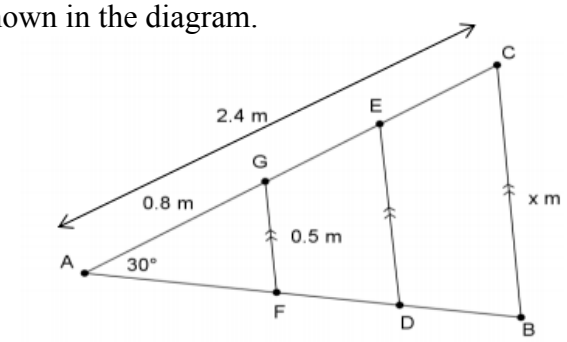
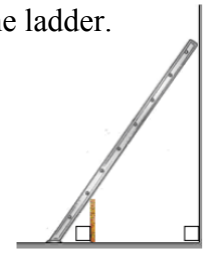
2D Summative/ Exam Review

1. Roof trusses are being constructed as shown in the diagram. Determine the value of x.



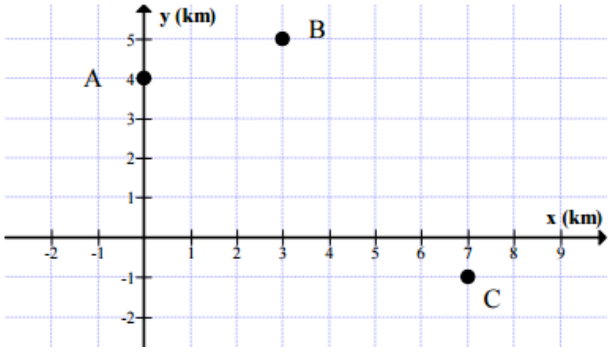
2. Define and sketch an example of:
   a) angle of elevation
   b) angle of depression

3. A ladder must reach 6 metres up a wall and pass over a fence. The fence is 1.5 metres in height and 3 metres from the wall. Determine the length of the ladder.

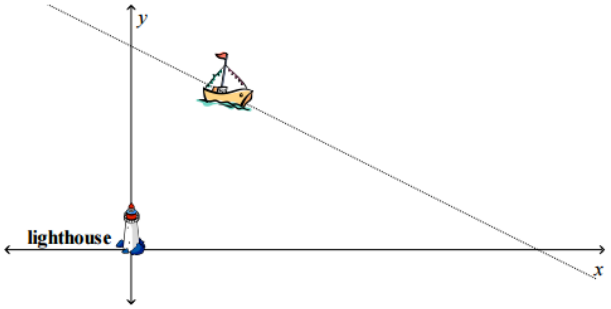


4. Two boats leave a harbour at the same time in directions that are 20° apart. If one is travelling at 20 km/h and the other at 30 km/h, how far apart are they after two hours?

5. Ahmed, Bonnie and Clyde are located at A(0, 4), B(3, 5) and C(7, –1) respectively. They agree to meet at their truck located halfway between Bonnie and Clyde. Determine the distance Ahmed must travel to reach the truck. Note: each unit on the grid represents 1 km.



6. A boat is travelling on a path defined by $y = -\frac{1}{2}x + \frac{17}{2}$ where x and y are measured in kilometres. A lighthouse, located at the origin, can detect boats up to 8 km away. Determine if the boat gets close enough to the lighthouse to be detected.



7. Determine the key features of the parabola with equation $y = x^2 + 2x - 8$

8. a) A stream of water flowing out of a hose can be modelled by the equation $y = -\frac{1}{6}(x+1)(x-11)$, where y is the height of the water, in metres above the ground, and x is the horizontal distance from the hose, in metres. The fireman climbs up the inclined ladder so that the peak of the stream is now 4 metres further horizontally and 2 metres higher. How far can the water stream now reach?

b) What other question(s) could be asked given this scenario?