

The activity topics are as follows:

Activity	Topic
Activity 1 – In Control	Using a digital flight simulator, students apply appropriate vocabulary in referring to the control surfaces on an aircraft. By testing these control surfaces in this simulation activity, students recognize the importance of stability and control to aircraft flight on a fixed wing airplane.
Activity 2 – Defying Gravity	Students predict and test several airfoil shapes in order to determine instances in which air movement across a surface results in lift – Bernoulli’s Principle. Probing questions help them to understand that Bernoulli’s Principle is one explanation of how lift is achieved on an aircraft.
Activity 3 – I Spy in the Sky	Using models, photographs, and information cards, students describe the differences in design between aircraft and spacecraft parts, and identify the reasons for the design differences between these vehicles. Using interchangeable parts from a number of bodies, wings, and tails, they design an aircraft that they think will fly and give explanations for their choices.
Activity 4 – What a Drag	Students test the aerodynamic design of two cars in order to determine how streamlining reduces drag, and then apply that knowledge to predict the effects of specific design changes on the drag of aircraft. Probing questions ask them to describe other applications of streamlining in everyday objects.
Activity 5 – Perplexing Propellers	Students use hand propellers and a propeller model to examine and test how propellers are able to generate thrust in different directions.
Activity 6 – Airborne Animals	Using a series of overlays of bird and insect wings, and two different sets of Wing Motion Simulators, students identify the adaptations that enable birds and insects to fly.
Activity 7 – Up, Up, and Away	Students conduct an experiment to prove that air has weight. (See Teacher notes regarding weight versus mass.) They apply this knowledge to describe the principles by which the rising and falling of hot air balloons is controlled.