

3. The image below shows a truck travelling around a banked curve:



(a) Explain how the banked curve causes centripetal acceleration, which reduces the truck's reliance on friction between the tyres and the road.

(3 marks)

4. An aeroplane is flying with its wings horizontal, and the lift force \vec{L} is balancing its weight \vec{F}_g , as shown in Diagram 1:

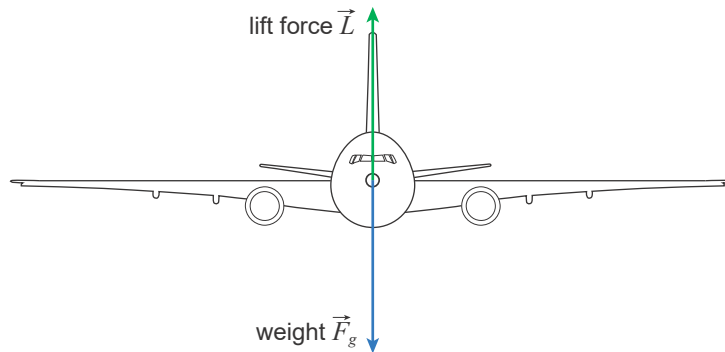


Diagram 1

- (a) To make a turn the aeroplane must be banked so that its wings are at an angle θ to the horizontal, as shown in Diagram 2:

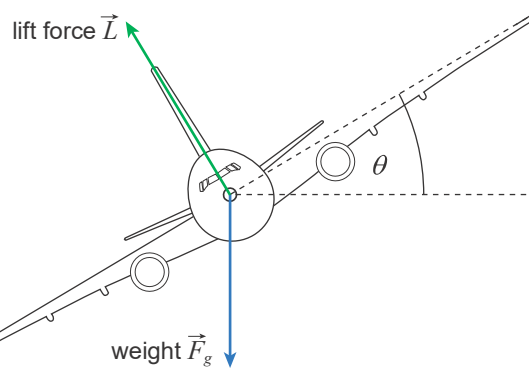


Diagram 2

Banking the aeroplane causes it to move in a uniform horizontal circular path.

- (i) *On Diagram 2*, draw and label both the horizontal component and the vertical component of the lift force. (2 marks)
- (ii) *Using one of the components of the lift force that you drew and labelled on Diagram 2*, explain how banking the aeroplane causes it to move in a uniform horizontal circular path.

(3 marks)