



2024 Edition

SCOUTMASTER BUCKY

Aviation Merit Badge

SCOUTS PARTICIPATING IN A SCOUTMASTER BUCKY MERIT BADGE OPPORTUNITY (ONLINE OR IN PERSON), PLEASE CONSIDER ALSO USING THE AVIATION MERIT BADGE CLASS PREPARATION PAGE FOR CLARIFICATIONS, INSIGHTS, AND EXPECTATIONS.

<https://scoutmasterbucky.com/merit-badges/aviation/class-prep/>

AVIATION MERIT BADGE WORKBOOK

REQUIREMENT 1a: Define "aircraft."

Notes:

REQUIREMENT 1a: Describe some kinds and uses of aircraft today

AIRCRAFT #1

Type:

Use:

AIRCRAFT #2

Type:

Use:



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AIRCRAFT #3

Type:

Use:

AIRCRAFT #4

Type:

Use:

AIRCRAFT #5

Type:

Use:



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AIRCRAFT #7

Type:

Use:

AIRCRAFT #8

Type:

Use:

AIRCRAFT #9

Type:

Use:



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REQUIREMENT 1a: Explain the operation of piston, turboprop, and jet engines.

Piston Engine:

Turboprop Engine:

Jet Engine:

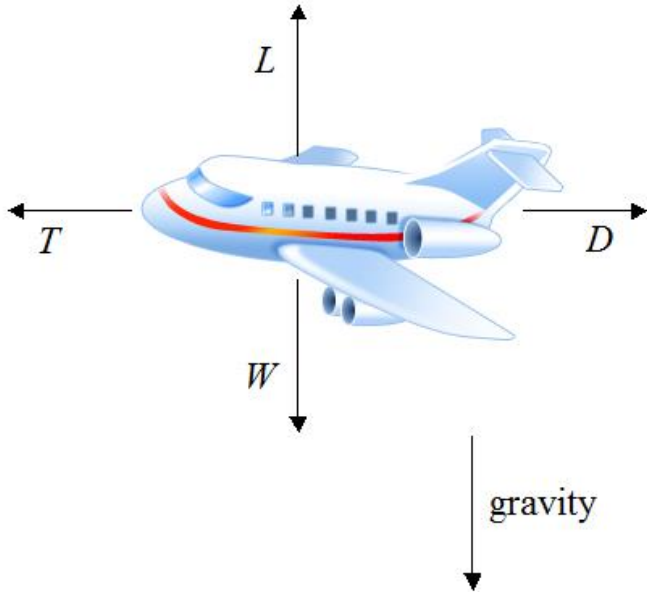


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REQUIREMENT 1b: Point out on a model airplane the forces that act on an airplane in flight.



T =

L =

D =

W =

Gravity:



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REQUIREMENT 1c: Explain how an airfoil generates lift.

Notes:

REQUIREMENT 1c: Explain how the primary control surfaces (ailerons, elevators, and rudder) affect the airplane's attitude.

Ailerons:

Elevators:

Rudder:

REQUIREMENT 1c: Explain how a propeller produces thrust.

Notes:



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REQUIREMENT 1d: Demonstrate how the control surfaces of an airplane are used for takeoff, straight climb, level turn, climbing turn, descending turn, straight descent, and landing.

This requirement must be reviewed with your merit badge counselor.

REQUIREMENT 1e: Explain the following: the sport pilot, the recreational pilot, and the private pilot certificates; the instrument rating.

Sport Pilot:

Recreational Pilot:

Private Pilot:



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DO TWO OF THE FOLLOWING (2A, 2B, 2C, 2D, 2E, or 2F) FOR REQUIREMENT 2

REQUIREMENT 2a: Take a flight in an aircraft, with your parent's permission.

Parent's Name _____

Phone _____

Parent's Signature _____

Date _____

permission

REQUIREMENT 2a: Record the date, place, type of aircraft, and duration of flight, and report on your impressions of the flight.

