



Aviation

Merit Badge Workbook

This workbook is not required but is designed to help you with this merit badge. No one can add or subtract from the Boy Scout Requirements #33215. Use page backs & add pages as needed. Please send comments to: craig@craiglincoln.com. Requirements revised: 2000, Workbook updated: January 2004.

Scout's Name: _____ Unit: _____

Counselor's Name: _____ Counselor's Ph #: _____

1) Do the following: a) Define "aircraft." _____

Describe some kinds and uses of aircraft today.

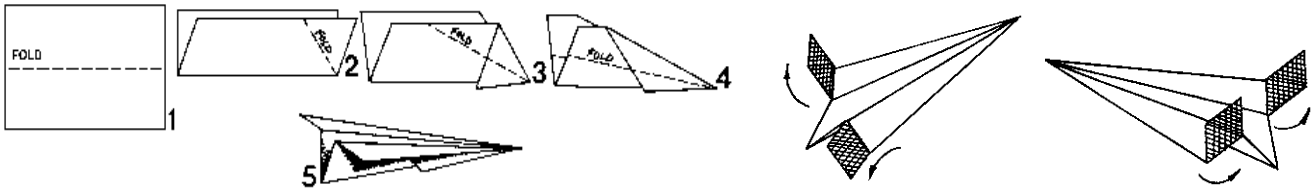
Kind: _____ Uses: _____

Explain the operation of piston, _____

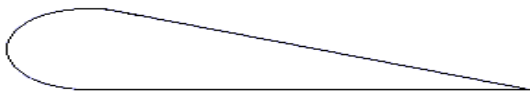
turboprop, _____

and jet engines. _____

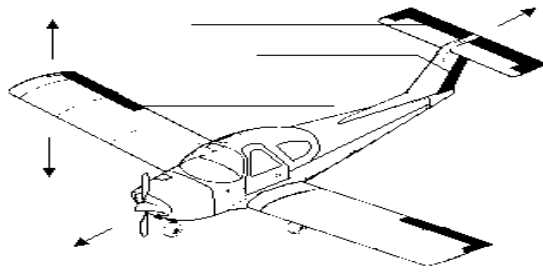
b) Point out on a model airplane the forces that act on an airplane in flight. (Hint: To make a model airplane out of paper...)



c) Explain how an airfoil generates lift, _____



how the primary control surfaces (ailerons, elevators, and rudder) affect the airplane's attitude,



Ailerons: _____

 Elevators: _____

 Rudder: _____

and how a propeller produces thrust. _____

d) Demonstrate how the control surfaces of an airplane are used for

	Ailerons	Elevators	Rudder	Flaps
takeoff,	_____	_____	_____	_____
straight climb,	_____	_____	_____	_____
level turn,	_____	_____	_____	_____
climbing turn,	_____	_____	_____	_____
descending turn,	_____	_____	_____	_____
straight descent,	_____	_____	_____	_____
and landing.	_____	_____	_____	_____

e) Explain the following: the recreational pilot and the private pilot certificates; _____

the instrument rating. _____

f) Find out what job opportunities there are in aviation. _____

Describe the qualifications and working conditions of one job in which you are interested. _____

Tell what it offers for reaching your goal in life. _____

2) Do TWO of the following:

a) Take a flight in an aircraft.

Record the date, _____ place, _____
 type of aircraft, _____ and duration of flight, _____
 and report on your impressions of the flight. _____

b) 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." _____

c) 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. _____

d) Visit an aviation museum or attend an air show: _____

Report on your impressions of the museum or show. _____

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) Visit an aircraft maintenance shop: _____

Interview a technician: _____

and report on his/her ideas about aircraft maintenance. _____

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

3) Do TWO of the following:

a) Interview a professional or military pilot: _____

Report on what you learned. _____

b) Interview a flight attendant.: _____

Report on what you learned. _____

c) Interview a certified flight instructor: _____

Report on what you learned. _____

d) Under supervision, perform a preflight inspection of a light airplane. _____

e) Obtain and learn how to read an aeronautical chart.

