Aviation

Merit Badge Worksheet

2009 Rev. Created
by Craig Long 2010

Scouts Name_____ Date_____

Counselor's Name_____ Counselor's Phone #_____

Complete

1. Do the following:
   a. Define "aircraft." Describe some kinds and uses of aircraft today. _____
   _____
   Explain the operation of each engine
   Piston: _____
   _____
   turboprop: _____
   _____
   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 altitude _____
   _____
   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. On a model airplane
   e. Explain the following: the recreational pilot and the private pilot certificates; the instrument rating. _____
   _____

Complete

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. Date Completed _____
   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. Arrive at 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. On a map, mark a route for an imaginary airline trip to at least three different locations. Start from the commercial airport nearest your home. From timetables (obtained from agents or on line from a computer, with your parent’s permission), decide when you will get to and leave from all connecting points. Create an aviation flight plan and itinerary for each destination. Describe your flight plan and itinerary: _____

_____

_____

f. 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) _____

communication radios _____

tachometer _____

oil pressure gauge _____

oil temperature gauge _____

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

Complete 3. Do ONE of the following:

a. Build and fly a fuel-driven or battery powered electric model airplane. Describe safety rules for building and flying model airplanes Tell safety rules for use of glue, paint, dope, plastics, fuel, and battery pack. _____

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_____

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

Complete 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, flight service station, 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. _____

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c. Visit an aviation museum or attend an air show. Report on your impressions of the museum or show. _____

_____

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Complete

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. _____

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