Acknowledgments

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Introduction

The National Aeronautics and Space Administration (NASA) conducts research for aeronautics, too! This High Flyers Alphabet Activity book has been created to introduce some basic aeronautics terms for children attending kindergarten through second grade. We want them to realize that many aeronautics terms and concepts surround them every day. These activities show how an alphabet letter can be related to an aeronautics concept and basic aeronautics terms. The child is invited to look at each of the letters, trace the letter, and print the letter in the space provided. We hope they enjoy doing the activities, too. Answers to the activities can be found on the last few pages of this book.

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NASA Aeronautics Education
http://www.aeronautics.nasa.gov/education.htm

NASA Education for Students
http://www.nasa.gov/audience/forstudents/index.html
## National Math and Science Standards

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</tbody>
</table>
aircraft

Draw a line to match each aircraft to its shadow.
balloon

Connect the dots and color.
Clouds

Count the pictures hidden in the clouds.

1

___

___

___

___

___

___
down

Follow the line and help the skydiver guide the parachute down to the target.
Each aircraft has a different type of engine. The engines move the aircraft through the air at different speeds. A passenger jet flies through the air at 550 miles per hour. A smaller private aircraft flies through the air at 410 miles per hour. A fighter jet flies through the air at 1,500 miles per hour.

The chart below shows the speed at which each aircraft flies. Use the graph below to complete the activity on the next page.
There was an airplane race. Draw a line from the trophy to the aircraft in the order it finished.

1st place
1,500 mph

2nd place
410 mph

3rd place
150 mph
fly

Circle the pictures of the things that fly.

How many did you circle? _____
Materials Needed

Scissors
Cellophane tape
One penny

Instructions

1. Cut out the wing and fuselage patterns that can be found on the back cover of this book.
2. Carefully cut on the wing slot line located on the fuselage.
3. Slide the wing into the slot, making sure that the wing center line is within the fuselage.
4. Tape the wing to the fuselage.
5. Tape the penny to the nose of the fuselage for balance.
6. Bend both elevons upward.
7. Gently toss the glider.
helicopters

Add the **helicopters** in each group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Helicopters</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military</td>
<td><img src="image" alt="Military Helicopters" /></td>
<td><img src="image" alt="Add the military helicopters" /></td>
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<tr>
<td>Coast Guard</td>
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<td><img src="image" alt="Add the coast guard helicopters" /></td>
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<tr>
<td>Traffic Reporter</td>
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<tr>
<td>Emergency Rescue</td>
<td><img src="image" alt="Emergency Rescue Helicopters" /></td>
<td><img src="image" alt="Add the emergency rescue helicopters" /></td>
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</table>
in

Draw a line to where the passengers, luggage, and engine go into the airplane.

passengers

luggage

engine
Circle the aircraft that is not a **jet**.
Color which type of day would be best for flying a kite.

sunny

snowy

windy

rainy
landing

The aircraft below are landing. Draw a line to match each aircraft to where it would land.

- Seaplane
- Helicopter
- Passenger plane
mechanic

Connect the dots to see what type of tools a mechanic uses.
The NASA Insignia (more commonly referred to as the "meatball") reflects the history and tradition of the Agency and is used in all of the Agency’s day-to-day communications materials. Designed in 1959 by former NASA employee James Modarelli of NASA Glenn Research Center, the NASA Insignia contains the following elements: the sphere represents a planet, the stars represent space, the vector represents aeronautics, and the orbit represents space travel.
oxygen mask

Does the pilot have his oxygen mask on or off? Under each picture, circle the word on or off.

How many pilots have their oxygen masks on? ____

How many pilots have their oxygen masks off? ____
A pilot uses instruments in the cockpit to fly. Color the circles green, the squares red, the triangles yellow, and the rectangles blue.
Your family is going on a trip far away. Under each picture is the time it will take each vehicle to get there. Circle the vehicle that will get you there the quickest.

- Ship: 2 weeks
- Airplane: 2 hours
- Train: 1 day
- Truck: 3 days

quick
runway

Help the airplane find the runway through the maze.

Start here
Draw and color at least three things that can fly in the **sky**.
takeoff

Write the number under the matching picture.

1. Loading
2. Takeoff
3. Flying
4. Landing
Circle the object in each group that does not go up in the air.
To complete the entire view of the airplane, draw the other half.
Wing

Trace the different wing shapes.

- Wright brothers
- Concorde
- Paper airplane
- F-18 (Blue Angels)
- Boeing 747
- Paper airplane
NASA uses test aircraft and space vehicles called **X-planes**. X-plane means experimental (X)-plane. Be an engineer and design your own X-plane in the space below. Give it an X-number and write it under your plane.

**X-**  

Where would you go on your airplane ride? Would you like to take an airplane ride? Whom would you take with you? Draw their faces in the windows. Don't forget your face!
Where would you go on your airplane ride? Where would you like to take an airplane ride? Whom would you take with you? Draw their faces in the windows. Don’t forget your face!
Count the number of airplanes in each group as they zoom by.

