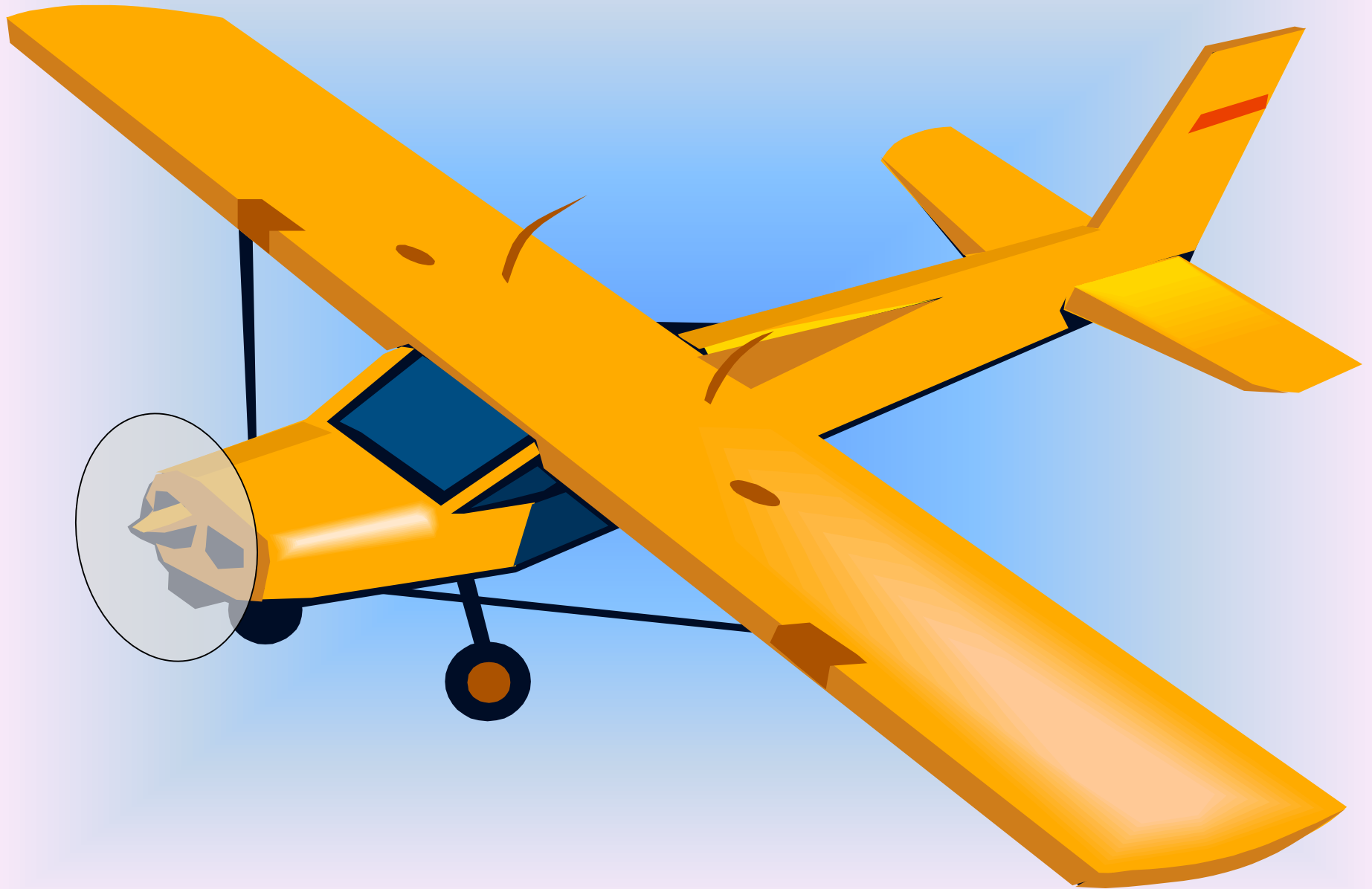


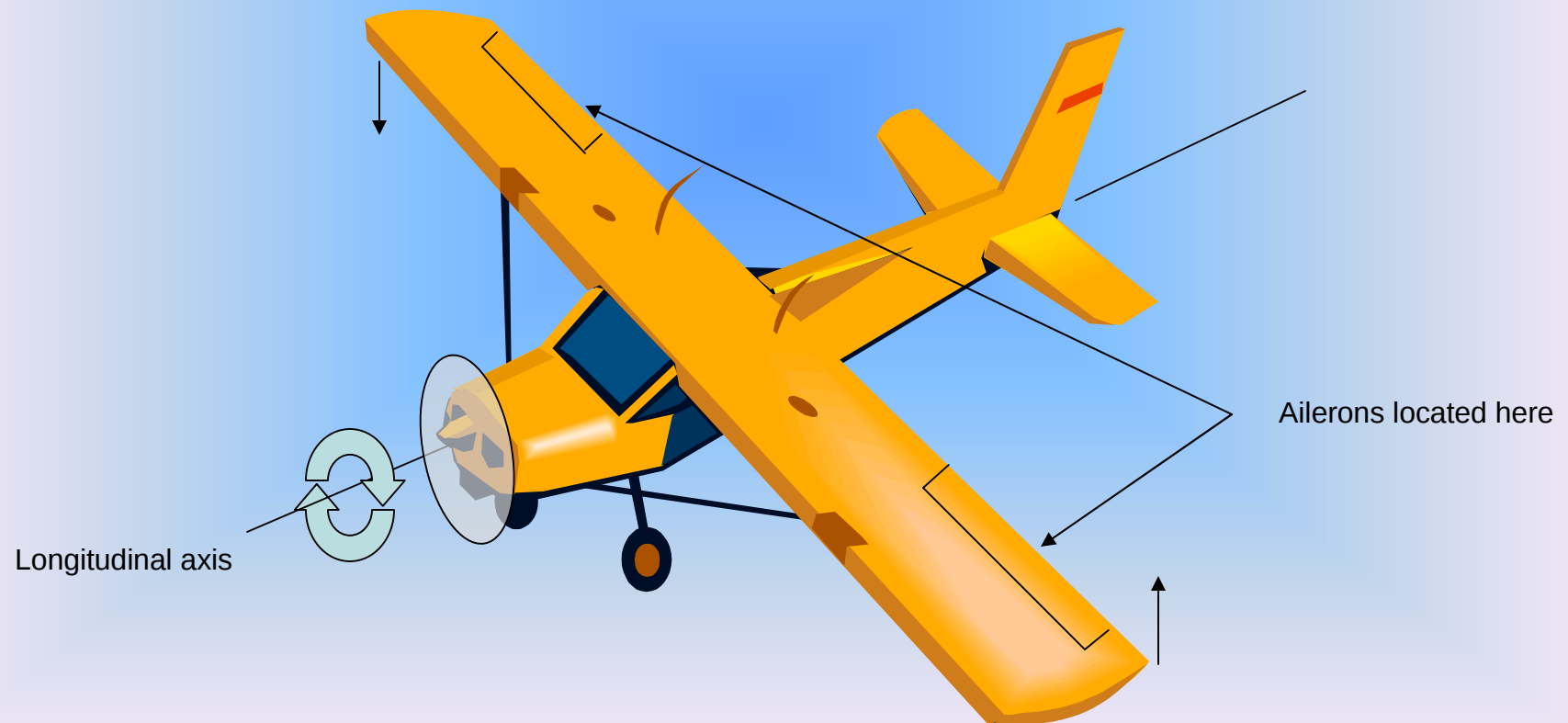
AIRPLANES



CONTROL SURFACES

AILERONS

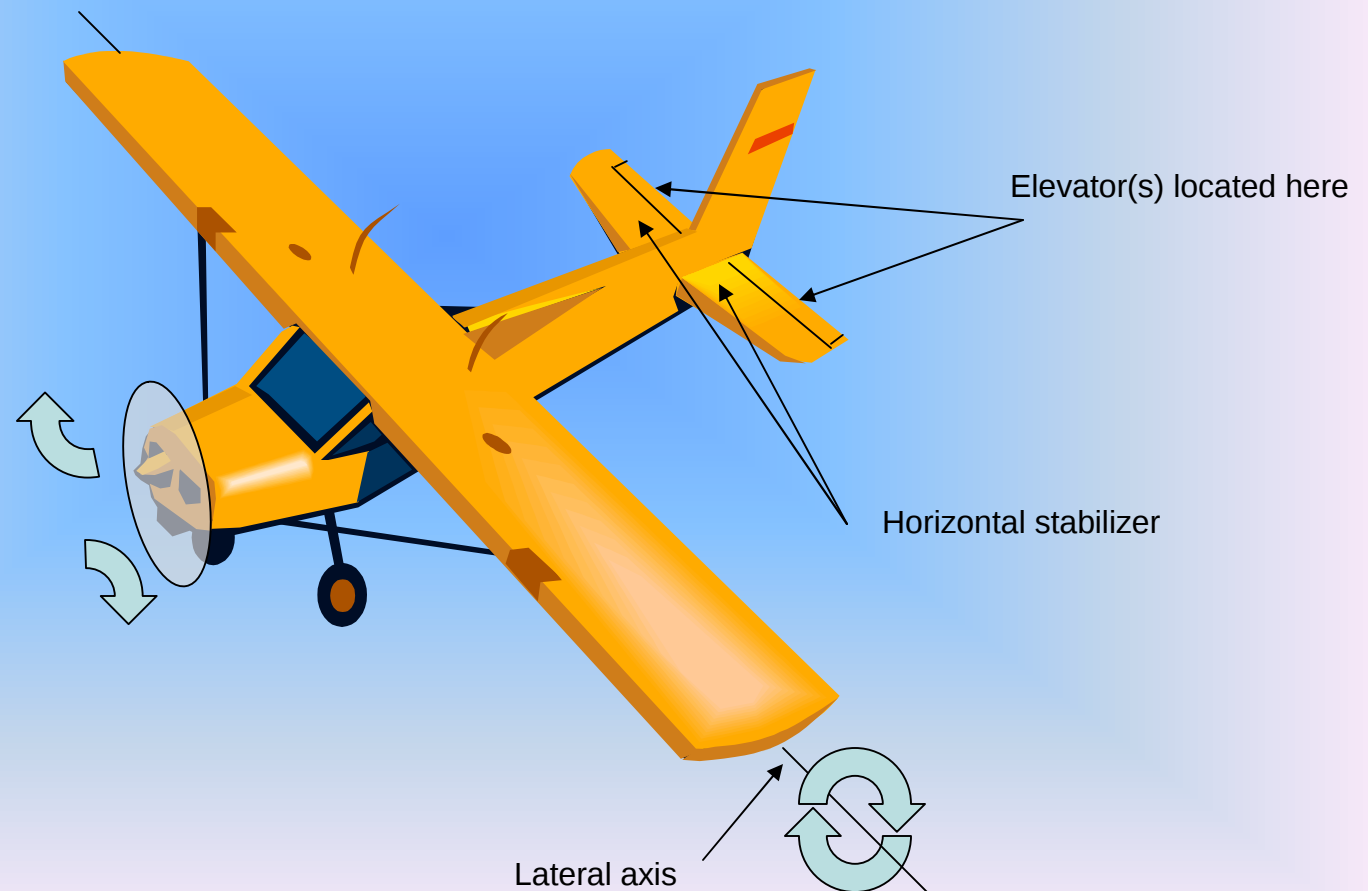
Ailerons are located on the outboard trailing edges of the wings. They work opposite one another (one goes up, the other goes down) as the pilot turns the yoke to the right or left. The ailerons control **roll**, the movement of the airplane about its **longitudinal axis**. When the yoke is moved to the right, the right aileron moves up (effectively spoiling lift on the right wing) and the left aileron moves down (creating more lift on the left wing). The left wing goes up, the right wing goes down, and the airplane rolls and banks to the right!



