

# #8 Classwork / Homework

① Jim is flying a plane from Midville to Vista, a distance of 500 km. Because of a thunderstorm, he had to fly  $17.5^\circ$  off course for 300 km. How far is he now from Vista, and through what angle should he turn to fly directly there?

② Two markers are located at points  $A$  and  $B$  on opposite sides of a lake. To find the distance between the markers, a surveyor laid off a base line,  $\overline{AC}$ , 25 m long and found that  $\angle BAC = 85^\circ$  and  $\angle BCA = 66^\circ$ . Find  $AB$ .

③ Two cables of length 300 m and 270 m extend from the top of a television antenna to the level ground on opposite sides of the antenna. The longer cable makes an angle of  $48^\circ$  with the ground. Find the acute angle that the shorter cable makes with the ground and the distance between the cables along the ground.

④ From a hang glider approaching a 5000 ft clearing the angles of depression of the opposite ends of the field measure  $24^\circ$  and  $30^\circ$ . How far is the hang glider from the nearer end of the field?

⑤ Two planes leave an airport at the same time, one flying at 300 km/h and the other at 420 km/h. The angle between their flight paths is  $75^\circ$ . After three hours, how far apart are they?

A plane leaves Austin on a bearing of  $286^\circ$  and travels 175 miles, to avoid a storm. The plane's new bearing  $34^\circ$  and travels 251 miles to its destination. The pilot is planning a return trip directly to Austin. What is the direct distance back to Austin?

⑦ Two wires bracing a transmission tower are attached to the same location on the ground. One wire is attached to the tower 10 m above the other. The longer wire is 30 m long and the angle of inclination of the shorter wire is  $53^\circ$ . To the nearest tenth of a degree, what angle does the longer wire make with the ground?

⑧ From the top of an office building 72 ft high, the angle of elevation to the top of an apartment building across the street is  $31^\circ$ . From the base of the office building, the angle of elevation is  $46^\circ$ . How tall is the apartment building?

⑨ Bobby leaves for a hike S  $55^\circ$  W for 3.1 miles, then turns N  $20^\circ$  for 4.3 miles. Find his distance directly home.

⑩ A 200-foot vertical tower is to be erected on the side of a hill. The angle of elevation of the sun is  $33^\circ$ , and the shadow of the tower down the hill is ~~200~~ 407 feet. Find the angle the hill makes with the horizontal.