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

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Aviation High School Student Notebook: Learn Science, Technology, Engineering, and Math through an exciting introduction to the aviation industry
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Charts and other excerpts from the Piper Archer III PA-28-181 Pilot's Operating Handbook, report VB-1563 and VB-2749, are courtesy Piper Aircraft, Inc., and are for illustrative purposes only.

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CONTENTS

CHAPTER 8

AERODYNAMICS OF FLIGHT

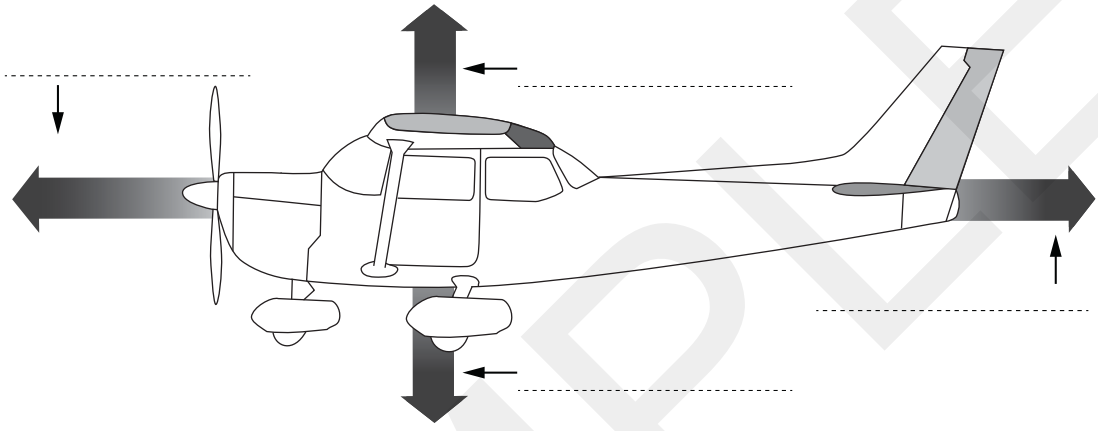
CONTENTS

Check off each activity upon completion.

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: _____

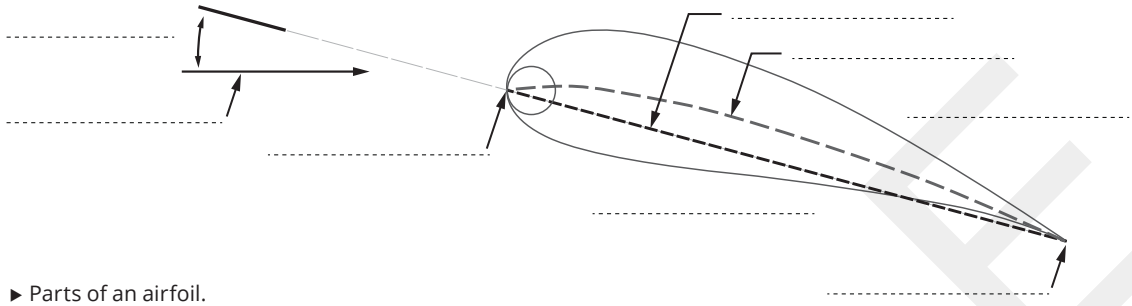
_____

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.

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