# Example – Drag on a Bicycle Rolling Down a Hill

Given: A person coasts a bicycle down a long hill with a slope of 5° in order to measure the drag area of the bike and rider. The mass of the bike is 7.0 kg, the mass of the rider is 70.0 kg, and the rolling resistance of the bike is measured separately – it is 19.0 N. When the rider coasts down the hill (no pedaling), the terminal speed is 10.1 m/s.
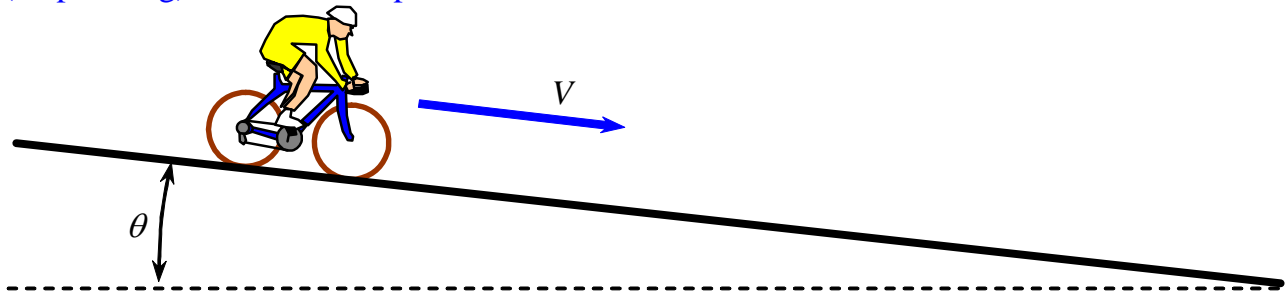
(**a**) **To do**: Calculate the drag area $C_D A$ of the rider/bicycle combination.

(**b**) **To do**: Calculate how much power it would take for the person to ride this bike on a level road at the same speed (10.1 m/s).

Solution: (to be completed in class)

   (**a**) First draw a free-body diagram of the bicycle and rider, showing all forces acting.