



Aviation

Merit Badge Workbook

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

The work space provided for each requirement should be used by the Scout to make notes for discussing the item with his counselor, not for providing the full and complete answers. Each Scout must do each requirement.

No one may add or subtract from the official requirements found in Boy Scout Requirements (Pub. 33216 – SKU 34765).

NAME _____ UNIT _____

1. Do the following:

- a. Define “aircraft.” An aircraft is a _____ than enables people (or cargo) to fly through the air.

From the pictures below, describe the type of aircraft and its possible uses:





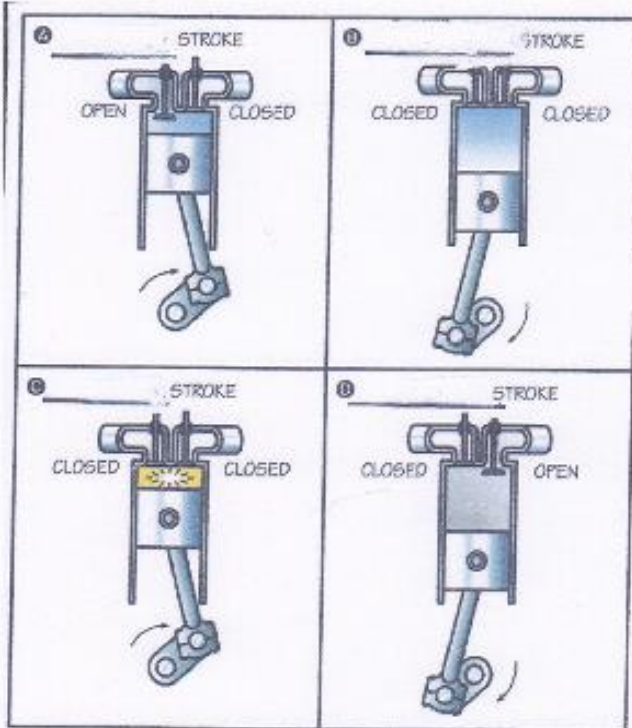








1. a. i. Describe and label the following aircraft engines:



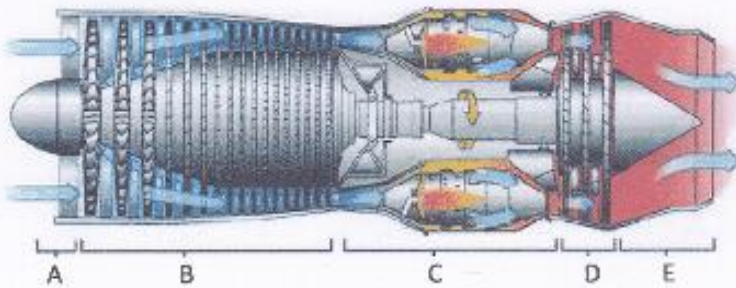
1 a ii. Describe and label the following aircraft engines:

