



AVIATION HIGH SCHOOL

Learn Science, Technology, Engineering,
and Math through an exciting introduction
to the aviation industry

STUDENT NOTEBOOK

Brittany D. Hagen, Sarah K. Anderson, Leslie M. Martin, and Paul R. Snyder



AVIATION SUPPLIES & ACADEMICS, INC.
NEWCASTLE, WASHINGTON

Brittany D. Hagen
Sarah K. Anderson
Leslie M. Martin
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by Brittany D. Hagen, Sarah K. Anderson, Leslie M. Martin, and Paul R. Snyder

AVIATION SUPPLIES & ACADEMICS, INC.
7005 132nd Place SE
Newcastle, Washington 98059
asa@asa2fly.com | 425-235-1500 | asa2fly.com

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CHAPTER 8

AERODYNAMICS OF FLIGHT

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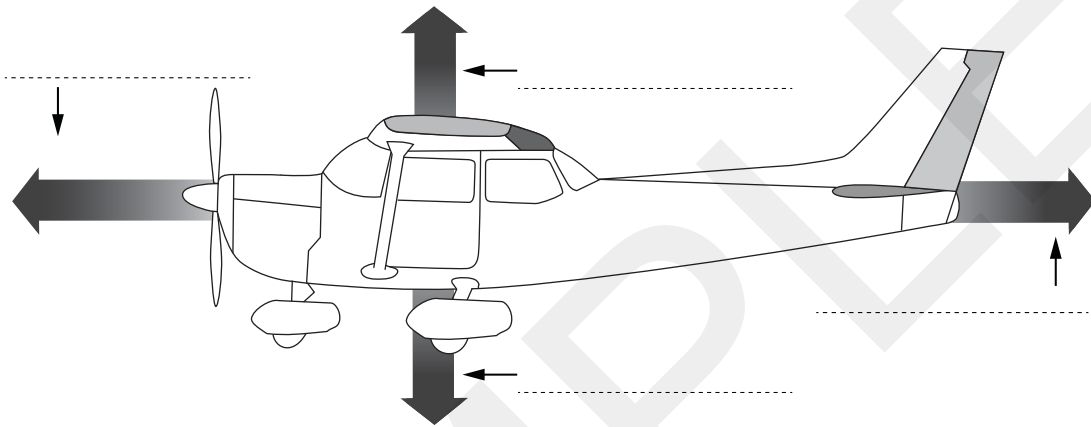
Check off each activity upon completion.

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LESSON 1

FORCES OF FLIGHT

ACTIVITY 1: The Four Forces



► Relationship of forces acting on an aircraft.

ACTIVITY 2: Aerodynamics Graphic Organizer

	What is it? (definition)	Important terms to know	How does it work?	Factors that impact it
Thrust				
Lift				
Drag				
Weight				

ACTIVITY 3: Home Group Questions

In your home group, answer the following questions.

1. What are the four forces that act on an aircraft?

2. What are three things that determine the weight of an airplane?

3. What are two things that determine the thrust of an airplane?

4. A high thrust-to-weight ratio means that the aircraft will have high _____
and a high _____.

5. Write a few sentences summarizing this activity and what you learned from it.

ACTIVITY 4: Acrostic

Write an acrostic based on one of the four forces: lift, weight, thrust, or drag.

LESSON 2

INTRODUCTION TO AIRFOILS

ACTIVITY 1: Airfoil Definitions

Define the following terms by looking them up in the *Pilot's Handbook of Aeronautical Knowledge* Chapter 5.

Leading edge: _____

Trailing edge: _____

Chord line: _____

Camber: _____

Angle of attack: _____

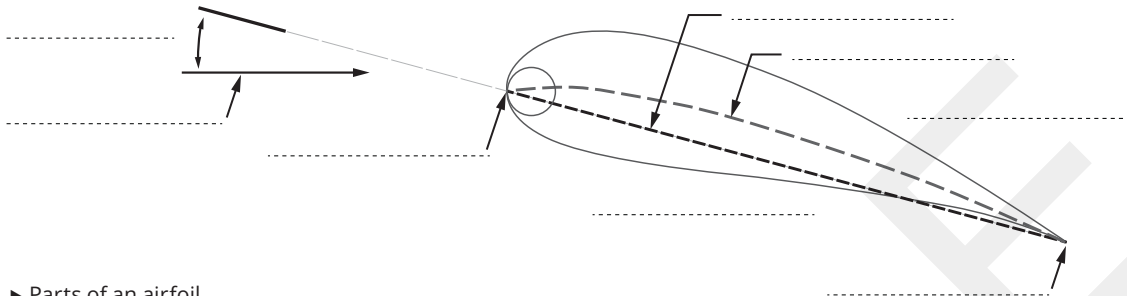
Relative wind: _____

High-pressure area: _____

Low-pressure area: _____

ACTIVITY 2: Labeling Airfoil Parts

In the drawing below, label the following parts of the airfoil: leading edge, trailing edge, chord line, camber, angle of attack, relative wind, high-pressure area, and low-pressure area.



► Parts of an airfoil.

ACTIVITY 3: Wing Experiment Questions

Directions: Cut your paper to create two pieces that are each 4 by 5 inches. Keep one piece of paper flat and form a slight arch, loop, or hill on top with the other. Tape the two pieces together.

1. Draw what your wing looks like.
2. How does it react when you blow over the top of the wing?

3. How does it react when you blow across the bottom of the wing?

4. Why is there a difference?

Create another wing with a different camber.

5. Draw what your wing looks like.

6. How does it react when you blow over the top of the wing?

7. Which wing performed better?

a. Why?

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This interactive *Aviation High School Student Notebook* addresses a growing need for future-ready competencies in aviation and provides an exciting and engaging context to learn Science, Technology, Engineering, and Math (STEM). You will be introduced to the innovative field of aviation, study the fundamentals of flight, and explore the various career opportunities available within the aviation industry.

Develop skills to pursue a career in the aviation and aerospace industry or gain knowledge you can apply to numerous other STEM fields. This *Student Notebook* will introduce you to 14 essential aviation topics divided into chapters:

- Aviation Training
- Aircraft Basics
- Airport Operations
- Aircraft Weight & Balance and Performance
- Aviation Communications
- People, Events, and Trends in Aviation
- Careers in Aviation
- Aerodynamics of Flight
- Aircraft Systems
- Flight Maneuvers
- Airspace
- Weather
- Aeromedical Factors
- Navigation and Flight Planning

Increase your understanding of key aeronautical concepts through a variety of daily activities as well as demonstrations using flight simulators and drones.



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