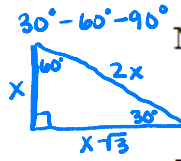
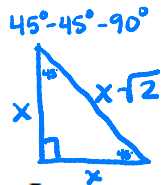
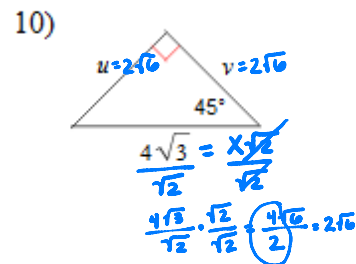
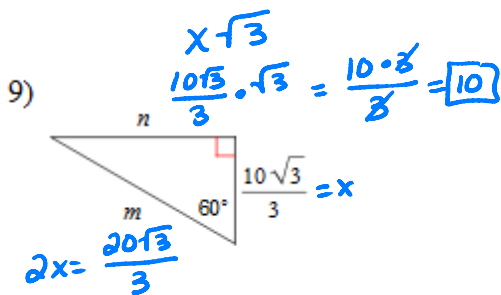
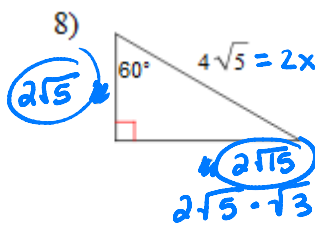
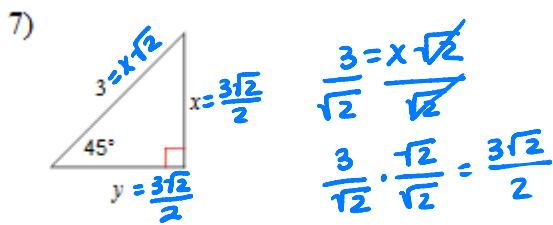
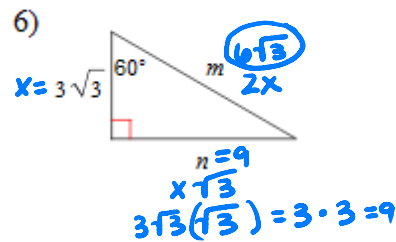
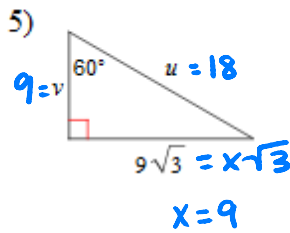
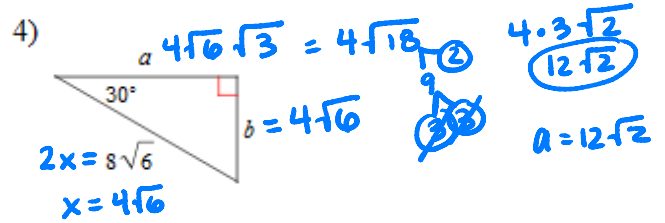
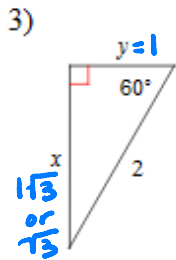
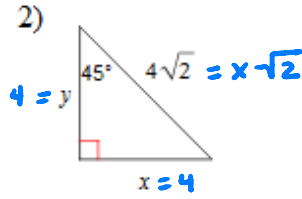
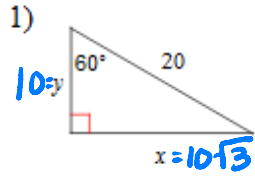


