



Aviation Merit Badge Workbook

SCOUTMASTER BUCKY

Scouts participating in a Scoutmaster Bucky merit badge opportunity, whether online or in person, should consider using the Aviation merit badge pamphlet for discovery and knowledge, along with the class preparation pages for clarifications, insights, and expectations.

<https://scoutmasterbucky.com/merit-badges/aviation/aviation-pamphlet.pdf>

<https://scoutmasterbucky.com/merit-badges/aviation/aviation-cpp.pdf>

REQUIREMENT 3e REQUIRES PARENT / GUARDIAN PERMISSION.

REQUIREMENT 1a: Define "aircraft".

Notes:

REQUIREMENT 1a: Describe three kinds of aircraft today, and their typical uses.

AIRCRAFT #1:

Type:

Use:

Use:



SCOUTMASTER BUCKY

AIRCRAFT #2:

Type:

Use:

AIRCRAFT #3:

Type:

Use:

AIRCRAFT #4:

Type:

Use:



SCOUTMASTER BUCKY

AIRCRAFT #5:

Type:

Use:

AIRCRAFT #6:

Type:

Use:

AIRCRAFT #7:

Type:

Use:



SCOUTMASTER BUCKY

AIRCRAFT #8:

Type:

Use:

AIRCRAFT #9:

Type:

Use:

AIRCRAFT #10:

Type:

Use:



SCOUTMASTER BUCKY

REQUIREMENT 1b: Provide a brief overview of the evolution of flight.

Use:

REQUIREMENT 1b: Discuss three notable times in history important to aviation.

Time #1:

Time #2:

Time #3:



SCOUTMASTER BUCKY

REQUIREMENT 1c: Explain the difference between a fixed wing and a rotary wing aircraft, and the benefits of each.

Difference between a Fixed Wing and Rotary Wing Aircraft:

Benefits of a Fixed Wing Aircraft:

Benefits of a Rotary Wing Aircraft:



SCOUTMASTER BUCKY

REQUIREMENT 1d: Explain the operation of piston, turbine, and jet engines.

Piston Engine:

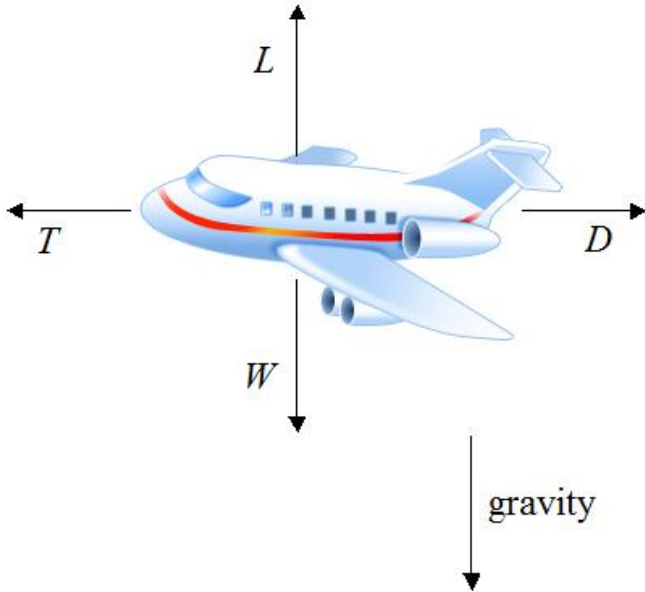
Turbine Engine:

Jet Engine:



SCOUTMASTER BUCKY

REQUIREMENT 1e: Using a model aircraft, describe the four forces that act on an aircraft in flight.



T =

L =

D =

W =

Gravity =



SCOUTMASTER BUCKY

REQUIREMENT 1f: Explain how an airfoil generates lift.

Notes:

REQUIREMENT 1f: Explain Bernoulli's principle.

Notes:

REQUIREMENT 1g: Identify and describe the aerodynamic control surfaces on the aircraft of your choice, and explain how they operate to control its attitude and direction of flight.

Aerodynamic Control Surface #1:



SCOUTMASTER BUCKY

Aerodynamic Control Surface #2:

Aerodynamic Control Surface #3:

Aerodynamic Control Surface #4:



SCOUTMASTER BUCKY

REQUIREMENT 1h:

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, communication, and engine performance indicators.



Attitude Indicator:



Heading Indicator:



Altimeter:



Airspeed Indicator:



SCOUTMASTER BUCKY



Turn and Bank Indicator:



Vertical Speed Indicator:



Compass:



Navigation:



Communication:



SCOUTMASTER BUCKY



Tachometer:



Oil Pressure Gauge:



Oil Temperature Gauge:

Notes:



SCOUTMASTER BUCKY

DO ONE OF THE FOLLOWING (2A, 2B, or 2C) FOR REQUIREMENT 2

REQUIREMENT 2a: Build a model FPG-9.

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.

REQUIREMENT 2a: 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.

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 or Email

Unit Leader's Signature

Date

☐

confirmed

Date and Location of Competition:

Notes:



SCOUTMASTER BUCKY

REQUIREMENT 2b: Build a rubber-band driven balsa wood airplane.

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.

REQUIREMENT 2b: Fly the plane for 25 feet in a straight line, with a smooth landing.

Consider recording your flights, otherwise you will need to satisfactorily complete this requirement with your merit badge counselor in person.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

Notes:

REQUIREMENT 2c: Build (or obtain) a fuel-driven or battery-powered electric model aircraft or drone.

