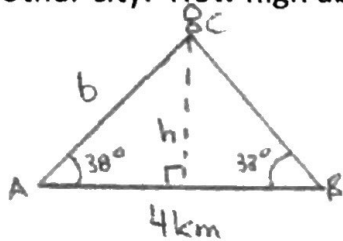


Section 7.4 – Practice Questions

1. A hot air balloon is flying directly between two cities that are 4km apart. The balloonist finds that the angle of depression to one city is 38° and 33° to the other city. How high above the ground is the balloon?



$$\angle C = 180 - 38 - 33$$

$$\angle C = 109^\circ$$

$$\frac{b}{\sin 33} = \frac{4}{\sin 109}$$

$$b = 2.3$$

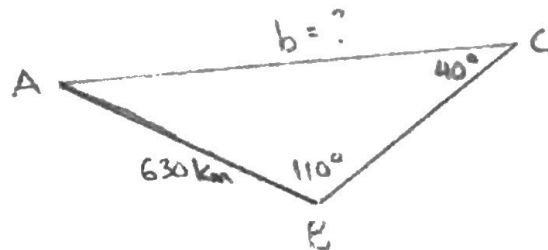
$$\sin A = \frac{h}{b}$$

$$h = b \sin A$$

$$h = 2.3 \sin 38$$

$$h = 1.4 \text{ km}$$

2. Two planes leave airport A at the same time in different directions. One plane lands at airport B, 630km from airport A. The other plane lands at airport C some time later. If the $\angle ABC = 110^\circ$ and $\angle ACB = 40^\circ$, how far did the second plane fly.

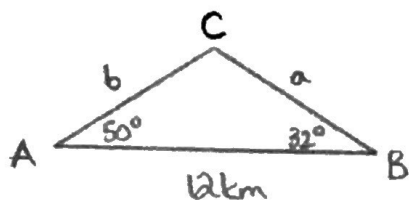


$$\frac{b}{\sin 110} = \frac{630}{\sin 40}$$

$$b = 921$$

2nd plane flew
921 km

3. A fire at C is spotted from two fire lookout stations, A and B , which are 12km apart. If station A reports $\angle BAC$ is 50° , and station B reports $\angle ABC$ is 32° , how far is the fire from station A ?



$$\angle C = 180 - 50 - 32$$

$$\angle C = 98^\circ$$

$$\frac{b}{\sin 32} = \frac{12}{\sin 98}$$

$$b = 6.4$$

• The fire is 6.4 km away from station A

4. In our solar system, the distance from the Sun (S) to planets A and B are 85 and 61 million miles respectively. When $\angle A = 20^\circ$, how far is it from planet A to planet B ?

$$\frac{\sin B}{85} = \frac{\sin 20}{61}$$

$$\angle A = 20$$

$$\angle B = 28.5^\circ \text{ or } 151.5^\circ$$

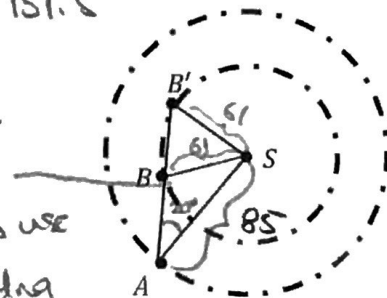
$$\angle S = 180 - 151.5 - 20$$

$$\angle S = 8.5^\circ$$

$$\frac{\overline{AB}}{\sin 8.5} = \frac{61}{\sin 20}$$

$$\overline{AB} = 26.2$$

- This is not acute
- So we need to use the corresponding degree



$$180 - 28.5 = 151.5$$

Planet A and B are
26.2 million m. long apart