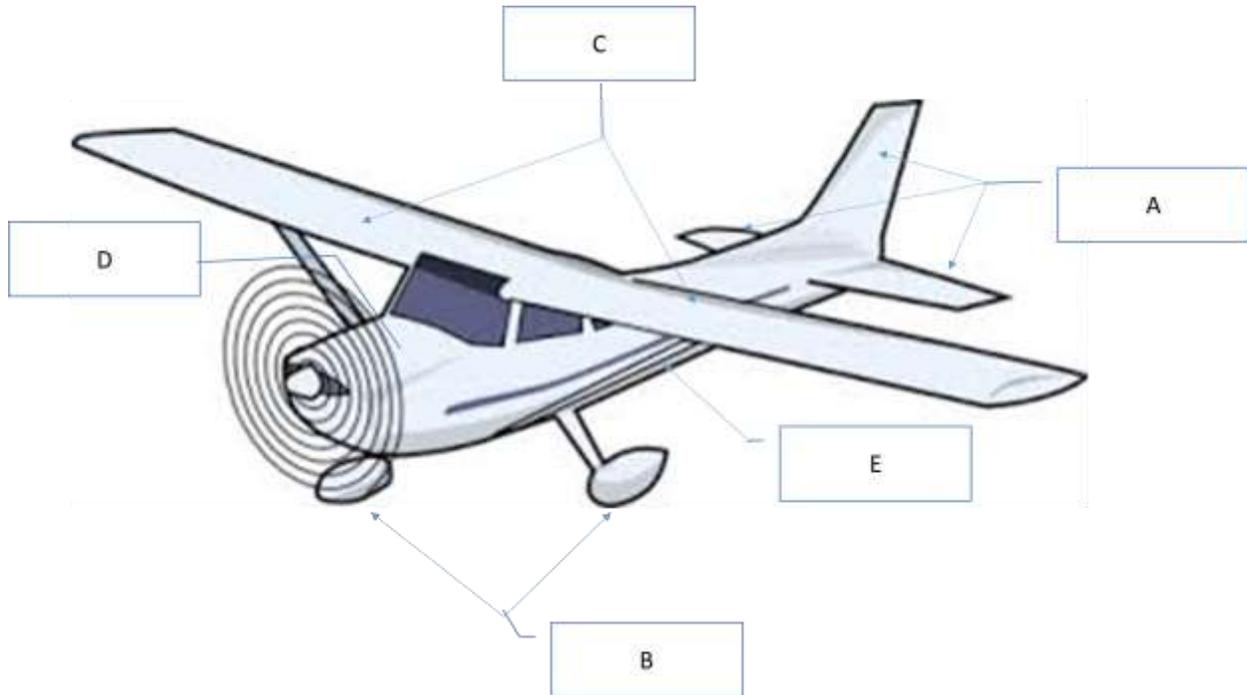


Chapter 3: Aircraft Construction

p. 1-3

1. Aircraft Design, Certification, and Airworthiness

1.1. Replace the letters A, B, C, and D by the appropriate name of aircraft component



A: _____

B: _____

C: _____

D: _____

E: _____

1.2. What are the three aviation products that the FAA certifies?

- Aircraft, aircraft engine, and propellers
- Aircraft, aircraft fuselage, and engine
- Aircraft, propeller, and fuselage
- Fuselage, aircraft engine, and aircraft

1.3. What airworthiness standards apply to Transport Category Airplanes?

- 14 CFR part 23
- 14 CFR part 25
- 14 CFR part 27
- 14 CFR part 31

1.4. The FAA issues a Type Certificate Data Sheet (TCDS) for the product when they are satisfied it complies with the applicable airworthiness standards

- True
- False

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2. Lift and Basic Aerodynamics

