



Canadian Council for Aviation & Aerospace



Youth lookbook

L E V E L 1

AGES 7+
7+

**Youth
Logbook**
L E V E L 1

Name: _____

Age: _____

School/Group: _____

Mailing Address

Apt/No. and Street: _____

City/Province: _____

Postal Code: _____

E-mail: _____

IF FOUND PLEASE RETURN TO OWNER.



Canadian Council for Aviation & Aerospace

CCAA Youth Certificate of Achievement

This certifies that:

Name _____
Please Print

has successfully completed CCAA Youth Logbook Level 1.



All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, or stored in a database or retrieval system, without the prior written consent of Canadian Council for **Aviation & Aerospace**

155 - 955 Green Valley Crescent
Ottawa, Ontario K2C 3V4
Tel: (613) 727-8272 or 1-800-448-9715
Fax: (613) 727-7018

www.avaerocouncil.ca

The development of this Youth Logbook was funded in part by the Government of Canada's Sector Council Program.

Canada

Name _____

Date Completed _____

Parent/Teacher _____



CCAA Youth Logbook

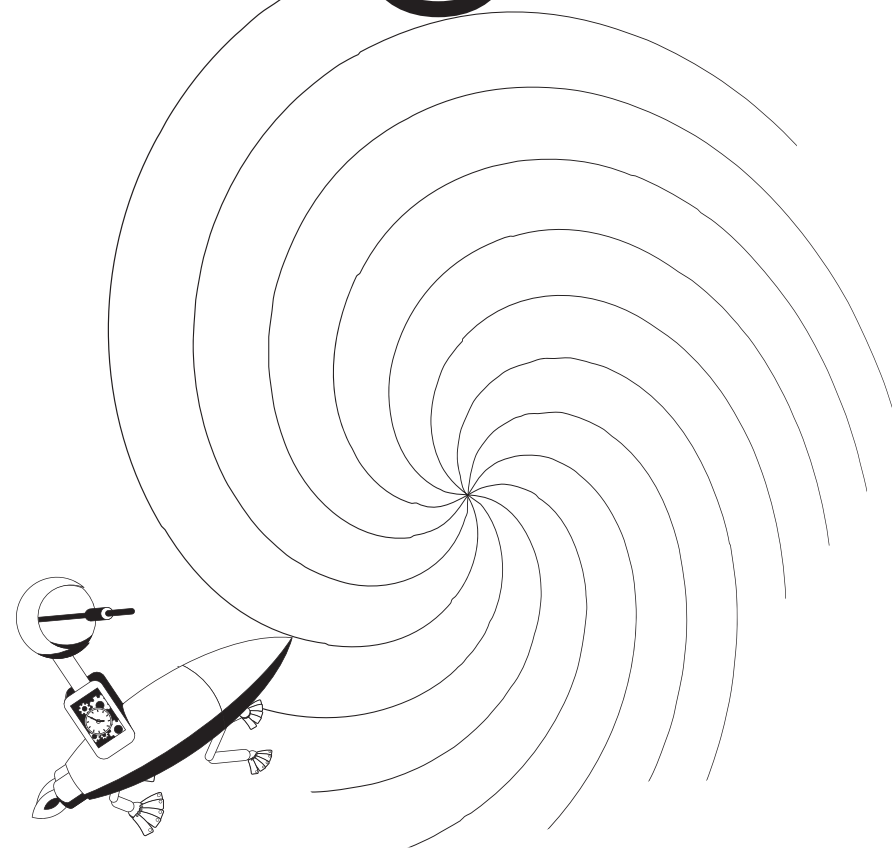
Adventure Guide

Certificate of Achievement	3
Time Travel	1-1
Activity 1-1: Be an Inventor.....	1-3
Activity 1-2: Canada Takes Flight.....	1-4
Flying Parts.....	2-1
Activity 2-1: Is an Airplane Like a Bird?	2-2
Activity 2-2: What's What?.....	2-6
Activity 2-3: Flying Parts Puzzle	2-7
Taking Off.....	3-1
Activity 3-1: Where's the Air?.....	3-2
Activity 3-2: Move It!	3-4
Activity 3-3: Using the Force.....	3-6