_____ engine.

- A) _____ stroke.
- B) _____
- C) _____ stroke.
- D) _____ stroke

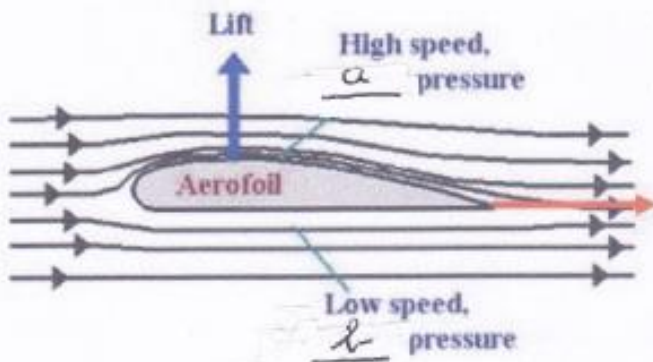
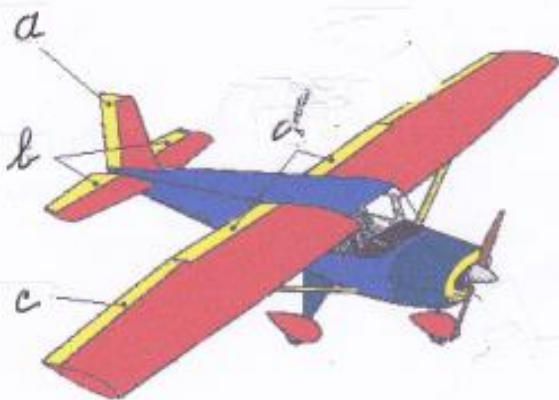
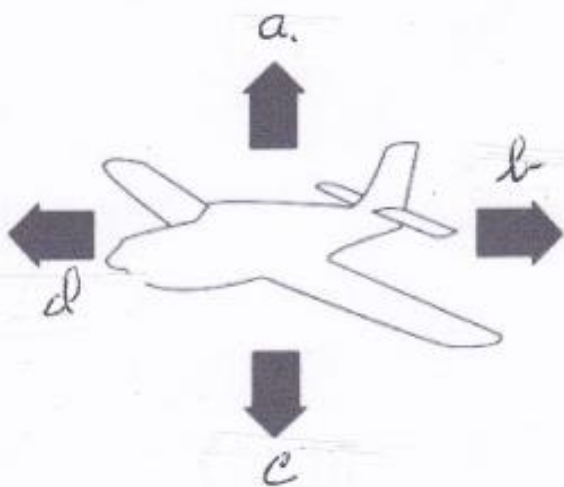
_____ engine

- A) _____ inlet
- B) _____
- C) _____ chamber
- D) _____
- E) _____



_____ This jet engine has a separate portion of compressor blades that bypasses the combustion chamber providing greater thrust for its weight.

_____ This variation of the turbojet engine turns a propeller. This combination allows aircraft to land and takeoff on shorter airfields.



1 B. Point out on a model airplane the forces that act on an airplane in flight.

- a. _____
- b. _____
- c. _____
- d. _____

Control surfaces of an airplane

1 C. Explain how an airfoil generates lift, how the primary control surfaces affect the airplane's attitude, and how a propeller produces thrust.

- a. _____
- b. _____
- c. _____
- d. _____

How an airfoil produces lift

- a. _____
- b. _____

1 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
Takeoff	Lf up neutral Rt up	Up Neutral Down	Left neutral right	Down Retracted
Straight Climb	Lf up neutral Rt up	Up Neutral Down	Left neutral right	Down Retracted
Right Level Turn	Lf up neutral Rt up	Up Neutral Down	Left neutral right	Down Retracted
Left Climbing Turn	Lf up neutral Rt up	Up Neutral Down	Left neutral right	Down Retracted
Left Descending turn	Lf up neutral Rt up	Up Neutral Down	Left neutral right	Down Retracted
Straight descent	Lf up neutral Rt up	Up Neutral Down	Left neutral right	Down Retracted
Landing	Lf up neutral Rt up	Up Neutral Down	Left neutral right	Down Retracted

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

Certificate/Rating	Minimum hours	Number of Passengers	Visibility VFR/IFR	Flight Max Distance	Night Flights	Fly for Hire
Sport Pilot Certificate						
Recreational Pilot Certificate						
Private Pilot Certificate						
Instrument Pilot Rating						

2. Do the following:

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

C. 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.

From _____ to _____ the true course is: _____⁰

Correct for wind drift + / - _____⁰ Gives you a True Heading of _____⁰

Correct for variation + / - _____⁰ Gives you a Magnetic Heading of _____⁰

Correct for compass deviation + / - _____⁰ Gives you a Compass Heading of _____⁰

3. Do the following:

- b. 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.

4. Do 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 _____

How runways are numbered, _____

How runways are determined to be "active." _____

5. Find out about three career opportunities in aviation.

1. _____

2. _____

3. _____

Pick one and find out the education, training, and experience required for this profession. _____

Education: _____

Training: _____

Experience: _____

Discuss this with your counselor, and explain why this profession might interest you. _____

Requirement resources can be found here:
http://www.meritbadge.org/wiki/index.php/Aviation#Requirement_resources