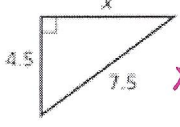
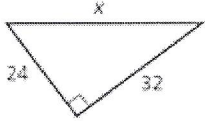


1. Find the value of x. Tell if the sides form a Pythagorean triple.

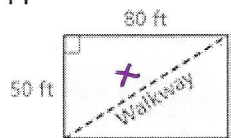
a)   $x^2 + 4.5^2 = 7.5^2$   
 $x^2 + 20.25 = 56.25$   
 $x^2 = 36$   
 $x = 6$

No, b/c 4.5 and 7.5 are not whole #s.

b)   $24^2 + 32^2 = x^2$   
 $1600 = x^2$   
 $40 = x$

Yes, b/c all #s are whole #s.

2. A landscaper wants to place a stone walkway from one corner of the rectangular lawn to the opposite corner. What will be the length of the walkway? Round to the nearest INCH.



$$50^2 + 80^2 = x^2$$

$$8900 = x^2$$

$$94\text{ft } 4\text{in.} = x$$

we are in feet, so that means one decimal place.

3. Tell if the measures can be the side lengths of a triangle. If so, classify the triangle as acute, obtuse, or right.

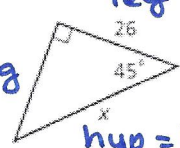
a) 9, 12, 16 → yes, can be a  $\Delta$   
 $9^2 + 12^2 = 16^2$   
 $225 = 256 \rightarrow c^2 > 225, \text{ obtuse}$

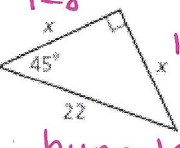
c) 1.5, 3.6, 3.9 → yes can be a  $\Delta$   
 $1.5^2 + 3.6^2 = 3.9^2$   
 $15.21 = 15.21 \rightarrow c^2 = 15.21, \text{ right}$

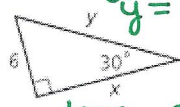
b) 11, 14, 27  
 cannot be a  $\Delta$

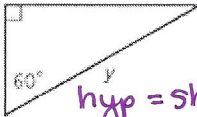
d) 2, 3.7, 4.1  
 cannot be a  $\Delta$

4. Find the values of the variables. Give your answers in simplest radical form. NO DECIMALS!

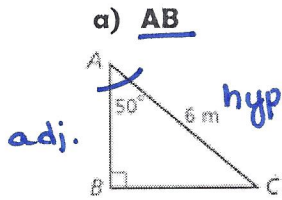
a)   $\text{hyp} = \text{leg}\sqrt{2}$   
 $x = 26\sqrt{2}$

c)   $\text{hyp} = \text{leg}\sqrt{2}$   
 $22 = x\sqrt{2}$   
 $11\sqrt{2} = x$

b)   $\text{hyp} = \text{short}(2)$   
 $y = 6(2) = 12$   
 $\text{long} = \text{short}\sqrt{3}$   
 $x = 6\sqrt{3}$

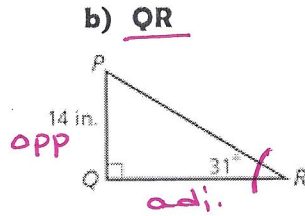
d)   $\text{long} = \text{short}\sqrt{3} \rightarrow \frac{14}{\sqrt{3}} = x\frac{\sqrt{3}}{\sqrt{3}}$   
 $\text{Short} \frac{14\sqrt{3}}{3}$   
 $\text{hyp} = \text{short}(2)$   
 $y = \frac{14\sqrt{3}}{3}(2)$   
 $y = \frac{28\sqrt{3}}{3}$   
 $\frac{14\sqrt{3}}{3} = x$