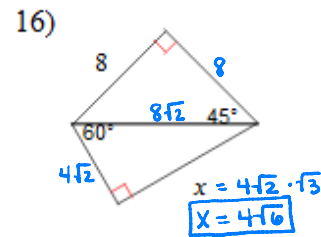
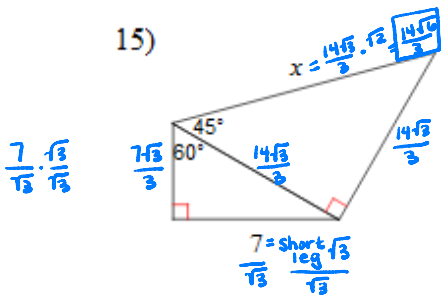
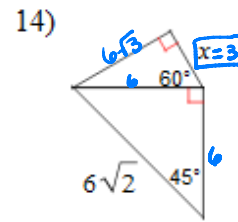
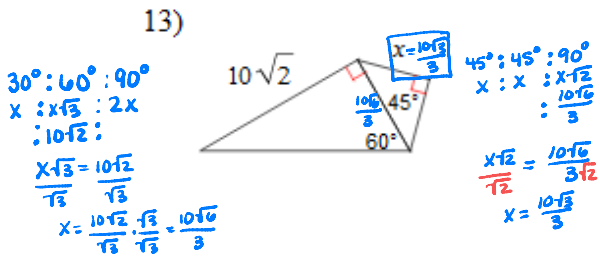
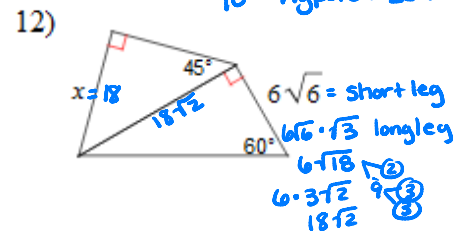
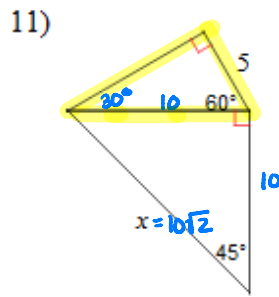
Trigonometry Review



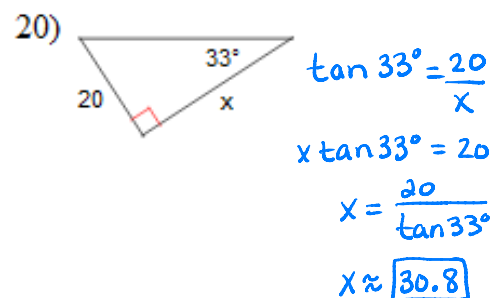
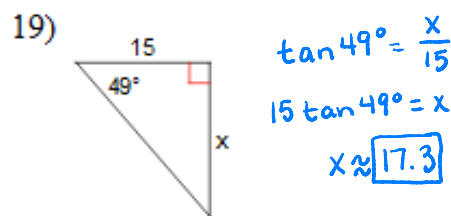
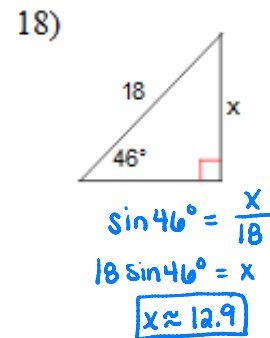
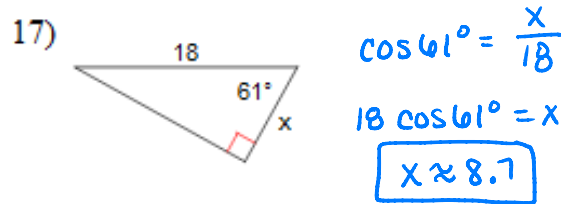
Find the missing side lengths. Leave your answers as radicals in simplest form.



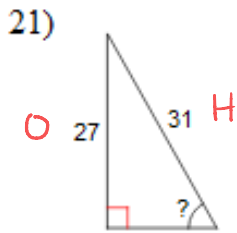
30° short leg = x
 60° long leg = $x\sqrt{3}$
 90° hypotenuse = $2x$



Find the missing side. Round to the nearest tenth.