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.

REQUIREMENT 2c: Obtain The Recreational UAS Safety Test (TRUST) certification.

More information and testing partners can be found here

[The Recreational UAS Safety Test \(TRUST\)](#)

BE PREPARED!

REQUIREMENT 2c: After obtaining The Recreational UAS Safety Test (TRUST) certification, fly the aircraft with a successful take-off and landing.

Consider recording your flights, otherwise you will need to satisfactorily complete this requirement with your merit badge counselor in person.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

Notes:



Aviation Merit Badge Workbook

SCOUTMASTER BUCKY

DO TWO OF THE FOLLOWING (3A, 3B, 3C, 3D, or 3E) FOR REQUIREMENT 3

REQUIREMENT 3a: Using a flight simulator software package, set a course and fly the headings you have established with a successful take-off and landing.

Consider using the [Aviation Merit Badge Pamphlet](#) for preparation information.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

REQUIREMENT 3b: Under supervision, perform a preflight inspection of an aircraft.

As a part of completing this requirement consider your merit badge counselor for the supervision role.

if done with someone else, consider having that individual provide confirmation below for consideration by your merit badge counselor.

If not the merit badge counselor, title and qualifications of person giving supervision for this requirement:

Supervision provided by Name

Phone or Email

Signature

Date

☐

confirmed

REQUIREMENT 3c: Observe and/or participate in an aircraft maintenance activity. Describe the maintenance schedule and requirements for an aircraft of your choice.

Aircraft Maintenance Activity:

Date and Location of Activity:

Notes:



Aviation Merit Badge Workbook

SCOUTMASTER BUCKY

REQUIREMENT 3d: 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 navigational heading for an aircraft.

Consider using the [Aviation Merit Badge Pamphlet](#) for preparation information.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!

REQUIREMENT 3e: With your parent or guardian's permission, take a discovery flight in an aircraft.

PARENT/GUARDIAN PERMISSION: IS REQUIRED.

Parent's / Guardian's Name

Phone or Email

Parent's / Guardian's Signature

Date ☐ permission

REQUIREMENT 3e: Record the date, place, type of aircraft, and duration of flight. Report on your impressions of the flight.

Type of Aircraft and Duration of Flight:

Date and Location of Flight:

Notes:



SCOUTMASTER BUCKY

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

REQUIREMENT 4a: Visit an airport.

Airport and Location Visited:

Date and Time of Visit:

REQUIREMENT 4a: After the visit, report on how the facilities are used.

Notes:

REQUIREMENT 4a: After the visit, report on how runways are numbered.

Notes:

REQUIREMENT 4a: After the visit, report on how runways are determined to be "active".

Notes:



Aviation Merit Badge Workbook

SCOUTMASTER BUCKY

REQUIREMENT 4b: Visit a Federal Aviation Administration facility: Airport Traffic Control Tower (ATCT), Terminal Radar Approach Control (TRACON), Air Route Traffic Control Center (ARTCC), or Flight Standards District Office (FSDO).

Facility and Location Visited:

Date and Time of Visit:

REQUIREMENT 4b: Report on the operation and your impressions of the facility.

Notes:



SCOUTMASTER BUCKY

REQUIREMENT 4c: Visit a military aviation facility.

Military Aviation Facility and Location Visited:

Date and Time of Visit:

REQUIREMENT 4c: Learn how that facility supports defense and/or civilian activities.

Notes:

REQUIREMENT 4c: Report on the operation and your impressions of the facility.

Notes:



SCOUTMASTER BUCKY

REQUIREMENT 4d: Visit an aviation museum or attend an air show.

Aviation Museum or Air Show and Location Visited:

Date and Time of Visit:

REQUIREMENT 4d: Report on your impressions of the museum or show.

Notes:

REQUIREMENT 4d: Report on what you learned from the experience.

Notes:



SCOUTMASTER BUCKY

REQUIREMENT 5a: Explain the following: the student pilot, the recreational pilot, the remote pilot, and the private pilot certificates.

Student Pilot Certificate:

Recreational Pilot Certificate:

Remote Pilot Certificate:

Private Pilot Certificate:



SCOUTMASTER BUCKY

REQUIREMENT 5b: Describe the benefits of the instrument rating.

Notes:

REQUIREMENT 5c: Explain the following: the commercial pilot certificate, the airline transport pilot certificate, and certified flight instructor (CFI).

Commercial Pilot Certificate:

Airline Transport Pilot Certificate:

Certified Flight Instructor (CFI):



SCOUTMASTER BUCKY

REQUIREMENT 5d: Identify an Exploring Post and/or Civil Air Patrol facility in your area. Learn about their activities and membership requirements.

Exploring Post and/or Civil Air Patrol facility in your area:

Notes:

REQUIREMENT 5e: Identify three career opportunities that would use skills and knowledge in aviation.

Career Opportunity #1:

Career Opportunity #2:

Career Opportunity #3:



SCOUTMASTER BUCKY

REQUIREMENT 5e: Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field.

Selected Career Opportunity:

Training Requirements:

Education Requirements:

Certification Requirements:

Experience Requirements:

Expenses associated with entering the field:



SCOUTMASTER BUCKY

REQUIREMENT 5e: Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career.

Prospects for Employment:

Starting Salary:

Advancement Opportunities:

Career Goals associated with this career:

REQUIREMENT 5e: Discuss what you learned with your counselor and whether you might be interested in this career.

Notes: