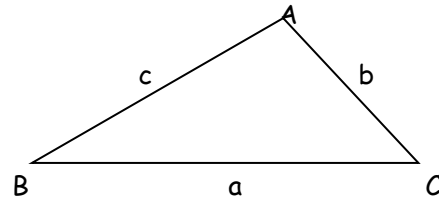


5.5 MAKE CONNECTIONS WITH THE SINE LAW AND COSINE LAW

SINE LAW: $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

Use when you are given:

- 2 angles and any side
- Two sides and a non- contained angle



COSINE LAW: $c^2 = a^2 + b^2 - 2ab \cos C$

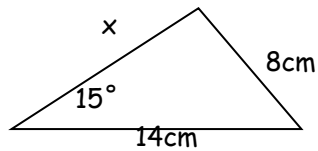
Use when you are given:

- All three side lengths
- Two sides and the contained angle

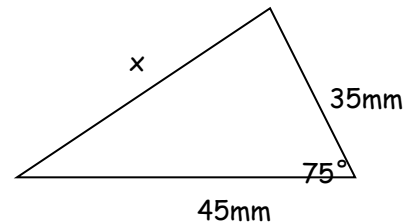
Examples:

1. Determine whether you should use the sine law or the cosine law to solve for the indicated side or angle measure. Then solve the triangle.

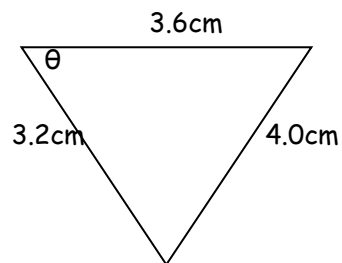
a)



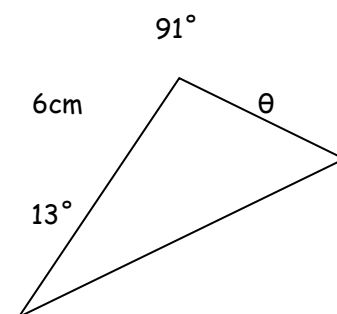
b)



c)



d)



2. An architect designs a house that is 12m wide. The rafters holding up the roof are equal in length and meet at an angle of 70° . The rafters extend 0.3m beyond the supporting wall. How long are the rafters?
3. A chandelier is suspended from the ceiling by two chains. One chain is 46cm long and forms an angle of 60° with the ceiling. The other chain is 65cm long. What angle does the longer chain make with the ceiling, to the nearest degree?
4. Two tracking stations, 20km apart, measure the angles of elevation of a rocket that was launched with a weather satellite. From station A, the angle of elevation is 41° , from station B, the angle of elevation is 75° . What is the altitude of the rocket, to the nearest tenth of a kilometer? (The stations are on the same side of the rocket launch.)
5. Two roads diverge at a 46° angle. Two bike riders take separate routes at 15km/h and 20km/h. How far apart are they after $1\frac{1}{2}$ hours, to the nearest kilometer?