AVIATION

“Enhancing our youths’ competitive edge through merit badges”
Requirements

1. Do the following:
   a. Define “aircraft.” Describe some kinds and uses of aircraft today. Explain the operation of piston, turboprop, and jet engines.
   b. Point out on a model airplane the forces that act on an airplane in flight.
   c. Explain how an airfoil generates lift, how the primary control surfaces (ailerons, elevators, and rudder) affect the airplane’s attitude, and how a propeller produces thrust.
   d. Demonstrate how the control surfaces of an airplane are used for takeoff, straight climb, level turn, climbing turn, descending turn, straight descent, and landing.
   e. Explain the following: the sport pilot, the recreational pilot, and the private pilot certificates; the instrument rating.

2. Do TWO of the following:
   a. Take a flight in an aircraft, with your parent’s permission. Record the date, place, type of aircraft, and duration of flight, and report on your impressions of the flight.
   b. Under supervision, perform a preflight inspection of a light airplane.
   c. Obtain and learn how to read an aeronautical chart. Measure a true course on the chart. Correct it for magnetic variation, compass deviation, and wind drift to determine a compass heading.
d. Using one of many flight simulator software packages available for computers, “fly” the course and heading you established in requirement 2c or another course you have plotted.

e. Explain the purposes and functions of the various instruments found in a typical single-engine aircraft: attitude indicator, heading indicator, altimeter, airspeed indicator, turn and bank indicator, vertical speed indicator, compass, navigation (GPS and VOR) and communication radios, tachometer, oil pressure gauge, and oil temperature gauge.

f. Create an original poster of an aircraft instrument panel. Include and identify the instruments and radios discussed in requirement 2e.

3. Do ONE of the following:

b. Build a model FPG-9. Get others in your troop or patrol to make their own model, then organize a competition to test the precision of flight and landing of the models.

4. Do ONE of the following:
   a. Visit an airport. After the visit, report on how the facilities are used, how runways are numbered, and how runways are determined to be “active.”
   b. Visit a Federal Aviation Administration facility—a control tower, terminal radar control facility, air route traffic control center, or Flight Standards District Office. (Phone directory listings are under U.S. Government Offices, Transportation Department, Federal Aviation Administration. Call in advance.) Report on the operation and your impressions of the facility.
   c. Visit an aviation museum or attend an air show. Report on your impressions of the museum or show.

5. Find out about three career opportunities in aviation. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.
Aviation Resources

Scouting Literature
Auto Mechanics, Electronics, Engineering, Model Design and Building, Orienteering, and Space Exploration merit badge pamphlets

For more information about Scouting-related resources, visit the BSA’s online retail catalog (with your parent’s permission) at www.scoutstuff.org.

Books

Periodicals
Flying
Telephone: 407-628-4802
Website: www.flyingmag.com

Model Airplane News
Air Age Media
Toll-free telephone: 800-827-0323
Website: www.modelairplanenews.com

Plane & Pilot
Werner Publishing Corp.
Telephone: 310-820-1500
Website: www.planeandpilotmag.com

Organizations and Websites
Academy of Model Aeronautics
5161 East Memorial Drive
Muncie, IN 47302
Toll-free telephone: 800-435-9262
Website: www.modelaircraft.org

Aircraft Owners and Pilots Association
421 Aviation Way
Frederick, MD 21701
Toll-free telephone: 800-872-2672
Website: www.aopa.org
ALLSTAR Network
Aeronautics Learning Laboratory for Science, Technology, and Research Website: www.allstar.fiu.edu

The Aviation History Online Museum
Website: www.aviation-history.com

Chasing the Sun
The History of Commercial Aviation Seen Through the Eyes of Its Innovators Website: www.pbs.org/kcet/chasingthesun

Federal Aviation Administration
800 Independence Ave. SW Washington, DC 20591 Toll-free telephone: 866-835-5322 Website: www.faa.gov

National Aeronautics and Space Administration
Suite 1M32 Washington, DC 20546-0001 Telephone: 202-358-0001 Website: www.nasa.gov

National Oceanic and Atmospheric Administration
1401 Constitution Ave., NW, Room 5128 Washington, DC 20230 Telephone: 202-482-6090 Website: www.noaa.gov

Sporty’s Pilot Shop
Website: www.sportys.com Toll-free telephone: 800-776-7897

University Aviation Association
2415 Moore’s Mill Road, Suite 265-216 Auburn, AL 36830 Telephone: 334-528-0300 Website: www.imis100us1.com/uaa

**DVDs**

*Be a Sport Pilot: Learn to Fly a Fixed-Wing Light-Sport Aircraft.* DVD, 75 min.

*Sporty’s Learn to Fly Course.* DVD, 23 hours.

*Sporty’s Introduction to Flying—A Non-Pilot’s Guide.* DVD, 56 min.

*Sporty’s So You Want to Fly Helicopters.* DVD, 2 hrs.

*Start Flying! Understand What’s Involved With Learning to Fly and Earning a Pilot’s License.* DVD, 34 min.

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