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Glossary:

Angle of Attack: The angle formed by the differnce between the center line of the airplane and center line (front to back) of the wing.

Angle of Incidence: The angle formed by the difference in the direction of airflow and the center line (front to back) of the wing.

Aspect Ratio: A mathematical way to describe the shape of a wing; the distance from wing tip to wing tip divided by the average width (chord) of the wing. Sail planes have a high aspect ratio. An F-22 has a low aspect ratio.

Attitude: How a plane is pointed relative to its flight path or generally to the ground. Nose up, nose down, level, rolled, yawed, or any combination of those.

Bank: Raising the outside wing during a turn.

Center of Gravity: The balance point of an airplane. The point through which gravity appears to act. The plane will rotate around its center of gravity when control surfaces are used.

Center of Lift: The point at which lift appears to act on the aircraft.

Control Surfaces: Surfaces that can be bent or moved to alter the airflow around the aircraft. Rudder, elevator, ailerons, and flaps are examples of control surfaces. Surfaces that control changes in flight attitude.

Dihedral Angle: The amount the wings sweep upward or downward as they leave the body of the plane. Positive (upward sloping) dihedral helps stabilize the airplane, particularly if the plane gets rocked right or left during flight.

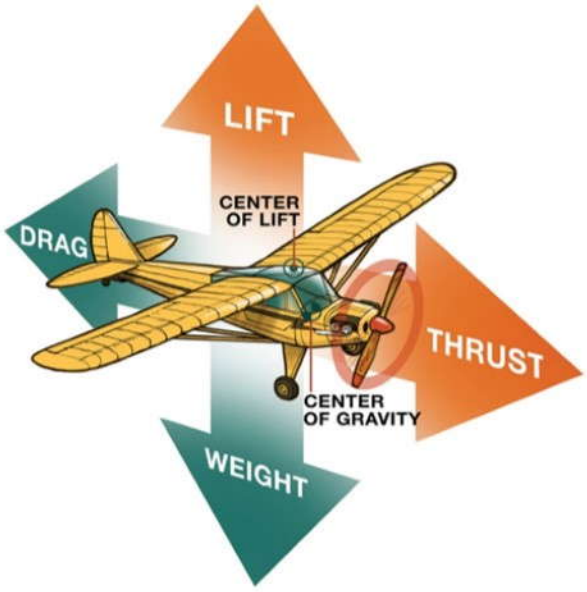
Drag: The resistance air exerts on a body moving through it.

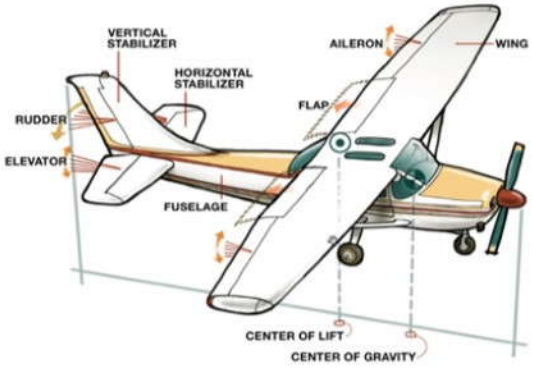
Elevator: A horizontal control surface at the trailing edge of the horizontal stabilizer. The elevator is moved up or down to control climbing and diving.

Fuselage: The body of an airplane.

Glider: A heavier than air, engineless aircraft that flies by trading height for speed lost to drag (gliding). Paper airplanes are gliders.

Basic Forces





Leading Edge: The forward edge of a lifting or stabilizing surface. Typically, the front edge of a wing.

Lift: The amount of force acting upward on an airplane. Lift can be generated by air moving over the curve of the wing, the angle of attack, and the angle of incidence. There is a measureable lower pressure on the top of most aircraft wings. This lower pressure, combined with airflow being directed downward at the back of the wing, creates an upward force.

Maneuver: Execution of a flight pattern other than straight line, level flight. Examples include turning, diving, rolling, or climbing.

Pitch: Moving the nose of the plane up or down.

Roll: To rotate the plane about the longitudinal axis. If your arms were wings, and you were flying, you'd typically be face down. During a roll, your face would point at the horizon, the sky, the opposite horizon and then the ground again.

