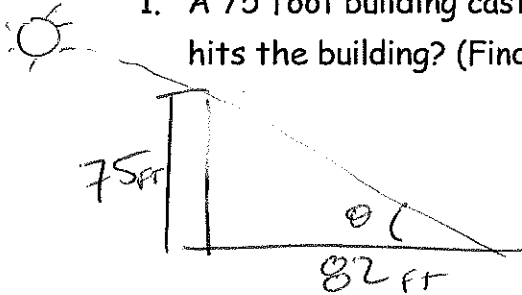


Solve each problem. Draw a picture and label the information. Show your work!

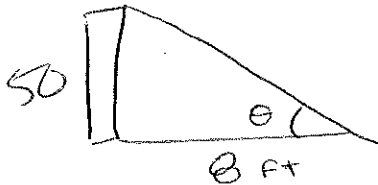
1. A 75 foot building casts an 82 foot shadow. What is the angle that the sun hits the building? (Find angle of Elevation)



$$\tan^{-1} \theta = \frac{75}{82}$$

$$\theta = 42.45^\circ$$

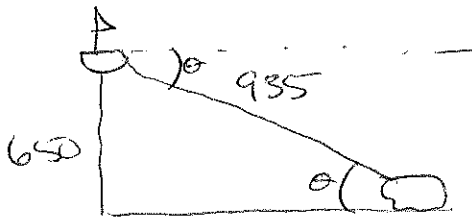
2. A tower, 50 feet high, is secured with a guy wire anchored 8 feet from the base of the tower. What angle will the guy wire make with the ground?



$$\tan^{-1} \theta = \frac{50}{8}$$

$$\theta = 80.91^\circ$$

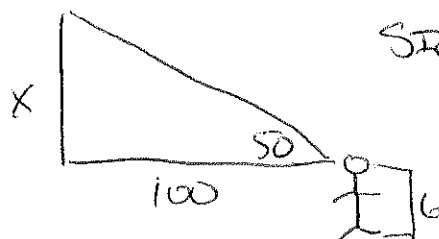
3. A boat is sailing and spots a shipwreck 650 feet below the water. A diver jumps from the boat and swims 935 feet to reach the wreck. What is the angle of depression from the boat to the shipwreck?



$$\sin^{-1} \theta = \frac{650}{935}$$

$$\theta = 44.04^\circ$$

4. Standing 100 feet from the base of a building, Sam measures the angle to the top of the building from his eye height to be 50° . If his eyes are 6 feet above the ground, how tall is the building?

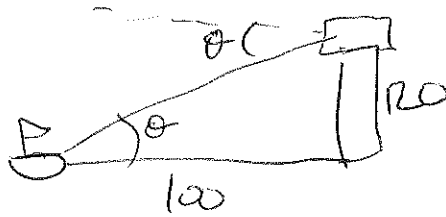


$$\sin 50 = \frac{x}{100}$$

$$x = 76.60 + 6 \text{ ft.}$$

$$\text{TOTAL BLDG HEIGHT} = 82.6 \text{ FT}$$

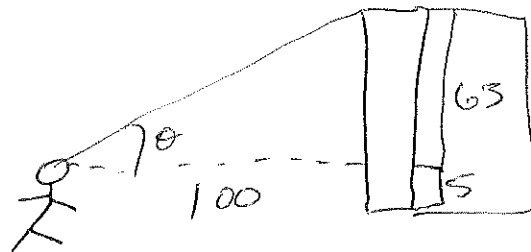
5. The distance from a boat to a lighthouse is 100 feet and the lighthouse is 120 feet tall. What is the angle of depression from the top of the Lighthouse to the boat?



$$\tan^{-1} \theta = \frac{120}{100}$$

$$\theta = 50.19^\circ$$

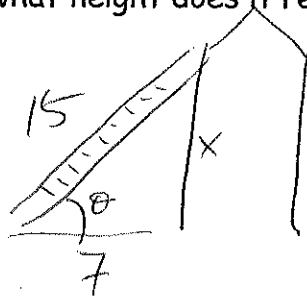
6. You are standing 100 feet from an arch that is 68 feet tall. At what angle do you have to look up to see the top of the arch? (Assume your line of sight is at 5 feet tall.)



$$\tan^{-1} = \frac{63}{100}$$

$$\theta = 32.21^\circ$$

7. A ladder is leaning against the side of a house so that the distance on the ground between the base of the ladder and the house is 7 feet. If the height of the ladder is 15 feet, then what is the angle at which the ladder is leaning? At what height does it reach the house?



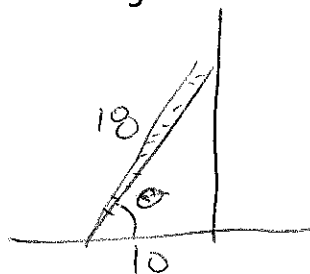
$$\cos^{-1} \theta = \frac{7}{15} = 62.18^\circ$$

$$\theta =$$

$$7^2 + x^2 = 15^2$$

$$x = \sqrt{176} = 4\sqrt{11} \text{ or } 13.27 \text{ ft}$$

8. An 18 foot ladder rests against a wall. The base of the ladder is 10 feet from the wall. What angle does the ladder make with the ground?



$$\cos^{-1} \theta = \frac{10}{18}$$

$$\theta = 56.25^\circ$$