



AVIATION MERIT BADGE WORK SHEET (BYU/UVU PowWow)

Scout's Name

Instructor's Name

Scout's Address

City

State

ZIP

Instructions

- 1) The Scout is to review the merit badge book before the first week of PowWow.
- 2) Bring this work sheet, paper, and pencil or pen each week.

Requirement Instructions*

- 1) The Scout should have completed and be prepared to pass off requirements 2 and 3 **before** PowWow begins.
- 2) During PowWow the Scout will complete and pass off requirements 1, 2, and 3.
- 3) The Scout should complete the project choices from requirements 2 and 3 for **homework** between sessions of PowWow.
- 4) Requirement 4 should be completed and ready to be passed off **before** PowWow begins.
- 5) Requirement 5 will be completed at PowWow.

*All requirements may be subject to change by the merit badge counselor based on time constraints at the PowWow session. Please listen to all instructions given by the instructor to be aware of any changes.

Requirement 1

Initial

Define aircraft.

Describe some kinds of aircraft in use today.

Type: _____ Description: _____

Type: _____ Description: _____

Type: _____ Description: _____

Explain the operation of piston engines.

Explain the operation of turboprop engines.

Explain the operation of jet engines.

Point out on a model airplane the forces that act upon the airplane in flight. Tell and explain what you pointed out.

Explain how an airfoil generates lift.

Explain how the primary control surfaces (ailerons, elevator, and rudder) affect the aircraft's altitude.

Explain how a propeller produces thrust.

How are the control surfaces of an airplane used for takeoff?

How are the control surfaces of an airplane used for a straight climb?

How are the control surfaces of an airplane used for a level turn?

How are the control surfaces of an airplane used for a climbing turn?

How are the control surfaces of an airplane used for a descending turn?

How are the control surfaces of an airplane used for a straight descent?

How are the control surfaces of an airplane used for landing?

Explain the recreational pilot certificate.

Explain the private pilot certificate.

What is meant by "instrument rating" when talking about the recreational pilot and private pilot certificates?

Requirement 2

Initial

You have been given seven options for this requirement. Select and complete TWO of them.

Option 1:

Take a flight in an aircraft, with your parent's permission. Record the date, place, type of aircraft, and duration of flight.

Date: Place: Type of aircraft: Duration:

Report your impressions of the flight on the back of this paper.

Option 2:

Under supervision, perform a preflight inspection of a light airplane.

Option 3:

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 draft. Arrive at a compass heading.

Option 4:

Using one of many flights simulator software packages available for computers, "fly" the course and heading you established in requirement 2, option 3, or another course you have plotted.

Option 5:

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 online from a computer, with your parent's permission), decide when you will get to and leave from all connection points. Create an aviation flight plan and itinerary for each destination.

Option 6:

Explain the purposes and functions of the various instruments found in a typical single-engine aircraft:

Altitude Indicator

Purpose:

Function:

Heading Indicator

Purpose:

Function:

Altimeter

Purpose:

Function:

Airspeed Indicator

Purpose:

Function:

Turn and Bank Indicator

Purpose:

Function:

Vertical Speed Indicator

Purpose:

Function:

Compass

Purpose:

Function:

Navigation (GPS and VOR) and Communication Radios

Purpose:

Function:

Tachometer

Purpose:

Function:

Oil Pressure Gauge

Purpose:

Function:

Oil Temperature Gauge

Purpose:

Function:

Option 7:

Create an original poster of an aircraft instrument panel. Include and identify the instruments and radios discussed in option 6. Use the back of this page to draw a small sketch of your poster or use it to help you come up with ideas for your poster.

Requirement 3

Initial

You have been given two options for this requirement. Select and complete ONE of them.

Option 1:

Build and fly a fuel-driven or battery-powered electric model airplane. Give a short summary of the building and the flight on the back of this page.

List the three safety rules in building model planes.

Rule 1:

Rule 2:

Rule 3:

List the safety rules in flying model planes.

Commonsense Rule of safety.

Safety Rule for Free-Flight Models:

Safety Rule for U-Control Models:

Safety Rule(s) for Radio-Control Models:

Tell safety rules for use of the following.

Glue:

Paint:

Dope:

Plastics:

Fuel:

Battery Pack:

Option 2:

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

Requirement 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 center, flight service station, or Flight Standards District Office. (Phone directory listings are under U.S. Government Offices, Transportation Department, and 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.

Requirement 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.

Merit badge work sheets will not be accepted at the Council Office in place of the official Merit Badge Application Card. Those who do not complete all the requirements should take their partially completed merit badge work sheet and their official application card to their local merit badge counselors for completion.