

Tell whether the triangle with the given side lengths is acute, obtuse, or right. If a triangle can not be formed write not possible.

1. 17, 10, 14

c
↓

$$10^2 + 14^2 \quad 17^2$$

$$100 + 196 \quad 289$$

$$296 > 289$$

Acute

2. $\sqrt{3}, 5, 6$

$$(\sqrt{3})^2 + 5^2 \quad 6^2$$

$$3 + 25 \quad 36$$

$$28 < 36$$

obtuse

3. 10, 26, 24

$$10^2 + 24^2 \quad 26^2$$

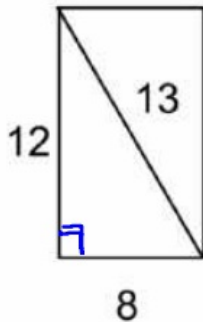
$$100 + 576 \quad 676$$

$$676 = 676$$

Right

Tell whether or not the parallelogram can be classified as a rectangle

5.



$$8^2 + 12^2 \stackrel{?}{=} 13^2$$

$$64 + 144 \stackrel{?}{=} 169$$

$$208 \neq 169$$

Not a Rectangle

Simplify each Radical

6. $\sqrt{112} = \sqrt{16} \cdot \sqrt{7}$
 $= 4\sqrt{7}$

7. $\sqrt{126} = \sqrt{9} \cdot \sqrt{14}$
 $= 3\sqrt{14}$

8. $\sqrt{325} = \sqrt{25} \cdot \sqrt{13}$
 $= 5\sqrt{13}$

Rationalize each denominator. (Make sure you reduce your fraction when possible)

$$\sqrt{18} = \sqrt{9 \cdot 2} = 3\sqrt{2}$$

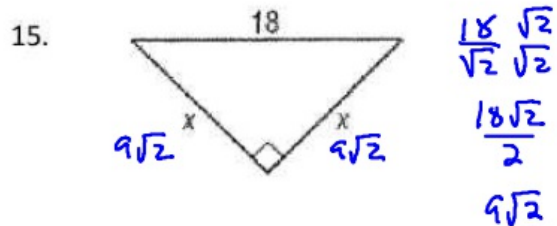
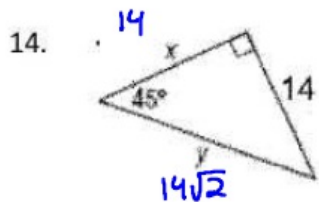
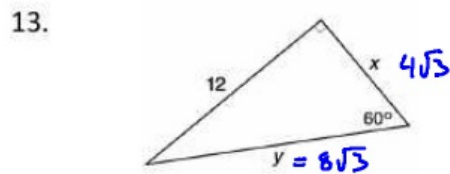
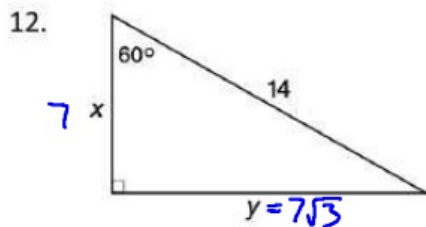
$$9. \frac{5}{\sqrt{7}} \frac{\sqrt{7}}{\sqrt{7}} = \frac{5\sqrt{7}}{7}$$

$$10. \frac{4}{\sqrt{6}} \frac{\sqrt{6}}{\sqrt{6}} = \frac{4\sqrt{6}}{6} = \frac{2\sqrt{6}}{3}$$

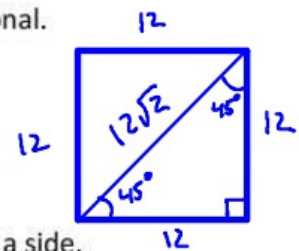
$$11. \frac{3}{\sqrt{18}} \frac{\sqrt{18}}{\sqrt{18}} = \frac{3\sqrt{18}}{18} = \frac{\sqrt{18}}{6} = \frac{3\sqrt{2}}{6} = \frac{\sqrt{2}}{2}$$

$$\frac{12}{\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$$

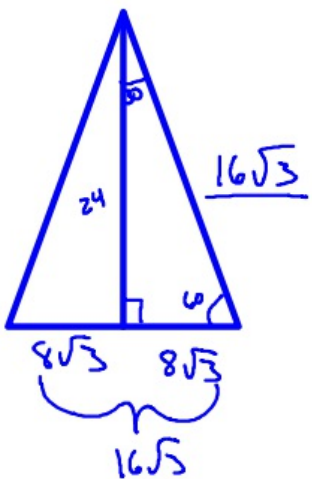
Find the value of x and y.