CONTROL SURFACES, cont'd

ELEVATOR

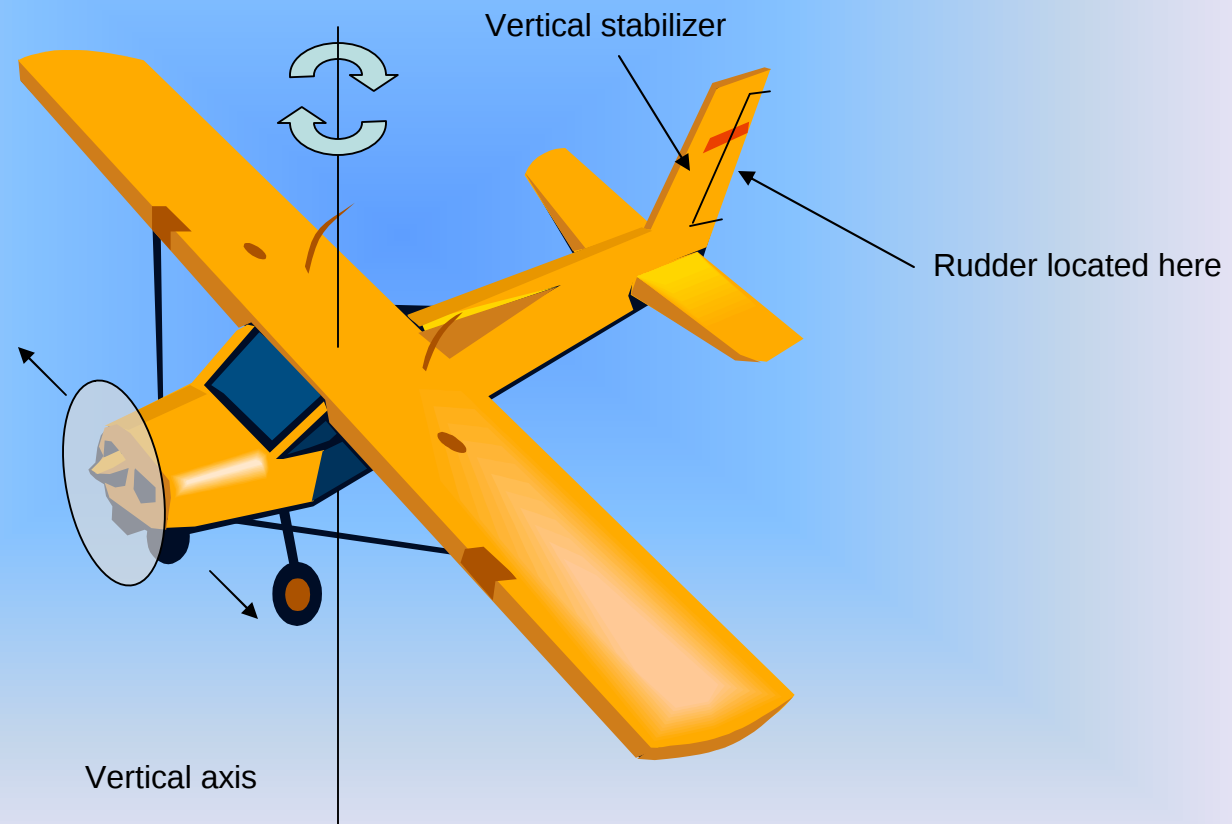
The **elevator** is located on the rear portion of the horizontal stabilizer. When the pilot moves the yoke back, the elevator swings upward, lowering the tail and raising the nose (the opposite happens when the yoke is moved forward). This changes the aircraft's **pitch** attitude and the airplane starts to climb. The elevators control movement about the airplane's **lateral axis**.



