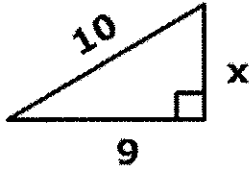


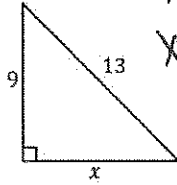
Geometry Unit 7 Review

1. Find x in each triangle. Leave your answer in simplest radical form where appropriate.

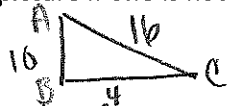
$$\begin{aligned} a^2 + x^2 &= 10^2 \\ 81 + x^2 &= 100 \\ x^2 &= 19 \\ x &= \sqrt{19} \end{aligned}$$



$$\begin{aligned} x^2 + 9^2 &= 13^2 \\ x^2 + 81 &= 169 \\ x^2 &= 88 \\ x &= 2\sqrt{22} \end{aligned}$$

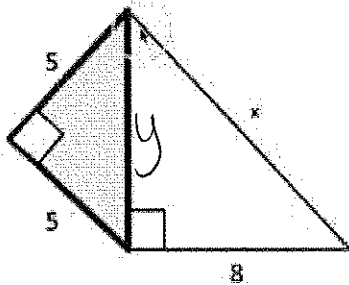


2. In right triangle ABC where B is the right angle, AB is 10, BC is 4 and AC is 16 find $\cos C$. (Hint: draw a picture if one is not given)



$$\cos C = \frac{4}{16} = \frac{1}{4}$$

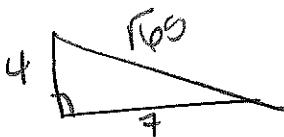
3. Find the value of x .



$$\begin{aligned} 5^2 + 5^2 &= y^2 \\ 25 + 25 &= y^2 \\ 50 &= y^2 \\ 5\sqrt{2} &= y \end{aligned}$$

$$\begin{aligned} (5\sqrt{2})^2 + 8^2 &= x^2 \\ 50 + 64 &= x^2 \\ 114 &= x^2 \\ \sqrt{114} &= x \end{aligned}$$

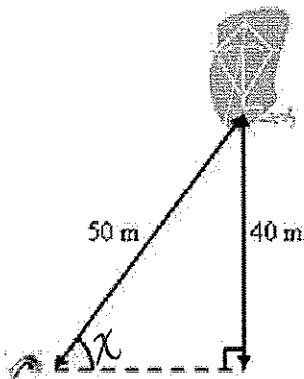
4. The tangent of an angle in a right triangle is $4/7$. What is the cosine of that same angle?



$$\begin{aligned} 4^2 + 7^2 &= h^2 \\ h &= \sqrt{65} \end{aligned}$$

$$\cos X = \frac{7}{\sqrt{65}} = \frac{7\sqrt{65}}{65}$$

5. Find the angle of elevation of the kite.



$$\sin X = \frac{40}{50}$$

$$\sin X = \frac{4}{5}$$

$$\begin{aligned} X &= \sin^{-1}\left(\frac{4}{5}\right) \\ &= 53.13^\circ \end{aligned}$$

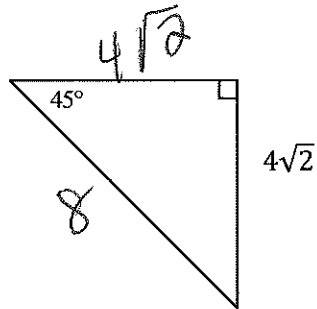
6. A triangle has side lengths of 12 cm, 27 cm, and 32 cm. Classify it as acute, obtuse, or right. Explain.

$$12^2 + 27^2 = 32^2$$

$$873 < 1024$$

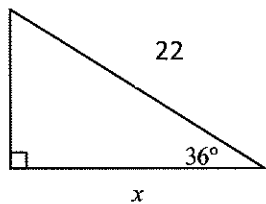
since $c^2 > a^2 + b^2$
the Δ is obtuse

7. Find the length of the missing sides



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

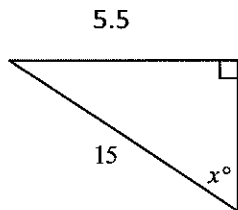
8. Solve for x. Round to the nearest thousandth.



$$\cos 36 = \frac{x}{22}$$

$$x = 17.798$$

- 9.

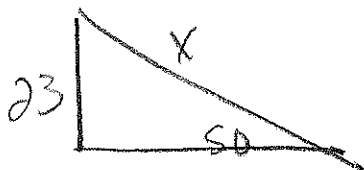


$$\sin x = \frac{5.5}{15}$$

$$x = \sin^{-1}\left(\frac{5.5}{15}\right)$$

$$x = 21.510^\circ$$

10. A snowball rolls down a hill that is 23 feet tall. If the angle of the hill to the ground is 50° , how far did the snowball roll?