5. Find each length. Round to the nearest HUNDREDTH.



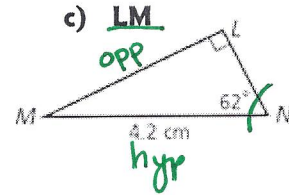
$$6 = \cos 50 = \frac{AB}{6} \cdot 6$$

$$\boxed{3.86m = AB}$$



$$\tan 31 = \frac{14}{QR}$$

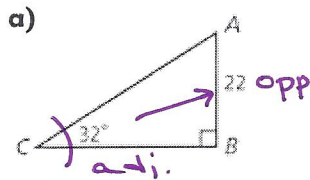
$$QR = \frac{14}{\tan 31} = \boxed{23.30 \text{ in.}}$$



$$4.2 = \sin 62 = \frac{LM}{4.2} \cdot 4.2$$

$$\boxed{3.71 \text{ cm} = LM}$$

6. Solve the right triangles. Round side lengths to the nearest HUNDREDTH and angles measures to the nearest DEGREE.



$$\angle A = 180 - 90 - 32$$

$$\boxed{\angle A = 58^\circ}$$

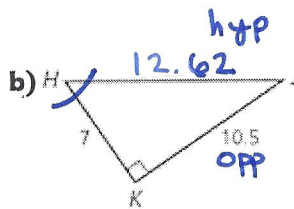
$$\tan 32 = \frac{22}{CB}$$

$$CB = \frac{22}{\tan 32} = \boxed{35.21}$$

$$22^2 + 35.21^2 = AC^2$$

$$1723.7441 = AC^2$$

$$\boxed{41.52 = AC}$$



$$7^2 + 10.5^2 = HJ^2$$

$$159.25 = HJ^2$$

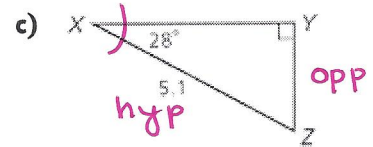
$$\boxed{12.62 = HJ}$$

$$\sin^{-1} \sin H = \frac{10.5}{12.62}$$

$$\boxed{\angle H = 56^\circ}$$

$$\angle J = 180 - 90 - 56$$

$$\boxed{\angle J = 34^\circ}$$



$$\angle Z = 180 - 90 - 28$$

$$\boxed{\angle Z = 62^\circ}$$

$$\sin 28 = \frac{YZ}{5.1} \cdot 5.1$$

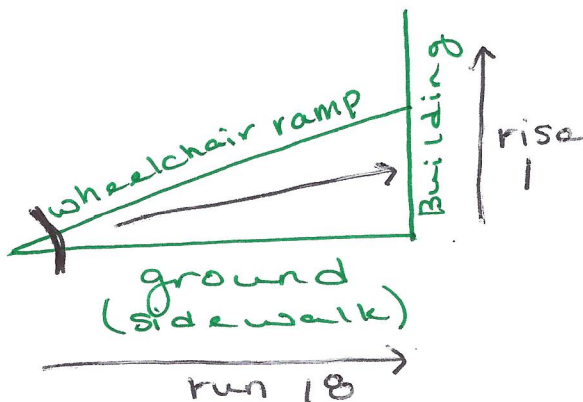
$$\boxed{2.39 = YZ}$$

$$XY^2 + 2.39^2 = 5.1^2$$

$$XY^2 = 20.2979$$

$$\boxed{XY = 4.51}$$

7. The wheelchair ramp at the entrance of the Mission Bay Library has a slope of  $\frac{1}{18}$ . What angle does the ramp make with the sidewalk? Round to the nearest DEGREE.



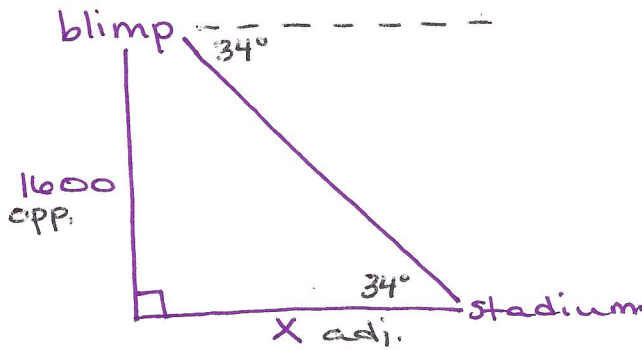
$$\text{Slope} = \frac{\text{rise}}{\text{run}}$$