2.1. Select the forces that act upon an aircraft in straight and level, unaccelerated flight

- Lift
- Mass
- Drag
- Centripetal Force
- Thrust
- Weight

2.2. Link the force with its appropriate definition

Thrust	This force opposes the downward force of weight, is produced by the dynamic effect of the air acting on the wing, and acts perpendicular to the flight path through the wing's center of lift (CL)
Drag	Forward force produced by the powerplant/propeller. It opposes or overcomes the force of drag. As a rule, it is said to act parallel to the longitudinal axis. This is not always the case
Weight	The combined load of the aircraft itself, the crew, the fuel, and the cargo or baggage. This force pulls the aircraft downward because of the force of gravity. It opposes lift and acts vertically downward through the aircraft's center of gravity (CG)
Lift	A rearward, retarding force and is caused by disruption of airflow by the wing, fuselage, and other protruding objects. Drag opposes thrust and acts rearward parallel to the relative wind

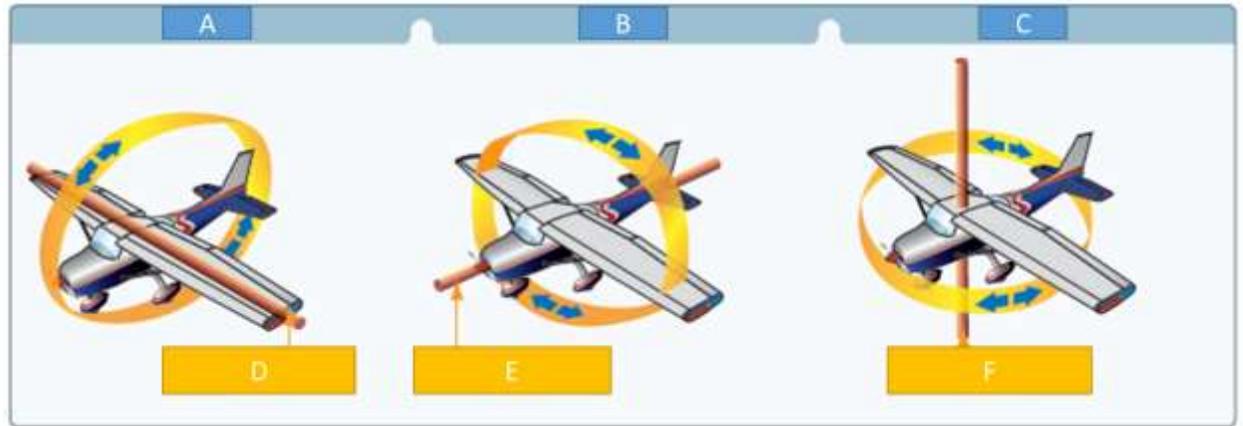
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3. Major Components:

3.1. What are the major components of the aircraft?

- a. Fuselage, Wings, Powerplant, and Landing gear
- b. Fuselage, Wings, Yaw, Landing gear
- c. Pitching, Rolling, and Yawing
- d. Fuselage, Empennage, Powerplant, and Landing gear

3.2. Replace letters A through B with the appropriate aircraft motion, and the letters C through F with the appropriate axis of motion



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3.3. Select the Truss-type fuselage structure components (check all that apply)

