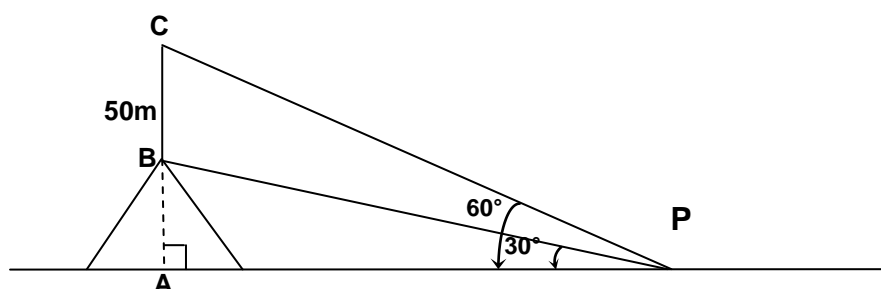


MATHEMATICS

Level Three

Angles and Angles

- 1) A tower of known height 50m sits on top of a hill. A surveyor has been asked to use some simple method to calculate the height of the hill (AB). From the point P, on level ground, the surveyor measures the angle of elevation to the bottom of the tower to be 30° , and the top of the tower to be 60° . Note: The diagram is not to scale.



- a. Use the above information to find the height of the hill and the distance AP as shown in the diagram.
- 2) You are standing in front of a tower on level ground. The angle of elevation to the top of a tower is 45° . When you move 20 m closer to the tower, the angle of elevation is now 60° .
- Draw a diagram to show the information above.
 - What is the height of the tower?
- 3) A lighthouse of height 'h' stands on the top of a cliff. An observer in a boat finds that the angle of elevation to the top of the lighthouse is 30° and the angle of elevation of the top of the cliff is 23° . Using this information, calculate the observer's distance from the foot of the cliff as a function of the height of the lighthouse.
- 4) Two pillars of equal height stand on either side of a roadway, which is 100 metres wide. At a point on the roadway between the pillars, the angles of elevation of the tops of the pillars are 60° and 30° . Find the height of each pillar and define the position of the point on the roadway.