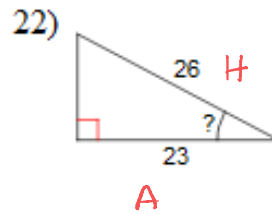
Find the measure of the indicated angle to the nearest degree.



$$\sin x = \frac{27}{31}$$

$$x = \sin^{-1}\left(\frac{27}{31}\right)$$

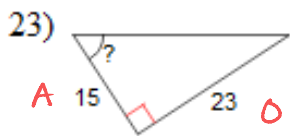
$$x \approx \boxed{60.6^\circ}$$



$$\cos x = \frac{23}{26}$$

$$x = \cos^{-1}\left(\frac{23}{26}\right)$$

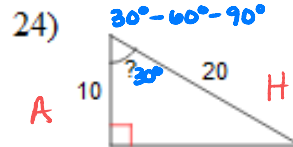
$$x \approx \boxed{27.8^\circ}$$



$$\tan x = \frac{23}{15}$$

$$x = \tan^{-1}\left(\frac{23}{15}\right)$$

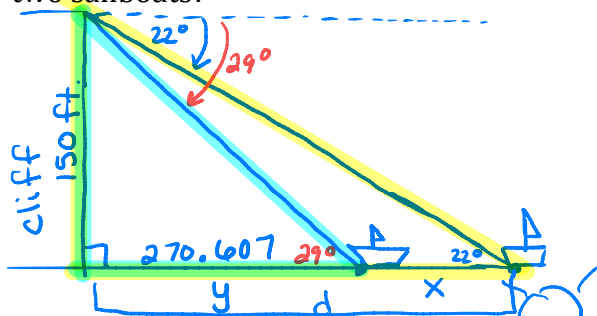
$$x = \boxed{56.9^\circ}$$



$$\cos x = \frac{10}{20}$$

$$x = \boxed{30^\circ}$$

25) Mrs. Smith is at the top of a 150-foot cliff and spots two sailboats. She notices that the angle of depression to one sailboat is 22° and to the other it is 29° . How far apart are the two sailboats?



$$\tan 29^\circ = \frac{150}{y}$$

$$y = \frac{150}{\tan 29^\circ}$$

$$y \approx 270.607$$

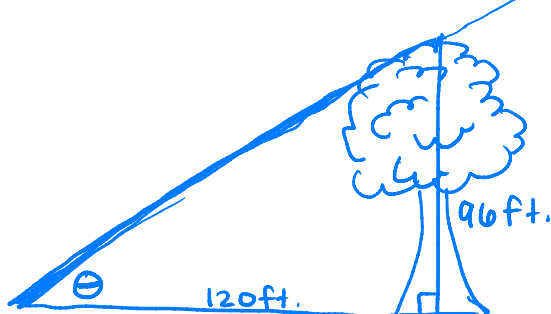
$$\tan 22^\circ = \frac{150}{d}$$

$$d = \frac{150}{\tan 22^\circ}$$

$$d \approx 371.263$$

$$x \approx \boxed{100.7 \text{ ft. apart}}$$

26) A 96 foot tree casts a shadow that is 120 feet long. What is the angle of elevation of the sun?

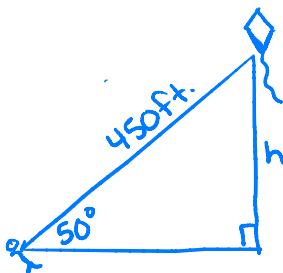


$$\tan \theta = \frac{96}{120}$$

$$\theta = \tan^{-1}\left(\frac{96}{120}\right)$$

$$\theta \approx \boxed{38.7^\circ}$$

27) A man is lying on the beach, flying a kite. He holds the end of the kite string at ground level and estimates the angle of elevation of the kite to be 50° . If the string is 450 feet long, how high is the kite above the ground?