CONTROL SURFACES, cont'd

RUDDER

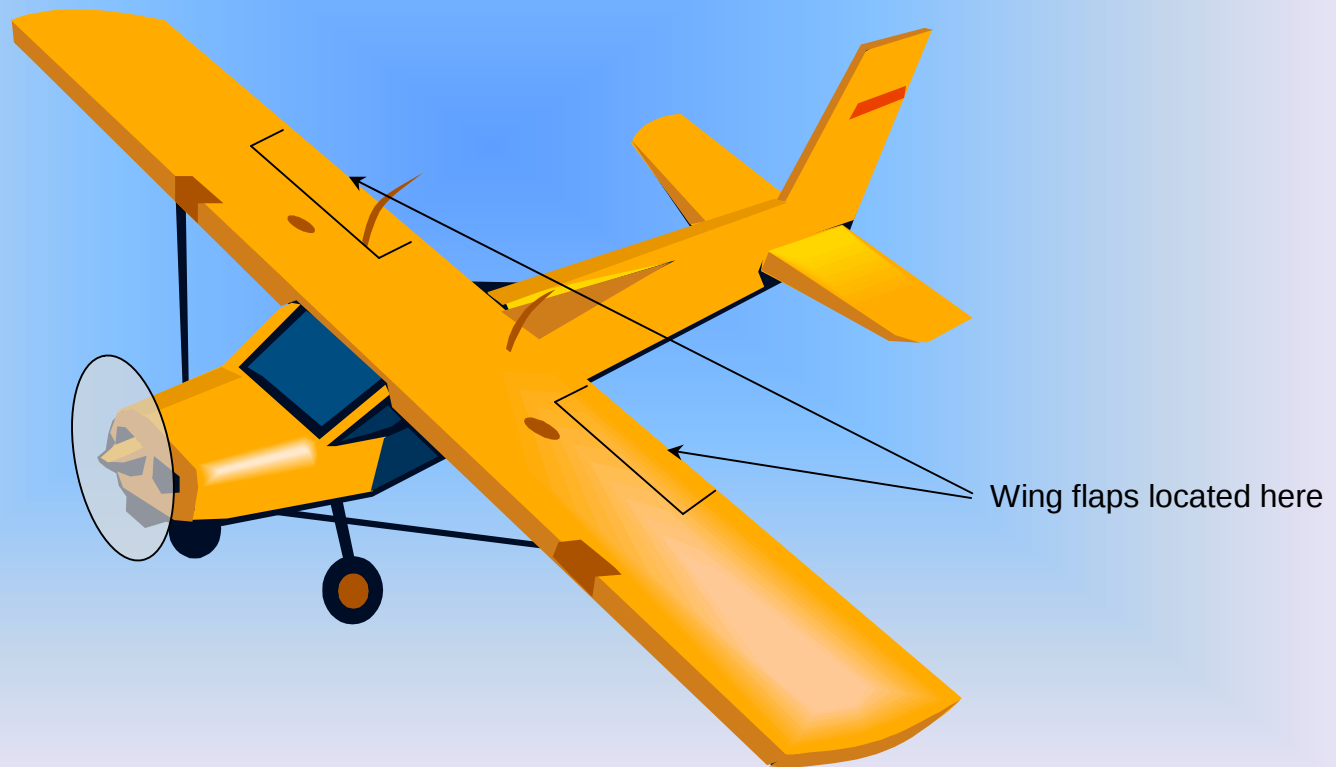
The **rudder** is located on the rear portion of the vertical stabilizer and is connected to the foot pedals at each pilot control station (the foot pedals are also used to steer the nosewheel and for braking). The rudder moves from side to side to control **yaw**, the side-to-side movement of the nose of the airplane. The rudder, therefore, controls movement about the airplane's **vertical axis**.



CONTROL SURFACES, cont'd

WING FLAPS

Wing flaps are located on the inboard trailing edges of the wings. When extended into the airflow behind and beneath the wings, they increase lift and drag. The primary purpose of the flaps is to allow a slower airspeed and a steeper angle of descent during a landing approach. In some cases, flaps can also be used to shorten the takeoff distance.



TRIM TABS

Trim tabs are secondary control surfaces that help to hold the primary control surfaces in a desired position, reducing the pilot's workload by lessening the resistance felt on the flight controls. If an airplane uses only one trim tab, it is usually located on the elevator.



AIRCRAFT ENGINES and PROPELLERS

Together, the **engine and propeller** provide the thrust for flight, and the engine also provides power for the accessories that furnish electrical, hydraulic and pneumatic energy to run pumps, electric motors, controls, lights, radios and instruments. The engine runs on fuel usually stored in tanks located in the wings.

