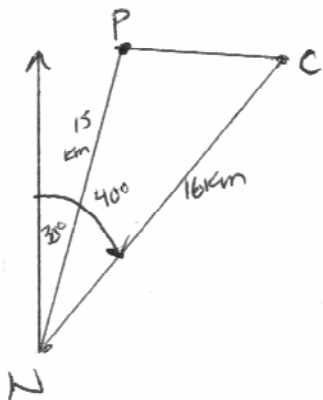


5. The radar screen at an air traffic control tower shows a Piper Cherokee 15 km from the tower in a direction 30° east of north, and a Cessna Skyhawk 16 km from the tower in a direction 40° east of north, at their closest approach to each other. If the two aircraft are less than 2 km apart, the controller must file a report.

(a) Sketch a diagram showing the tower and the two aircraft. Label the given distances and angles.



(b) From the tower, what is the angle separating the aircraft?

$$\angle PNC = 40^\circ - 30^\circ = 10^\circ$$

(c) Is it necessary to consider the ambiguous case? Justify your answer.

No, because in this triangle we are given two sides and the contained angle. This is a cosine law problem.

(d) Will the controller need to file a report? Explain?

$$h^2 = 15^2 + 16^2 - 2(15)(16) \cos 10^\circ$$

$$h^2 = 225 + 256 - 480 \cos 10^\circ$$

$$h = 2.9$$

° °
 ° The aircraft are not less than 2 km apart, the controller doesn't need to file a ~~para~~ report.