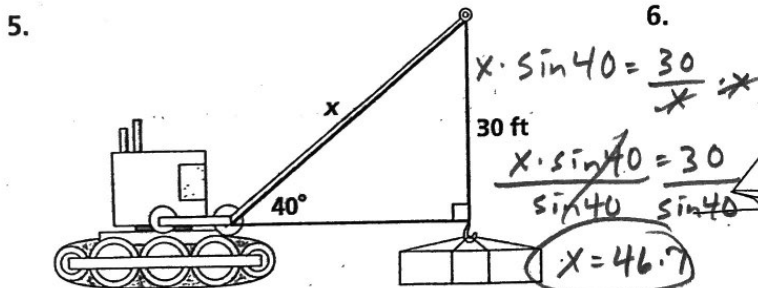
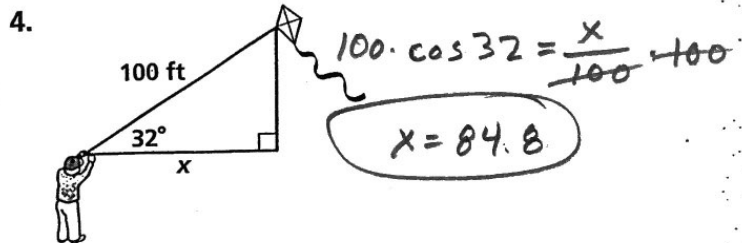
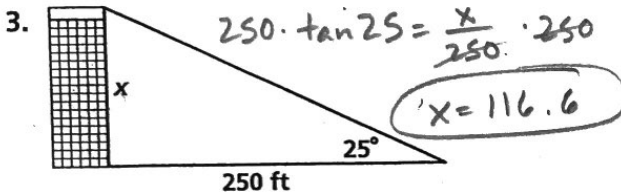
1. a.  $\angle 1$
- b.  $\angle 2$
- c.  $\angle 3$
- d.  $\angle 4$



2. a.  $\angle 1$
- b.  $\angle 2$
- c.  $\angle 3$
- d.  $\angle 4$



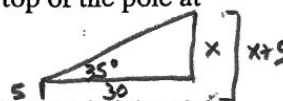
Find the value of  $x$ . Round the lengths to the nearest tenth.



9. A person standing 30 ft from a flagpole can see the top of the pole at a  $35^\circ$  angle of elevation.

a. Draw a diagram.

b. The person's eye level is 5 ft from the ground. Find the height of the flagpole to the nearest foot.



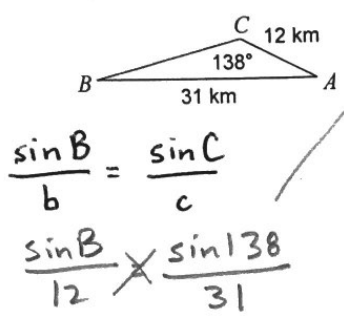
$$\tan 35 = \frac{x}{30}$$

$$x = 30 \cdot \tan 35 = 21$$

$$21 + 5 = 26$$

Find each measurement indicated. Round your answers to the nearest tenth.

1) Find  $m\angle B$



$$31 \cdot \sin B = 12 \cdot \sin 138$$

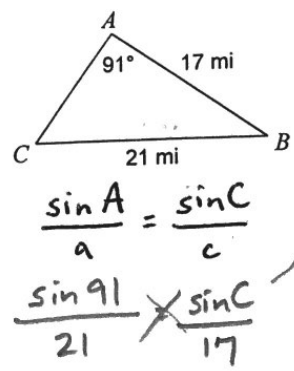
$$\cancel{31} \sin B = \frac{8.030}{\cancel{31}}$$

$$\sin B = 0.259$$

$$B = \sin^{-1}(0.259)$$

$$B = 15.0^\circ$$

2) Find  $m\angle C$



$$17 \cdot \sin 91 = 21 \cdot \sin C$$

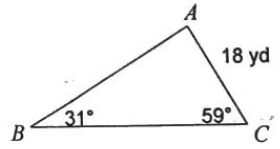
$$\frac{16.997}{21} = \frac{21 \cdot \sin C}{21}$$

$$\sin C = 0.809$$

$$C = \sin^{-1}(0.809)$$

$$C = 54.0^\circ$$

3) Find AB



$$\frac{\sin B}{b} = \frac{\sin C}{c}$$

$$\frac{\sin 31}{18} \times \frac{\sin 59}{c}$$

$$c \cdot \sin 31 = 18 \cdot \sin 59$$

$$c \cdot \sin 31 = 15.429$$

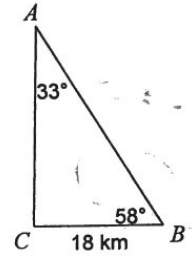
$$c = \frac{15.429}{\sin 31}$$

$$c = 29.957$$

$$\downarrow$$

$$30.0$$

4) Find AC



$$b \cdot \sin 33 = 18 \cdot \sin 58$$

$$\frac{b \cdot \sin 33}{\sin 33} = \frac{15.265}{\sin 33}$$

$$b = 28.028$$

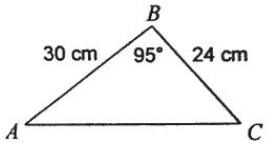
$$\downarrow$$

$$28.0$$

$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

$$\frac{\sin 33}{18} \times \frac{\sin 58}{b}$$

5) Find AC



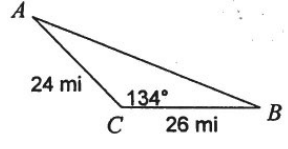
$$b^2 = a^2 + c^2 - 2ac \cdot \cos B$$

$$b^2 = 24^2 + 30^2 - 2(24)(30) \cdot \cos(95)$$

$$\sqrt{b^2} = \sqrt{1601.5}$$

$$b = 40.0$$

6) Find AB



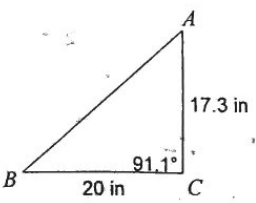
$$c^2 = a^2 + b^2 - 2ab \cdot \cos C$$

$$c^2 = 26^2 + 24^2 - 2(26)(24) \cdot \cos(134)$$

$$\sqrt{c^2} = \sqrt{2118.93}$$

$$c = 46.0$$

7) Find AB



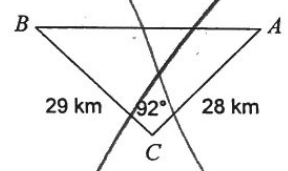
$$c^2 = a^2 + b^2 - 2ab \cdot \cos C$$

$$c^2 = 20^2 + 17.3^2 - 2(20)(17.3) \cos(91.1)$$

$$\sqrt{c^2} = \sqrt{712.575}$$

$$c = 26.7$$

8) Find  $m\angle A$



$$a^2 = b^2 + c^2 - 2bc \cdot \cos A$$