Type of Aircraft and Duration of Flight:

Date and Location of Flight:

Notes:



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REQUIREMENT 2b: Under supervision, perform a preflight inspection of a light airplane.

This requirement component should be done with your merit badge counselor, however if done with someone else, please have that individual fill out the section below for consideration by your merit badge counselor or get approval from your counselor before-hand.

Title and qualifications of person giving supervision for this requirement:

Supervision provided by Name _____

Phone _____

Signature _____

Date _____

approved

Notes:



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REQUIREMENT 2c: 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.

Consider using the Aviation merit badge pamphlet for preparation information on this component.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

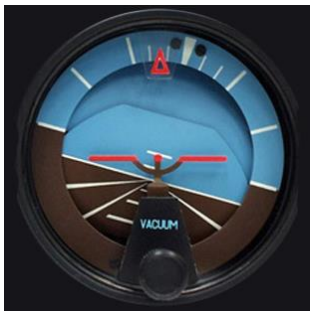
REQUIREMENT 2d: Using one of many flight simulator software packages available for computers, “fly” the course and heading you established in requirement 2c or another course you have plotted.

Consider using the Aviation merit badge pamphlet for preparation information on this component.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

REQUIREMENT 2e: 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.



Attitude Indicator:



Heading Indicator:



Altimeter:



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Airspeed Indicator:



Turn and Back Indicator:



Vertical Speed Indicator:



Compass:



Navigation (GPS and VOR):



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Communication Radios:



Tachometer:



Oil Pressure Gauge:



Oil Temperature Gauge:





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



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DO ONE OF THE FOLLOWING (3A or 3B) FOR REQUIREMENT 3

REQUIREMENT 3a: Build and fly a fuel-driven or battery-powered electric model airplane.

The building requirement of this requirement component can be done on your own, however the flying part of this requirement component should be done with your merit badge counselor.

If done with someone else, please have that individual fill out the section below for consideration by your merit badge counselor for sign off.

Title and qualifications of person giving supervision for this requirement:

Supervision provided by Name _____

Phone _____

Signature _____

Date _____

approved

Notes:



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REQUIREMENT 3a: Describe safety rules for building and flying model airplanes.

Notes:

REQUIREMENT 3a: Tell safety rules for use of glue, paint, dope, plastics, fuel, and battery pack.

Glue:

Paint:



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Dope:

Plastics:

Fuel:

Battery Pack:



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REQUIREMENT 3b: 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.

The building requirement of this requirement component can be done on your own, however you should bring your model to share with your merit badge counselor.

After completing the competition, make sure to have a unit leader sign off that this competition has occurred.

I hereby confirm that the model airplane competition, as required for this merit badge requirement, has been completed at the patrol/troop level .

Unit Leader's Name

Phone

Unit Leder's Signature

Date

confirmed

Date and Location of Competition:

Notes:



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DO ONE OF THE FOLLOWING (4A, 4B, or 4C) FOR REQUIREMENT 4

REQUIREMENT 4a: Visit an airport.

Airport and Location Visited:

Date and Time of Visit:

Adult that attended with you:

Adult's Name

Phone

Adults Signature

Date

attended

REQUIREMENT 4a: 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:



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How runways are numbered:

How runways are determined to be “active”:



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REQUIREMENT 4b: 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.

Facility and Location Visited:

Date and Time of Visit:

Adult that attended with you:

Adult's Name

Phone

Adults Signature

Date

attended

Notes:



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REQUIREMENT 4c: Visit an aviation museum or attend an air show. Report on your impressions of the museum or show.

Aviation Museum or Air Show Visited:

Date and Time of Visit:

Adult that attended with you:

Adult's Name

Phone

Adults Signature

Date

attended

Notes:



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REQUIREMENT 5: Find out about three career opportunities in aviation.

Career Opportunity #1:

Career Opportunity #2:

Career Opportunity #3:

REQUIREMENT 5: Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor.

Selected Career Opportunity:

Educational Requirements:

Training Requirements:

Experience Requirements:

REQUIREMENT 5: Explain why this profession might interest you.

Notes:



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