The Many Shapes of Flight.....	4-1
Activity 4-1: What's With the Weird Shape?.....	4-3
Activity 4-2: Wings for Different Things.....	4-5
Activity 4-3: Catching Some Air.....	4-7
It's All About Safety!.....	5-1
Activity 5-1: Be an Investigator	5-3
Aviation Work.....	6-1
Activity 6-1: Career Connect	6-3
Activity 6-2: Reinventing Your Invention.....	6-4



Adventure 1

time travel



Adventure Goals:

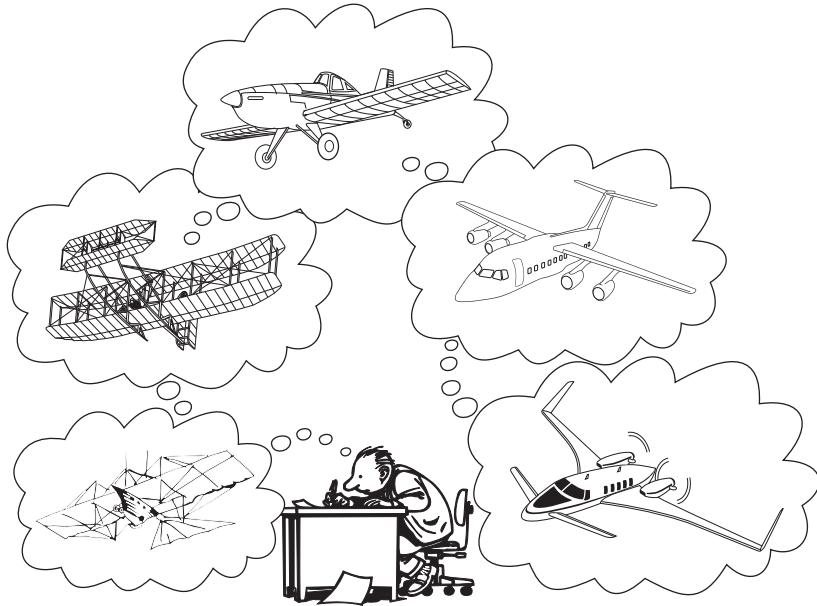
- Inventor Inventions
- 100 Years of Flight in Canada



time travel

For hundreds of years, people have wanted to fly. Past inventors had plenty of ideas on how to do this, but none of them seemed to work. It took years of experimenting with different ideas, designs and materials in order to build the first successful flying machine.

Today, engineers are still working to improve human flight. They work to improve the safety, and to increase the performance of our aircraft. Just as inventors did hundreds of years ago, today's inventors ask questions, create designs, and build working models to test their ideas.



be an inventor

Design your own flying machine.
Sketch your design in the space below.

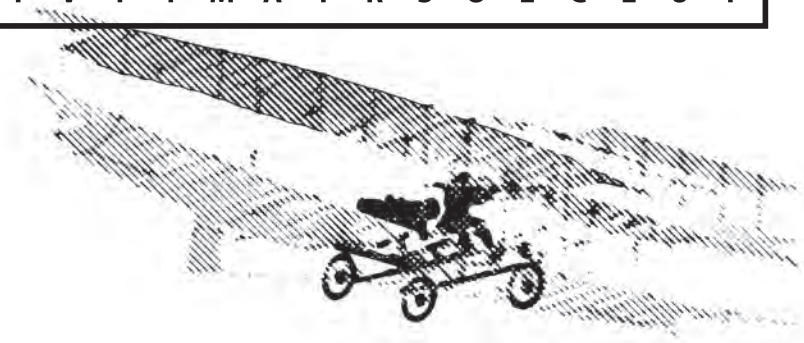
Date

Parent/Teacher Initials



Canada takes flight

In 2009, we will be celebrating 100 years of flight in Canada. Learn some interesting facts about Canada's first flight by completing the word search below using the bolded words on the next page.



Canada takes flight continued

- SILVER DART** The name of the first airplane to fly in Canada.
- NOVA SCOTIA** Canada's first flight took place in this province.
- FEBRUARY** The month this event took place.
- HALF A MILE** The distance the aircraft flew.
- BADDECK** The village in Nova Scotia that was the site of Canada's first flight.
- MCCURDY** John Alexander Douglas McCurdy was the designer and pilot of the first aircraft to fly in Canada.
- ICE** The runway used for the first flight.
- BAY** The first flight flew over Baddeck Bay.
- BELL** Alexander Graham Bell was a famous inventor who was involved in the first flight.
- TELEPHONE** Mr. Bell's most famous invention.
- AERODROME** A landing field for airplanes that has extensive buildings, equipment, shelters, etc.; airport.
- AEA** The group Aerial Experiment Association was responsible for the first flight in Canada.
- FOURTH** The Silver Dart was the 4th production for the AEA.
- SIXTY-FOUR** The Silver Dart travelled at a speed of 64 km/hr.
- BAMBOO** The frame and structure of the Silver Dart was made of steel tube, bamboo, friction tape, wire and wood.

Date

Parent/Teacher Initials



notes



Adventure 2
flying  parts

- Adventure Goals:**
- Is an Airplane Like a Bird?
 - Get to Know the Parts of the Plane





is an airplane like a bird?

Compare the pictures of the airplane and the bird.



Identify the things that are the same.

But.....

We cannot fly exactly like a bird. List some of the ways that airplanes and birds fly differently.

Date

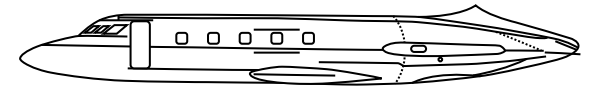
Parent/Teacher Initials



flying parts

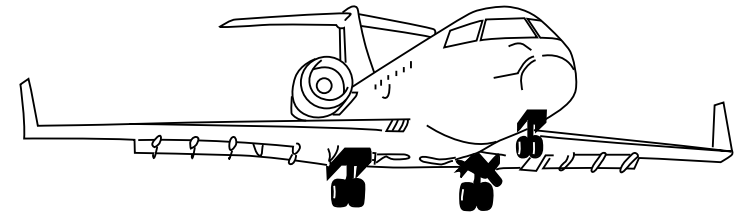
Body

The body of the plane is the long tube to which all other parts are attached. It is also called the *fuselage*. It includes the cockpit where the flight crew sits during flight.



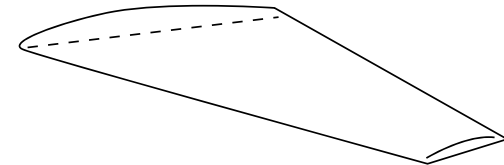
Wheels

The *wheels* are the parts under the body that support the airplane. Wheels on an airplane have brakes (like a car) to help stop the aircraft once it lands. Some airplanes use skis or pontoons instead of wheels. These parts are called the *landing gear*.



Wings

All planes have *wings*. They help lift the plane into the air.

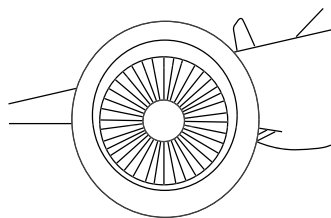




flying parts continued

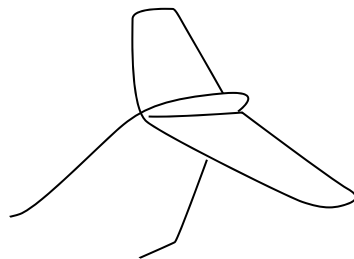
Engine

The *engine* provides the power to push or pull the airplane through the air.



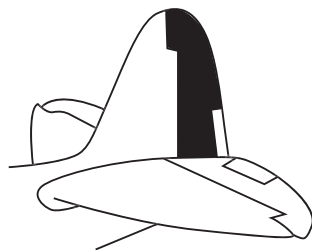
Tail

The *tail* is at the back of the plane. It helps to keep the plane flying straight.



Rudder

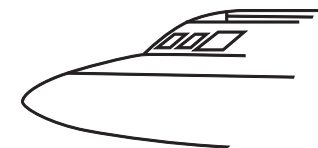
The *rudder* is the movable part of the tail that sticks straight up. The rudder can move from side to side. It helps the airplane move left and right.



flying parts continued

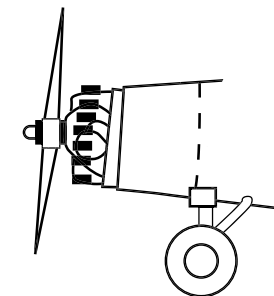
Cockpit

The *cockpit* is the very front of the aircraft where the flight crew sits. The cockpit contains all of the instruments and controls required to fly the aircraft.



Propeller

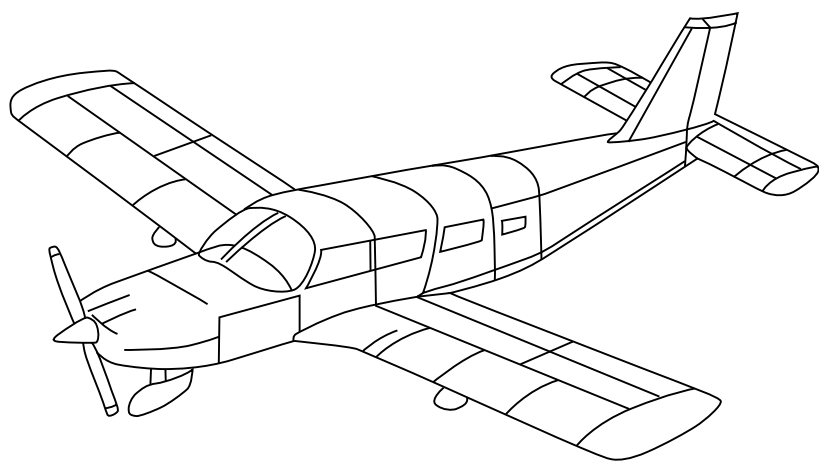
The *propeller* is two or more twisted blades that are turned by an engine. The propeller pulls the aircraft through the air.





what's what?

Help us recognize the parts of a plane...



- Colour the landing gear **GREEN**
- Colour the rudder **ORANGE**
- Colour the tail **YELLOW**
- Colour the wings **BLUE**
- Colour the propeller **BLACK**
- Colour the cockpit **BROWN**
- Colour the body **RED**

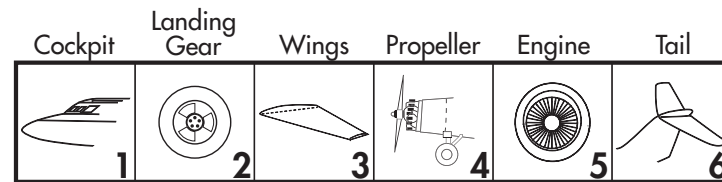
Date

Parent/Teacher Initials



flying parts puzzle

Using the 6 plane parts listed below; complete the Aviation Su Doku Puzzle. Each aviation piece should be used only once in each row, column, and in each identified block of 6 pieces. Draw the missing parts or place the correct numbers in the empty spaces provided.