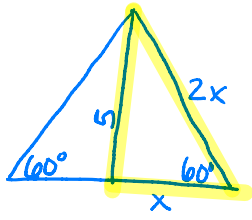


$$\sin 50^\circ = \frac{h}{450}$$

$$450 \sin 50^\circ = h$$

$$h \approx \boxed{344.7 \text{ ft.}}$$

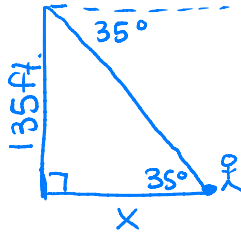
28) The altitude of an equilateral triangle is 5 cm. What is the length of a side of the triangle?



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

$$x = \frac{5}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{5\sqrt{3}}{3} \text{ cm}$$

29) An office worker on the fourteenth floor of a building sight a friend on the street. The angle of depression is 35° , and the fourteenth floor is 135 ft in the air. How far is the friend from the building?

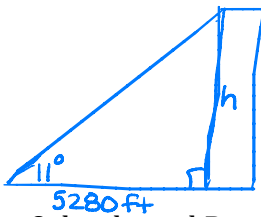


$$\tan 35^\circ = \frac{135}{x}$$

$$x \tan 35^\circ = 135$$

$$x = \frac{135}{\tan 35^\circ} \approx 192.8 \text{ ft.}$$

30) The angle of elevation to the top of the Empire State Building in New York is found to be 11° from the ground at a distance of 1 mile from the base of the building. Using this information, find the height of the Empire State Building in feet.

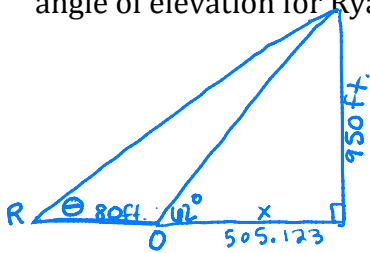


$$\tan 11^\circ = \frac{h}{5280}$$

$$5280 \tan 11^\circ = h$$

$$h \approx 1026.3 \text{ ft.}$$

31) Orlando and Ryan are taking measurements related to the installation of a TV tower. Orlando measures a 62° angle of elevation to the top of the 950 ft TV tower. Find the angle of elevation for Ryan, standing 80 ft farther from the tower than Orlando.



$$\tan 62^\circ = \frac{950}{x}$$

$$x = \frac{950}{\tan 62^\circ}$$

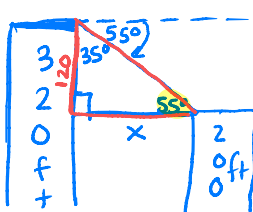
$$x \approx 505.12396$$

$$\tan \theta = \frac{950}{585.12396}$$

$$\theta = \tan^{-1}\left(\frac{950}{585.12396}\right)$$

$$\theta \approx 58.4^\circ$$

32) The angle of depression from the top of a 320 foot office building to the top of a 200 foot office building is 55° . How far apart are the two buildings?

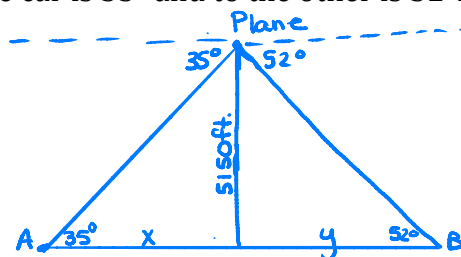


$$x \tan 55^\circ = \frac{120}{x}$$

$$x = \frac{120}{\tan 55^\circ}$$

$$x \approx 84.0 \text{ ft. apart}$$

33) An airplane is flying at an elevation of 5150 ft, directly above a straight highway. Two motorists are driving cars on the highway on opposite sides of the plane, and the angle of depression to one car is 35° and to the other is 52° . How far apart are the cars?



$$x \tan 35^\circ = \frac{5150}{x}$$

$$y \tan 52^\circ = \frac{5150}{y}$$

$$x = \frac{5150}{\tan 35^\circ}$$

$$y = \frac{5150}{\tan 52^\circ}$$

How far apart are the cars?

$$x + y \approx 11378.58 \text{ ft} \approx 2.2 \text{ miles}$$