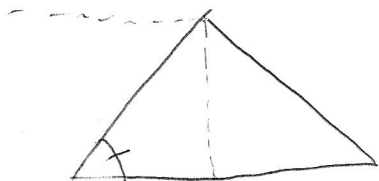
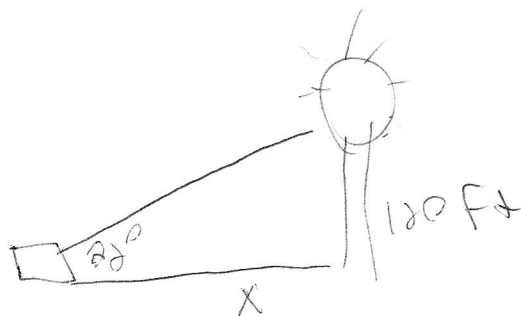


16. A man climbs 213 feet along the side of a pyramid and finds that the angle of depression to his starting point is  $52.6^\circ$ . How high off the ground is he?



17. The angle of elevation of the top of a lighthouse from a boat is  $22^\circ$ . If the lighthouse is 120 feet tall, how far from the lighthouse is the boat?



$$\tan 22 = \frac{120}{X}$$

$$297 \text{ ft}$$

18. A train travels 5,000 meters along a track whose angle of elevation has a measurement of  $3^\circ$ . How much did it rise during this distance?



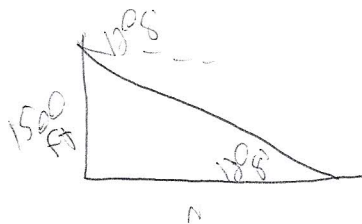
19. An air force pilot must descend to an aircraft carrier from an altitude of 1,500 feet at a  $12^\circ 8'$  angle of descent (depression). How far must he travel (horizontally)?



$$\sin 3 = \frac{1500}{5000}$$

$$201.7 \text{ m}$$

20. How long should an escalator be if it is to make an angle of  $33^\circ$  with the floor and carry people a vertical distance of 21 feet between floors?



$$\tan 12^\circ 8' = \frac{1500}{x}$$

$$6977 \text{ ft}$$

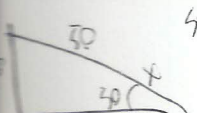
21. Find the angle of elevation of the sun if a 6 foot person casts a 3 foot 6 inch shadow.



$$\sin 33^\circ = \frac{21}{x}$$

$$38.568 \text{ ft}$$

22. An airplane flying at an altitude of 5000 feet is 10 miles (horizontally) from an airstrip. What angle of descent (depression) should the plane maintain to reach the front edge of the airstrip? (Hint: There are 5,280 feet in a mile.)



$$\sin 50 = \frac{1000}{x}$$

$$x = 1546.49$$

$$\tan x = \frac{65}{33}$$

$$\tan^{-1}\left(\frac{65}{33}\right) = x$$

$$x = 64.113$$

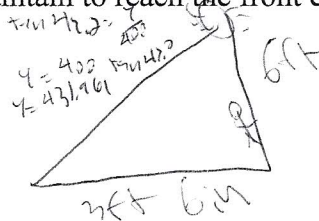
$$64^\circ 06' 47''$$

$$\tan 45 = \frac{x}{400}$$

$$x = 400 \cdot \tan 45$$

$$x = 400$$

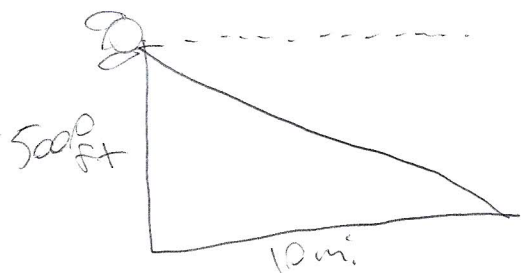
$$x - y = x$$



$$\tan \theta = \frac{6}{3.5}$$

$$59^\circ 44' 39''$$

23. An airplane flying 8,000 feet above level ground passes directly over an observation station. One minute later, the angle of elevation of the plane from the station is  $48^\circ$ . How far has the plane traveled?



$$\begin{aligned} \tan \theta &= \frac{7000}{72500} \\ &= 5^\circ 24' 35'' \end{aligned}$$