AVIATION SU DOKU

3			4		6
				1	
5			6		1
1		6	2		
	5				2
4		3		6	

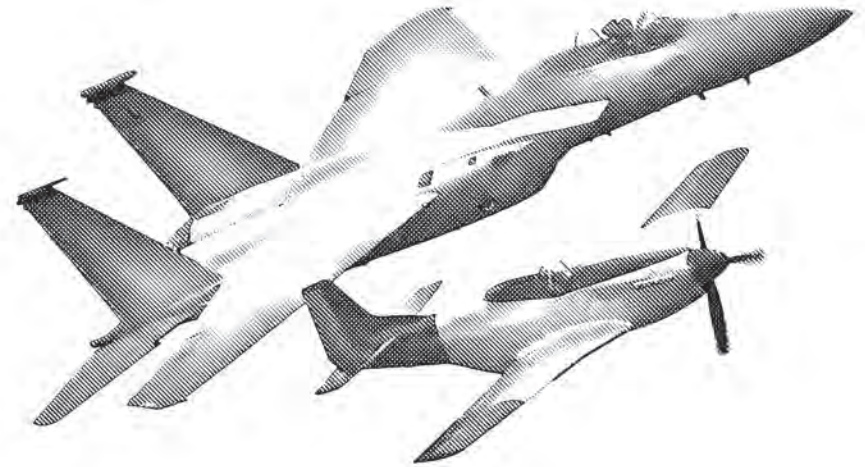
Date

Parent/Teacher Initials

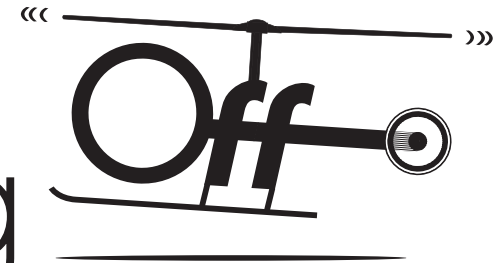


notes

Lined area for taking notes, consisting of 20 horizontal lines.



Adventure 3 taking



Adventure Goals:

- All About Air
- Principles of Flight



Air — Something or Nothing?

Even though we can't see it, air is all around us. List some of the ways we know that air is there.

1. _____

2. _____

3. _____

4. _____

5. _____

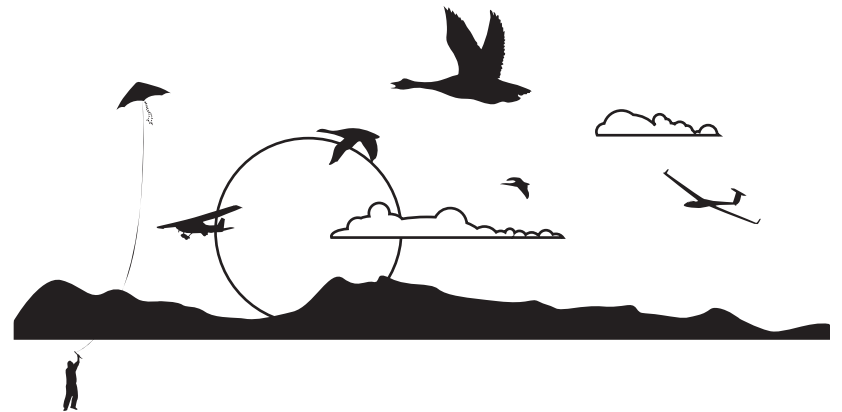
Date

Parent/Teacher Initials



air's got
THE POWER!

All things that fly need moving air. Only moving air can produce the energy power required to push and pull objects through it.





move it!

Experience the power of moving air by performing three simple tests...

1. Take a balloon that is not inflated and let it go. What happens to the balloon?



2. Now, blow up the balloon (do not tie the end) and let it go. What happens to the balloon this time?



3. Blow up the same balloon, tie it and let it go. What happens to the balloon now?



Air was available in all three tests, yet the results were different. Why?

Tests 2 and 3 both involved balloons that were filled with air. Use what you know about air to explain why these balloons acted differently when they were let go.