How many airplanes did you count? ___
Aero Adventure Activity Book Practice Page

Aa aircraft

Bb balloon

Cc clouds
Dd down
Dd down

Ee engine
Ee engine

Ff fly
Ff fly
Gg glider
Gg glider
Hh helicopters
Hh helicopters
Ii in
Ii in
Aero Adventure Activity Book Practice Page

Jj  jet

Kk  kite

Ll  landing
Mm mechanic

Mm mechanic

Nn NASA

Nn NASA

Oo oxygen

Oo oxygen
Pp pilot

Qq quick

Rr runway
Ss sky
Ss sky

Tt takeoff
Tt takeoff

Uu up
Uu up
Vv  view
Vv  view
Vv  view

Ww  wing
Ww  wing

Xx  X-plane
Xx  X-plane
Yy you

Zz zoom

Zz zoom
Airplane Parts Definitions

- **Wing**: generates lift
- **Cockpit**: command and control
- **Fuselage (body)**: holds parts together (carries passengers, cargo, and fuel)
- **Engine**: generates thrust
- **Rudder**: changes yaw (side to side)
- **Elevator**: changes pitch (up and down)
- **Aileron**: changes roll (rotates body)
Aeronautics
The science of making and flying aircraft.

Aileron
A hinged flap on the back edge of the wing of an airplane; the flap is moved up or down to keep the airplane steady or make a turn in the air (refer to picture on page 40).

Aircraft
1. An item that you can fly or float through the air.
2. Any machine for flying.

Airplane
An aircraft that is kept up by the force of air upon its wings and driven forward by a jet engine or propeller.

Balloon
A large bag or rubber sack that is filled with air or other gases causing it to rise and float in the air.

Clouds
White or gray objects that float in the air and contain tiny water drops.

Cockpit
A place where the pilot or crew sits to control the aircraft (refer to picture on page 40).

Elevator
A part of the tail of an airplane that can be moved to make the airplane go up or down (refer to picture on page 40).

Elevon
A control surface on an airplane that combines the functions of an elevator and an aileron.

Engine
A machine, such as an aircraft engine, that uses energy of some kind to create motion and do work (refer to picture on page 40).

Engineer
A person trained and skilled in the design, construction, and use of engines, machines, or other devices of industry and everyday life.

Experimental
Having to do with a test or series of tests to find out if something is correct.
**Fuselage**
The main structural body of an aircraft to which the wings and tail are attached (refer to picture on page 40).

**Glider**
An aircraft that has no engine and is carried along by air currents.

**Helicopter**
A kind of aircraft that has a large propeller fixed on top and no wings; it can be flown backward, forward, straight up, and down.

**Instrument**
A mechanical or electronic measuring device that gives pilots information they need to fly their airplanes safely.

**Jet**
An airplane that moves very quickly and is jet propelled.

**Kite**
A tethered glider that is lifted by the wind.

**Landing**
The act of coming down after flying.

**Loading**
Putting something to be carried into or upon an aircraft.

**Luggage**
The suitcases, trunks, baggage, and belongings of a passenger.

**Mechanic**
1. A worker skilled in making, using, or repairing machines, vehicles, and tools.
2. A person who repairs and maintains aircraft.

**Oxygen mask**
A mask placed over the mouth and nose and through which oxygen is supplied from an attached storage tank.

**Parachute**
A large cloth device that opens up like an umbrella and is used for slowing down a person or thing dropping from an airplane.

**Passenger**
A person traveling in an airplane but not helping to operate it.
Pilot
A person who operates an airplane, balloon, or other aircraft.

Propeller
A set of blades driven by an engine that pull or push an airplane through the air.

Runway
A surface on the ground specifically used for aircraft takeoffs and landings.

Rudder
A hinged, vertical flap at the rear of an aircraft; used for steering (refer to picture on page 40).

Seaplane
Any airplane designed to land on or take off from water.

Takeoff
The act of rising from the ground, especially in an aircraft.

Vehicle
An object that moves people, such as an automobile, bicycle, or aircraft.

View
A way of seeing or looking at something.

Wing
The part of an airplane that produces lift (refer to picture on page 40).

X-plane
A special vehicle designed for experimental flight tests.

Source definitions:
http://www.dictionary.com


Little Explorers Picture Dictionary from EnchantedLearning.com
**Aa**

- Various aircraft images

**Bb**

- Hot air balloons

**Cc**

- Clouds and related images

**Dd**

- Parachute and related images

**Ee**

- Engines with speed details

**Ff**

- Cow, butterfly, and other images

**Gg**

- Assemble Glider

**Hh**

- Table for counting:
  - Military: 4
  - Coast Guard: 2
  - Traffic Reporter: 4
  - Emergency Rescue: 3

**Ii**

- Airplane and luggage images
Does the pilot have his oxygen mask on or off? Under each picture, circle the word on or off.

How many pilots have their oxygen masks on? 3
How many pilots have their oxygen masks off? 3
How many airplanes did you count?

Your own drawings here.

Your own drawing here.
Congratulations

on completing the

High Flyers ALPHABET
Activity Book

You have earned your wings as an honorary NASA pilot.

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Print your name on the lines above
Acknowledgments

Thanks to the High Flyers Alphabet Activity Book team for their invaluable suggestions and fortitude to see this book come to fruition. Thanks also to the teachers who provided our team with ideas and feedback and, most important, the NASA Headquarters Aeronautics Research Mission Directorate for funding this outreach activity.

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