- Longerons
- Struts
- Spurs
- Bulkhead
- Stringers

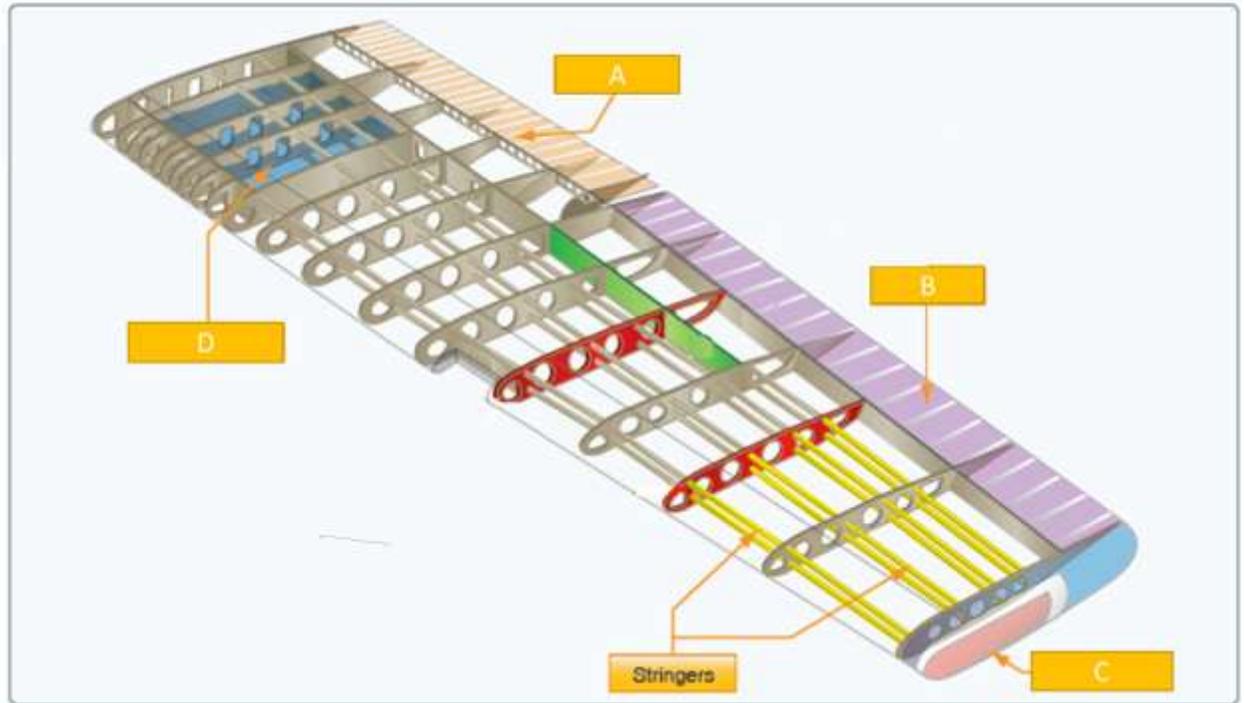
3.4. Wings may be attached at the top, middle, or lower part of the fuselage.

- True
- False

3.5. The wing component that mainly transmits the flight and landing loads to the the main fuselage structure in many high-wing airplanes is

- a. Strut
- b. Bulkhead
- c. Stringers
- d. Longerons

3.6. Complete the labels for the wing components



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3.7.

3.7. Cite 3 types of flaps.

3.8. With the following words: (tail), (vertical stabilizer), (horizontal stabilizer), (rudder), (elevator), (trim). Fill in the blanks below.

The empennage includes the entire (...) group and consists of (...) surfaces, such as the (...) and the (...). The (...) surfaces include the (...), the (...), and one or more (...) tabs.

3.9. The antiservo tab moves in the same direction as the trailing edge of the stabilator and helps make the stabilator less sensitive.

- True
 - False
- p.3-7

3.10. Landing gear with a front mounted wheel is called conventional landing gear

- True
- False

- 3.11. In most single-engine airplanes, the engine's functions include (check all that apply)
- Provide the power to turn the propeller
 - Provide a pressurization
 - Generate electrical power
 - Provide a vacuum source for some flight instruments
 - Provide water
 - Provide a source of heat for the pilot and passengers
- 3.12. The propeller, mounted on the front of the engine, translates the rotating force of the engine into thrust, a forward acting force that helps move the airplane through the air. This process is (put the sentences in the correct order)
1. This pressure differential develops thrust from the propeller, which in turn pulls the airplane forward
 2. The propeller rotates.
 3. A high-pressure area is formed at the back of the propeller's airfoil, and low pressure is produced at the face of the propeller.

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