Rudder: A vertical control surface at the trailing edge of the vertical stabilizer. A rudder starts or controls yawing (the movement of the nose of the plane left and right).

Stall: When airflow fails to follow the shape of the wing. Typically, a stall will happen when the plane flies too slowly or the wing is at too high an angle of incidence. Stalls cause a loss of lifting force.

Trailing Edge: The rear edge of a wing or stabilizer.

Trim: To make minor adjustments to the control surfaces of the plane to affect attitude. On many modern planes, there are trim tabs in addition to control surfaces. These allow the pilot to correct minor pitch problems that might occur from cargo being loaded so that the center of gravity is misaligned. Or, a trim tab might be used to correct yaw caused by a strong crosswind.

Winglet: A vertical stabilizer at a wing tip. Winglets add directional stability and help the wing slip through the air more efficiently. Typically, there are two winglets, one on each wing tip.

Yaw: Movement of the nose of the plane left or right.

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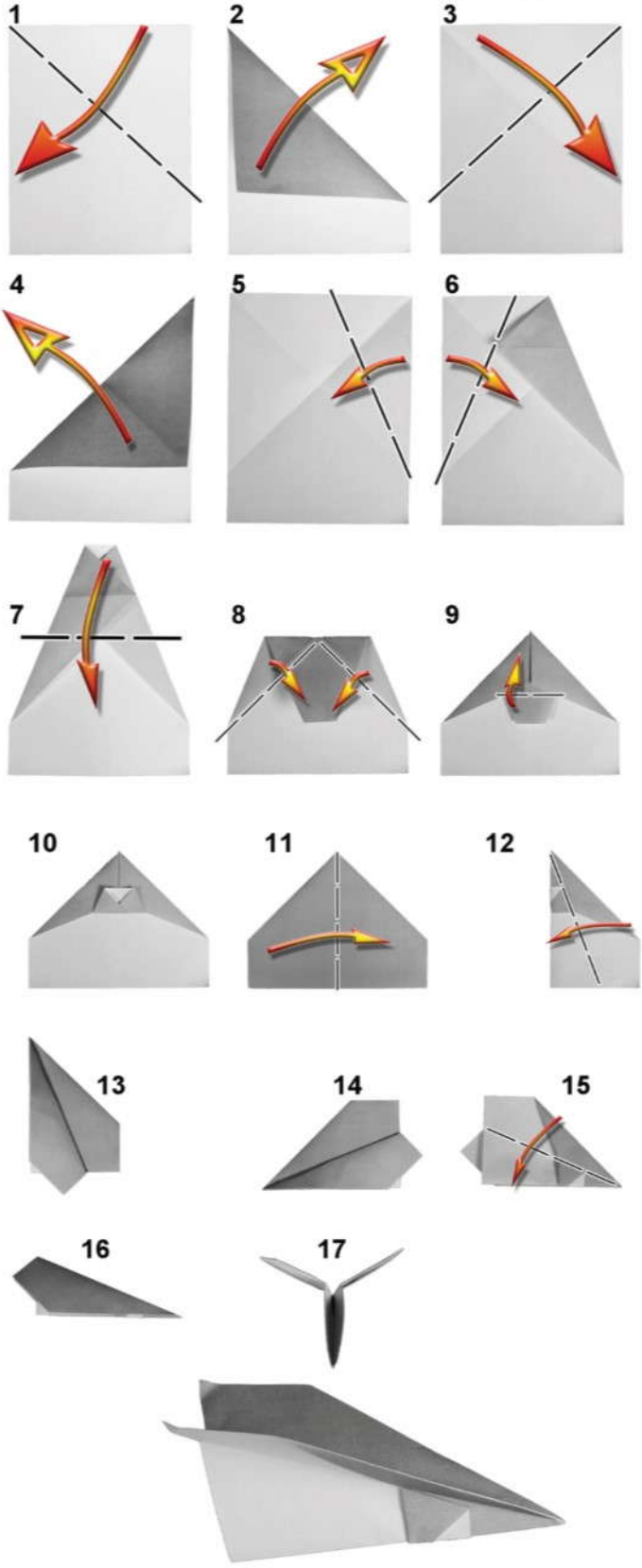

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