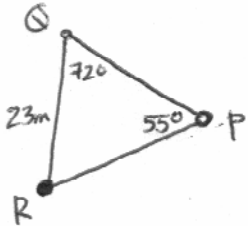


## Solving Problems in Two Dimensions: The Ambiguous Case

### Example Problems:

1. Patina, Quentin, and Romeo are standing on a soccer field. Quentin is 23 m from Romeo. From Quentin's point of view, the others are separated by an angle of  $72^\circ$ . From Patina's point of view, the others are separated by an angle of  $55^\circ$ .

- (a) Sketch a diagram for this situation. Why is the triangle formed an oblique triangle?



This triangle is an oblique triangle because it does not contain a  $90^\circ$  angle. All 3 angle measurements are acute.

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

It is not necessary to consider the ambiguous case because we are not presented with a triangle given two sides and a non-contained angle.

- (c) Determine the distance from Patina to Romeo, to the nearest tenth of a metre. IF there are two answers, determine both.

$$\frac{23}{\sin 55^\circ} = \frac{x}{\sin 72^\circ}$$

$$x = 26.7 \text{ m}$$

$$\frac{x \sin 55^\circ}{\sin 55^\circ} = \frac{23 \sin 72^\circ}{\sin 55^\circ}$$

$\therefore$  The distance from Patina to Romeo is 26.7 m.

2. A lighthouse at point L is 10 km from a yacht at point Y and 8 km from a sailboat at point B. From the yacht, the lighthouse and the sailboat are separated by an angle of  $48^\circ$ .

- (a) Is it necessary to consider the ambiguous case? Explain

Yes, because we are given two sides and the non-contained angle

- (b) Sketch possible diagrams for this situation.

diagram # 1 :

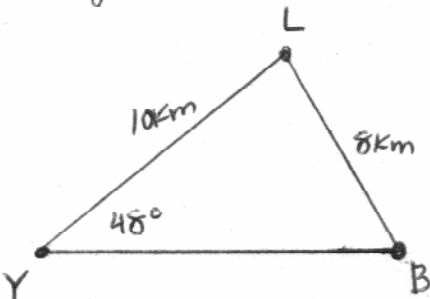


diagram # 2 :

