

## Merit Badge Workbook

This workbook can help you but you still need to read the merit badge pamphlet.

This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counselor

## Merit Badge Counselors may not require the use of this or any similar workbooks.

You still must satisfy your counselor that you can demonstrate each skill and have learned the information. You should use the work space provided for each requirement to keep track of which requirements have been completed, and to make notes for discussing the item with your counselor, not for providing full and complete answers.

If a requirement says that you must take an action using words such as "discuss", "show",

"tell", "explain", "demonstrate", "identify", etc, that is what you must do.

No one may add or subtract from the official requirements found on Scouting.org.

The requirements were last issued or revised in 2014 • This workbook was updated in November 2023.

			Unit	Date Started
			Phone No.:	Email:
	C	Comments or suggestions for	or changes to the <u>requirements</u> for the	bout this <u>workbook</u> to: <u>Workbooks@USScouts.Org</u> <u>merit badge</u> should be sent to: <u>Merit.Badge@Scouting.Org</u>
Do the following:				
a. Define "aircraft."				
			nd uses of aircraft today.	
		Kind:	Uses:	

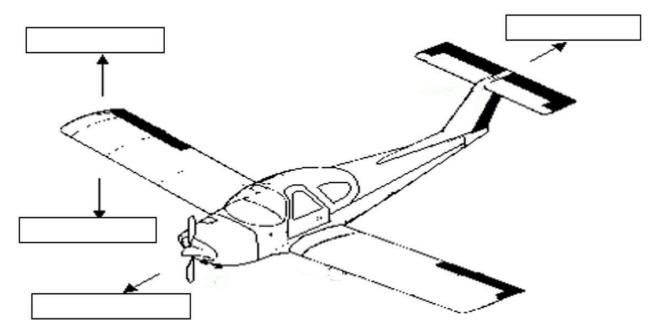
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Explain the operation of piston, turboprop, and jet engines.

operation of piston, turboprop, and jet en	giries.	
	peration of pistori, turboprop, and jet en	speration 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.



Airfoil:	
Ailerons:	
Elevators:	
Rudder:	
Propeller:	

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.

Ailerons	Elevators	Rudder	Flaps
	Ailerons	Ailerons Elevators	Ailerons Elevators Rudder

e. Explain the following: the sport pilot, the recreational pilot and the private pilot certificates; the instrument rating.

Sport pilot certificate	
certificate	
Recreational pilot certificate:	
certificate:	
Private pilot	
certificate:	

Aviation Scout's Name: Instrument rating: 2. Do TWO of the following: a. Take a flight in an aircraft with your parent or guardian's permission. Record the date, place, type of aircraft, and duration of flight, and report on your impressions of the flight. Date: Place: Type of aircraft: Duration of flight: Impressions: b. Under supervision, perform a preflight inspection of a light airplane. 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. 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, and oil temperature gauge. Attitude indicator: Heading indicator:

Altimeter:	
Airspeed	
indicator:	
Turn and bank	
indicator:	
Vertical speed	
indicator:	
Compass:	
Navigation (GPS and VOR):	
VOR):	
Communication radios:	
radioo.	
Tachometer:	

- 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."

How the facilities are used			
are used			

When working on merit badges, Scouts and Scouters should be aware of some vital information in the current edition of the *Guide to Advancement* (BSA publication 33088).Important excerpts from that publication can be downloaded from <a href="http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf">http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf</a>.

You can download a complete copy of the Guide to Advancement from <a href="http://www.scouting.org/filestore/pdf/33088.pdf">http://www.scouting.org/filestore/pdf/33088.pdf</a>.