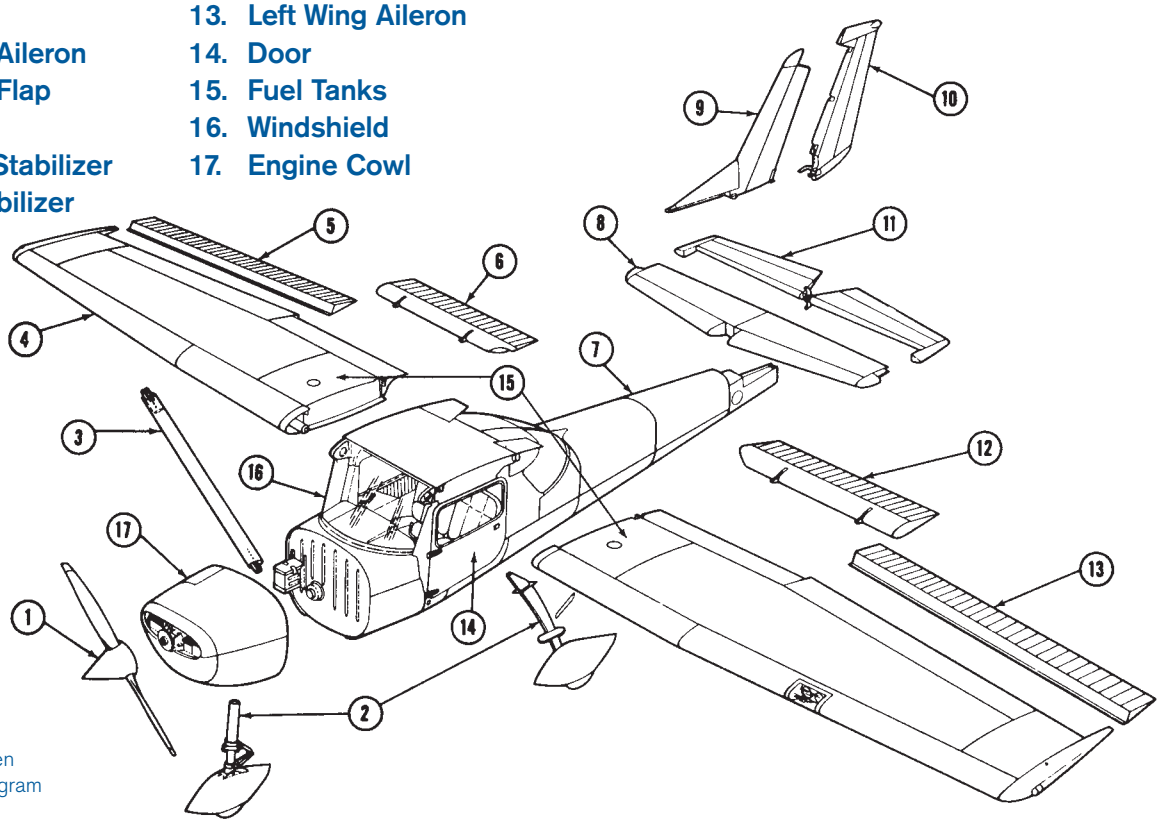
CORE SUBJECTS: MECHANICS, SCIENCE, AERODYNAMICS

THE AIRPLANE IS ESSENTIAL to human flight. It is a heavier-than-air vehicle, powered by an engine that travels through the air via the forces of lift and thrust. Its pieces provide clues to what makes an aircraft move up and down, left and right and side-to-side. Your students may be surprised to learn that small, single-engine airplanes and large jetliners have essentially the same basic parts. They just get bigger as the size of the airplane increases.

Use this as a reference for other activities in this handbook.

THE MAIN PARTS OF AN AIRPLANE

1. Propeller
2. Landing Gear
3. Right Wing Strut*
4. Wing
5. Right Wing Aileron
6. Right Wing Flap
7. Fuselage
8. Horizontal Stabilizer
9. Vertical Stabilizer
10. Rudder
11. Elevator
12. Left Wing Flap
13. Left Wing Aileron
14. Door
15. Fuel Tanks
16. Windshield
17. Engine Cowl



* Left wing strut hidden under wing in this diagram

Photocopy this activity for classroom use.
Go to www.aopa.org/path for student worksheets.

PARTS OF AN AIRPLANE THAT MAKE IT FLY.

Propeller – A propeller is a rotating blade on the front of the airplane. The engine turns the propeller, which pulls the airplane through the air.

Wings – Wings are the parts of airplanes that provide lift. They also support the entire weight of the aircraft and its contents while in flight.

Flaps – Flaps are the movable sections of an airplane's wings that are closest to the fuselage. They move in the same direction on both wings at the same time, and, by creating drag and lift, enable the airplane to fly more slowly.

PARTS OF AN AIRPLANE THAT HELP CONTROL DIRECTION OF FLIGHT.

Ailerons – Ailerons are the movable sections on an outer edge of an airplane's wings. They move in opposite directions (when one goes up, the other goes down). They are used in making turns by controlling movement along the **longitudinal axis** (an invisible line through the airplane from the nose to the tail).

Rudder – The rudder is the movable, vertical section of the tail that controls lateral (side-to-side) movement along the **vertical axis** (an invisible line through the airplane perpendicular to the longitudinal axis). When the rudder moves in one direction, the aircraft nose moves the same direction.

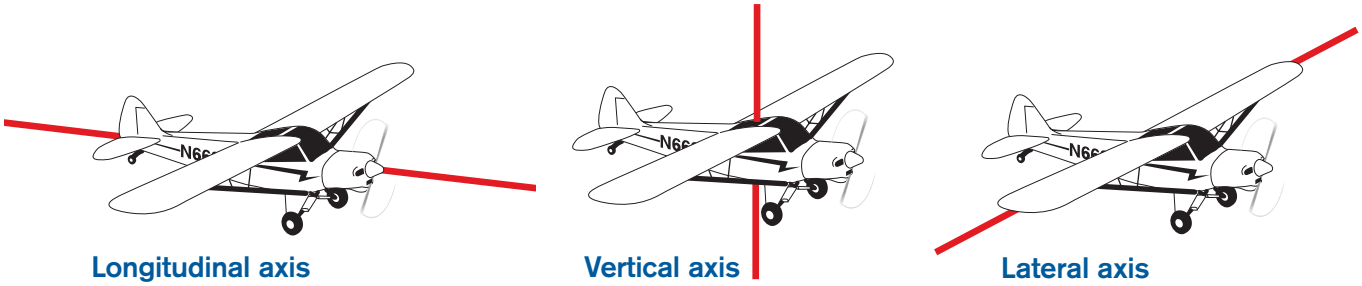
Elevator – The elevator is the movable, horizontal section of the tail that causes the airplane to climb and descend. When the elevator moves one direction, the nose moves in the same direction (up or down). This movement is along the **lateral axis** (an invisible line that runs from wing tip to wing tip.

OTHER PARTS OF AN AIRPLANE

Fuselage – The fuselage is the central body of an airplane, designed to accommodate the pilot/crew and the passengers and/or cargo.

Cockpit – In general aviation airplanes the cockpit is the space within the fuselage where the pilot sits and controls the airplane.

Landing Gear – The landing gear is underneath the airplane and supports it while on the ground. The landing gear usually includes two main wheels and a nose- or tailwheel.



Longitudinal axis

Vertical axis

Lateral axis