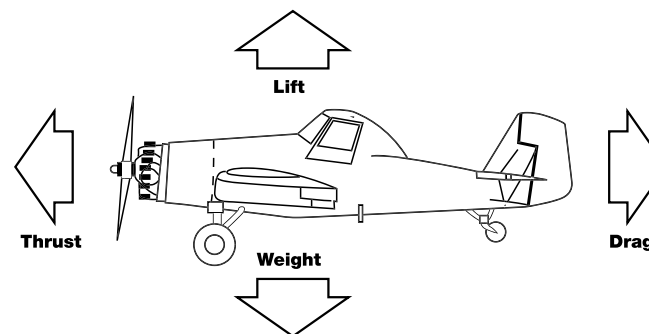
Date

Parent/Teacher Initials



forces in flight

There are 4 basic forces reacting with air during flight: Weight, Thrust, Drag, and Lift.



- Weight** Anything with mass has weight. Weight is caused by gravity, which pulls things toward the earth.
- Lift** A force that pushes an object up against the weight.
- Thrust** A force that moves an object forward.
- Drag** A force that works against thrust to slow an aircraft down. Drag is the resistance of air to anything moving through it.



using the force

Using the forces in flight just described, identify the main force at work in each of the following activities. Explain.

Running 

Jumping 

Holding an umbrella on a windy day 

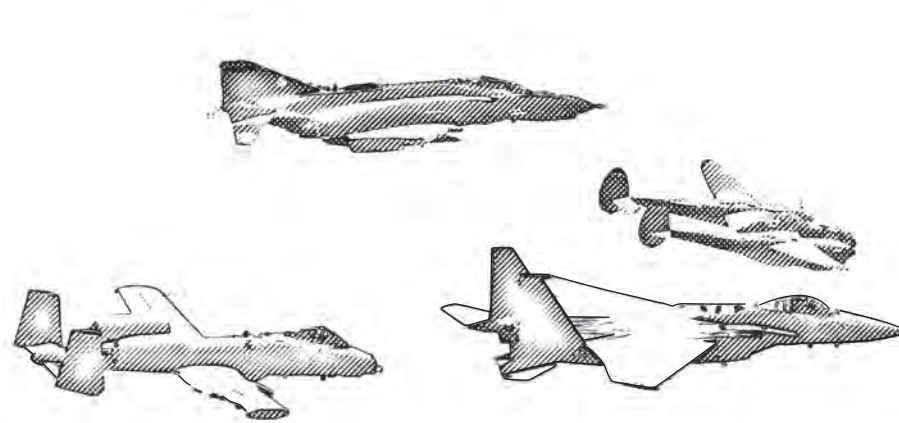
Falling 

notes



notes

Lined area for writing notes, consisting of multiple horizontal lines.



Adventure 4



the many shapes of flight

Adventure Goals:

- Importance of Structures and Shapes
- Design Features that Make Use of the Properties of Air
- Other Industries in which Air is Important



air flow

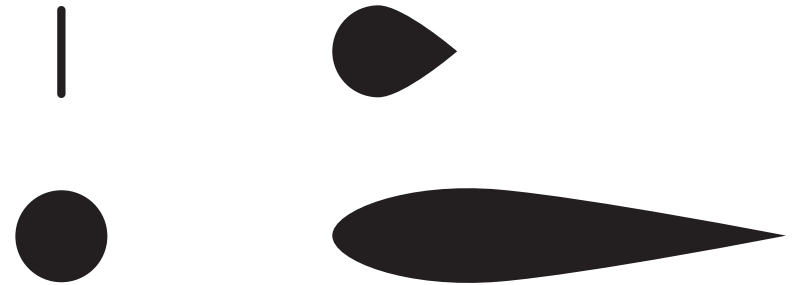
Even though we can't see it, air is flowing all around us. Air is made up of tiny molecules that are constantly moving. Air is fluid. Like water, air molecules flow and are affected by things moving through it.



what's with the **weird shape?**

Aerodynamics is the science of air flow over objects. People who study aerodynamics help to develop products that can move through the air faster by changing the way that air flows around them.