$$\tan^{-1} \tan X = \tan^{-1} \frac{1}{18}$$

$$\angle X = \tan^{-1} \left( \frac{1}{18} \right)$$

$$\boxed{\angle X = 3^\circ}$$

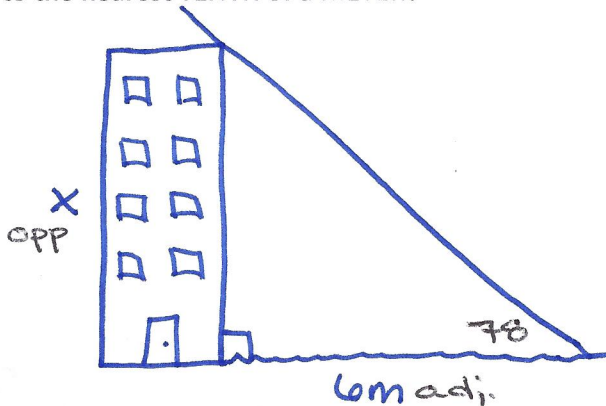
8. An observer in a blimp sights a football stadium at an angle of depression of  $34^\circ$ . The blimp's altitude is 1600ft. What is the horizontal distance from the blimp to the stadium? Found to the nearest FOOT.



$$\tan 34 = \frac{1600}{x}$$

$$x = \frac{1600}{\tan 34} = \boxed{2372 \text{ ft.}}$$

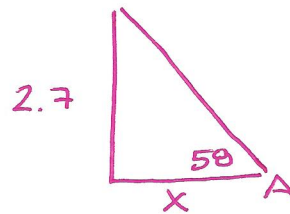
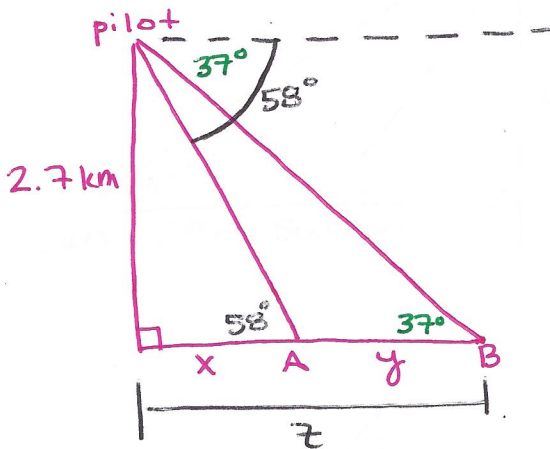
9. When the angle of elevation of the sun is  $78^\circ$ , a building casts a shadow that is 6m long. What is the height of the building to the nearest TENTH of a METER?



$$6 \cdot \tan 78 = \frac{x}{6} \cdot 6$$

$$\boxed{28.2 \text{ m} = x}$$

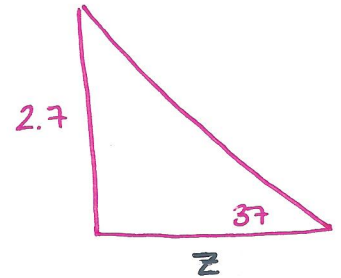
10. A pilot at an altitude of 2.7km sights two control towers directly in front of her. The angle of depression to the base of one tower is  $37^\circ$ . The angle of depression to the base of the other tower is  $58^\circ$ . What is the distance between the two towers? Round to the nearest tenth of a kilometer.



$$\tan 58 = \frac{2.7}{x}$$

$$x = \frac{2.7}{\tan 58}$$

$$x = 1.687$$



$$\tan 37 = \frac{2.7}{z}$$

$$z = \frac{2.7}{\tan 37}$$

$$z = 3.583$$

$$y = z - x$$

$$y = 3.583 - 1.687$$

$$\boxed{y = 1.9 \text{ km}}$$