16. The perimeter of a square is 48 cm. Find the length of the diagonal.

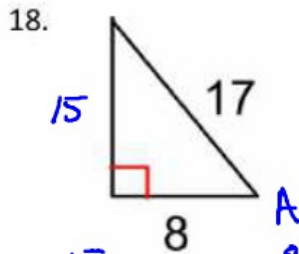


17. The altitude of an equilateral triangle is 24 in. Find the length of a side.

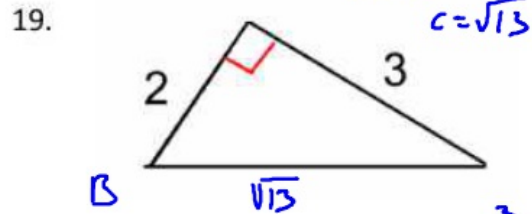


$$\frac{24}{\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{24\sqrt{3}}{3}$$

Find the sine, cosine, and tangent for the given angle.



$$\sin A = \frac{15}{17} \quad \cos A = \frac{8}{17} \quad \tan A = \frac{15}{8}$$



$$2^2 + 3^2 = c^2$$

$$4 + 9 = c^2$$

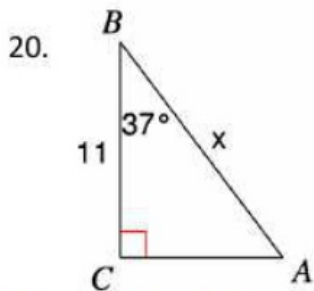
$$c = \sqrt{13}$$

$$\sin B = \frac{3}{\sqrt{13}} = \frac{3\sqrt{13}}{13}$$

$$\cos B = \frac{2}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$$

$$\tan B = \frac{3}{2}$$

Find the side indicated by the variable. Round to the nearest tenth.

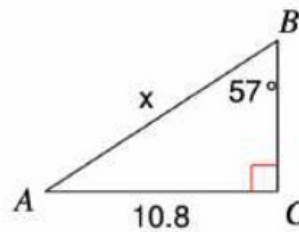


$$x(\cos 37^\circ) = \left(\frac{11}{x}\right)x$$

$$x \cos 37 = 11$$

$$x = \frac{11}{\cos 37} = 13.8$$

21.

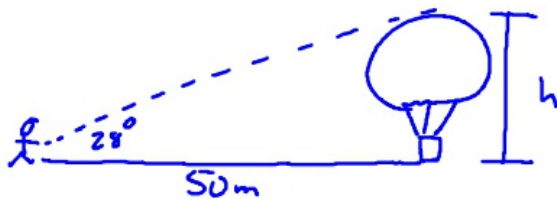


$$x(\sin 57^\circ) = \left(\frac{10.8}{x}\right)x$$

$$x \sin 57^\circ = 10.8$$

$$x = \frac{10.8}{\sin 57} = 12.9$$

22. You are standing 50 meters from a hot air balloon that is preparing to take off. The angle of elevation to the top of the balloon is 28° . Find the height of the balloon.



$$\tan 28^\circ = \frac{h}{50}$$

$$h = 50 \tan 28^\circ$$

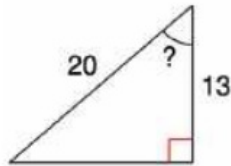
$$= 26.6 \text{ m}$$

→ Inverse sin/cos/tan

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

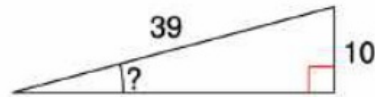
\sin^{-1}
 \cos^{-1}
 \tan^{-1}

23.



$$\cos ? = \frac{13}{20}$$
$$\cos^{-1}\left(\frac{13}{20}\right) = ?$$
$$49^\circ$$

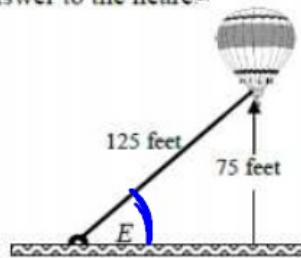
24.



$$\sin ? = \frac{10}{39}$$
$$\sin^{-1}\left(\frac{10}{39}\right) = ?$$
$$15^\circ$$

25.

A hot air balloon hovers 75 feet above the ground. The balloon is tethered to the ground with a rope that is 125 feet long. At what angle of elevation, E , is the rope attached to the ground? Round your answer to the nearest degree.



$$\sin E = \frac{75}{125}$$
$$\sin^{-1}\left(\frac{75}{125}\right) = m\angle E$$
$$m\angle E = 37^\circ$$