$$\sin 50 = \frac{23}{x}$$

$$x = 30.024 \text{ feet}$$

16. Find the value of w , then x . Round to the nearest tenth.

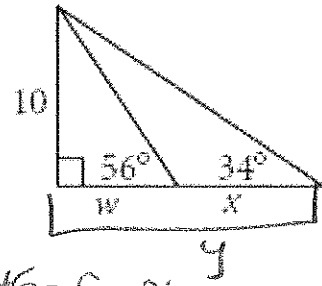
$$\tan 56 = \frac{10}{w}$$

$$w = \frac{10}{\tan 56} = 6.745$$

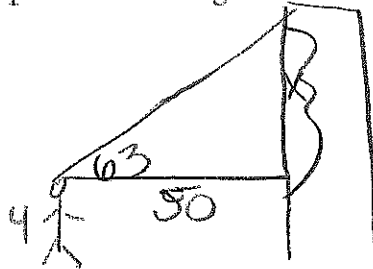
$$\tan 34 = \frac{10}{y}$$

$$y = 14.826$$

$$x = y - w = 14.826 - 6.745 = 8.081$$



17. A surveyor measures the top of a building 50 ft away from him. His angle-measuring device is 4 ft above ground. The angle of elevation to the top of the building is 63° . How tall is the building?



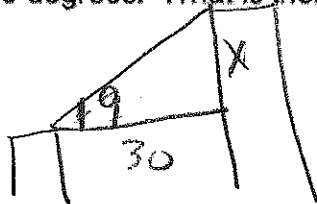
$$\tan 63 = \frac{x}{50}$$

$$x = 98.131$$

$$\frac{14}{102.131 \text{ feet}}$$

18. Two buildings are 30 feet apart. The angle of elevation from the top of one to the top of the other is 19° . What is their difference in height?

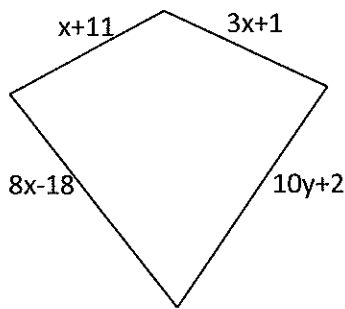
18.



$$\tan 19 = \frac{x}{30}$$

$$x = 10.330 \text{ feet}$$

19. Find the values of x and y for the kite below



$$x+11 = 3x+1$$

$$10 = 2x$$

$$5 = x$$

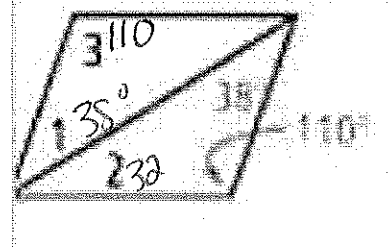
$$8(5) - 18 = 10y + 2$$

$$22 = 10y + 2$$

$$20 = 10y$$

$$2 = y$$

20. Find the measure of each numbered angle for the parallelogram.



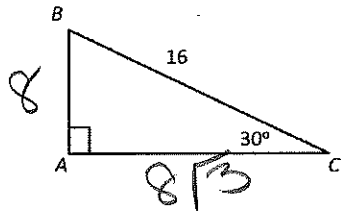
21. Identify the hypothesis and conclusion of the conditional below.

If it floods, then school will be canceled.

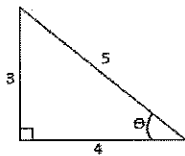
hyp: it floods

Conclusion: school will be canceled

11. Find AC and BA.



12. Write the ratios for $\sin \theta$, $\cos \theta$, and $\tan \theta$.



$$\sin \theta = \frac{3}{5}$$

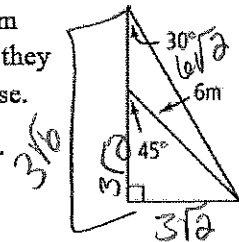
$$\cos \theta = \frac{4}{5}$$

$$\tan \theta = \frac{3}{4}$$

13.

House Repair After heavy winds damaged a house, workers placed a 6-m brace against its side at a 45° angle. Then, at the same spot on the ground, they placed a second, longer brace to make a 30° angle with the side of the house.

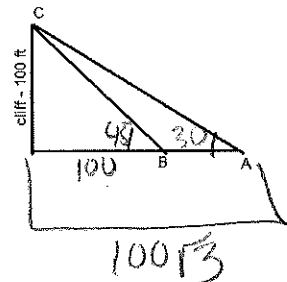
- How long is the longer brace? Round to the nearest tenth of a meter.
- About how much higher does the longer brace reach than the shorter brace?



a. $\frac{6}{\frac{1}{\sqrt{2}}} = \frac{6\sqrt{2}}{1} = 6\sqrt{2}$ so $3\sqrt{2} \cdot 2 = 6\sqrt{2} \text{ m}$

b. $3\sqrt{2} \cdot \sqrt{3} = 3\sqrt{6}$ so $3\sqrt{6} - 3\sqrt{2}$

14. Albert is standing at point A. He takes a sighting to the top of a cliff, (point C). The angle of elevation is 30 degrees. Becky is standing at point B and takes a sighting to the top of the same cliff, (point C). The angle of elevation is 45 degrees. If the cliff is 100 feet high, find the exact distance between Albert and Becky.



$$100\sqrt{3} - 100$$

15. Refer to the diagram. Find the exact values of p , q , r , s , t , u , v , and w .

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

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

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

$$s = 2 \cdot 2 = 4$$

$$t = 4$$

$$u = 4\sqrt{2}$$

$$v = 2\sqrt{2}$$

$$w = 2\sqrt{2} \cdot \sqrt{3} = 2\sqrt{6}$$

