**Angles of Elevation and Depression**

(a) Mercy stands $50 m$ away from the foot of a tower. When she looks to the top of the tower, the angle of elevation is $41°$. Find the height of the tower.

(b) Rob is a passenger on a boat. The boat is $450 m$ from the foot of a cliff, which is $110 m$ high. Find the angle of elevation of the top of the cliff from the boat.

(c) Talha is on plane, looking down at the airport with an angle of depression of $36°$. The height of the plane from the ground is $5 km$. Find the distance from the plane to the airport.

(d) A pigeon flies down to the ground from the top of a tree at an angle of depression of $28°$. The distance the pigeon flies is $15.8 m$. How tall is the tree?

(e) Salisbury cathedral spire is $123 m$ tall. Guy stands $46 m$ from the cathedral spire. What is the angle of elevation of the top of the spire from where Guy is standing?

(f) A plane passes overhead at a height of $8000 m$. A short time later, it is at an angle of elevation of $71°$. How far away is the plane from its original position?

(g) A prison officer watches prisoners from a guard tower which is $10.5 m$ tall. He looks due North and can see two prisoners. The angle of depression of each of the prisoners is $18°$ and $23°$. How far apart along the ground are the two prisoners?

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