Measure a true course on the chart. _____

Correct it for magnetic variation, _____

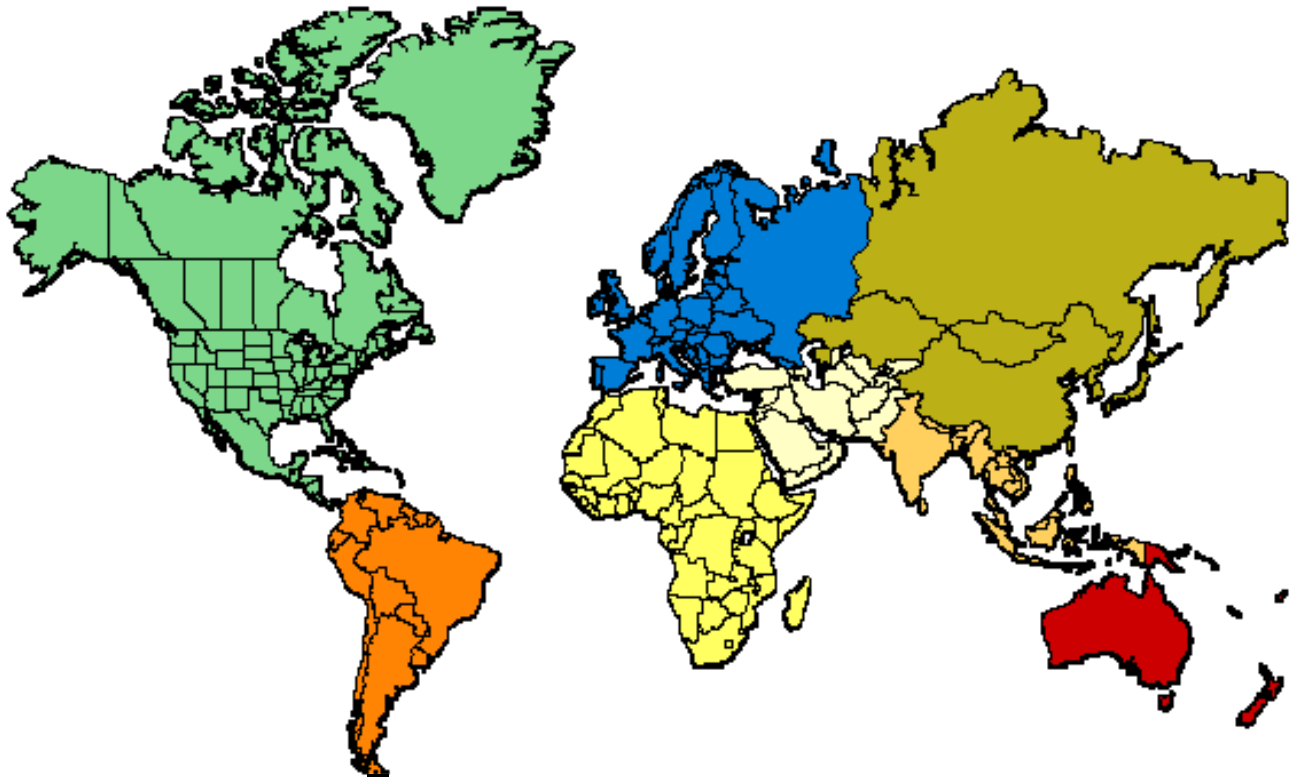
compass deviation, _____

and wind drift. _____

Arrive at a compass heading. _____

f) Using one of many flight simulator software packages available for computers, "fly" the course and heading you established in requirement 3e or another course you have plotted.

g) On a map, mark a route for an imaginary airline trip to at least three foreign countries. *(Hint: Here is a map...)*



Start from the commercial airport nearest your home. From timetables (obtained from agents or online from a computer), decide when you will get to and leave from all connecting points. *(Hint: Consider using the table below...)*

Depart	Flight Time	Arrive	Time	Depart	Flight Time	Arrive	Time
1 _____	_____	_____	_____	7 _____	_____	_____	_____
2 _____	_____	_____	_____	8 _____	_____	_____	_____
3 _____	_____	_____	_____	9 _____	_____	_____	_____
4 _____	_____	_____	_____	10 _____	_____	_____	_____
5 _____	_____	_____	_____	11 _____	_____	_____	_____
6 _____	_____	_____	_____	12 _____	_____	_____	_____

h) Build and fly a fuel-driven model airplane. _____

Describe safety rules for building and flying model airplanes. _____

Tell safety rules for use of glue, paint, dope, plastics, and fuel. _____

i) Assemble a poster (or album) of original photographs taken while accomplishing the requirements.