Log in to www.camc.ca/windtunnel/ and check out how air flows around the following objects. Draw the arrows.



Many companies need to understand air flow to improve the performance of an object. Some of these companies make boats, racing bicycles and transport trucks.



Aerodynamic efficiency is the most important element in developing a competitive race car. Car manufacturers will test a vehicle's aerodynamic features in a wind tunnel by sticking lots of ribbons on the vehicle and watching how they move in the wind.



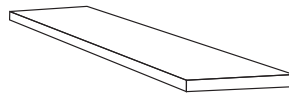
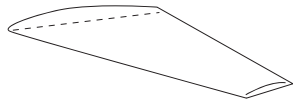
what's with the weird shape?

continued

Look at each set of objects below. Draw arrows to represent the airflow around each object. Circle the object in each pair that makes the best use of the properties of air.



Using what you know, circle which wing shape makes the best use of the properties of air.



Date

Parent/Teacher Initials



wings for different things

In aviation, wings are designed to help *increase* the airflow *over* the wing while *decreasing* it *under* the wing. This causes lift.

Wings come in many different shapes and sizes. The size and shape of a wing can affect what the aircraft can do.

Read the descriptions below. Find the image on the next page that matches the description and write the image number in the space provided.

Glider: A glider's wings are designed to fly without an engine. They are longer (more surface area) to create more lift, smoother to reduce drag, and are very lightweight.

Image # _____

Space Shuttle: Since there is no air in space, there is no need for wings. The space shuttle's wings are used only for re-entry to the earth's atmosphere. They are very short and produce only enough lift to bring the shuttle in for a safe landing.

Image # _____

High Speed Airplanes (Jet Fighter): The wings of high speed airplanes are thin and swept back. They help to reduce drag from the air as well as the force of shock waves.

Image # _____

Aerobatic Airplanes: The wings of aerobatic aircrafts have a similar curve on the top and bottom to help them fly upside down.

Image # _____

Date

Parent/Teacher Initials

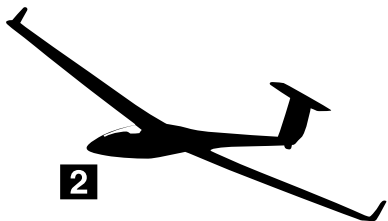


wings for different things_{continued}

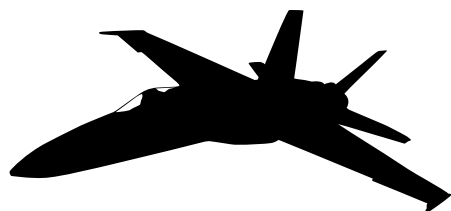
1



2



3



4



catching some air

Just like real airplanes, not all paper airplanes are made the same. Some are long with narrow sweptback wings; others are short with wide straight wings. The paper airplane design found in the centre of this book holds the world record for the longest time in the air. Build this airplane and see how well it flies.

What do you notice about this paper airplane design compared to other airplanes you have made?

What do you think makes this paper airplane stay in the air longer than other paper airplanes?

Which of the aircraft in activity 4-2 would behave most like to our paper airplane?

Make other design changes to your paper airplane and see what happens (example: put a paper clip on the nose of the airplane).

Date

Parent/Teacher Initials



notes

Adventure 5

it's **all** about **safety!**



Adventure Goals:

- Learn Some of the Safety Rules in Aviation



safety is job 1

Safety is very important to people in the aviation and aerospace industry. Here are some of the safety rules within the aviation industry:

1. identify and reduce fire hazards;
2. use and keep tools and equipment in a safe manner;
3. know how to handle dangerous materials;
4. use safety equipment and clothing;
5. keep work areas clean and clear; and
6. always behave in a safe manner around aircraft — never fool around.



be an investigator

Using the safety rules just listed, identify all of the safety hazards in the following scene.



Date

Parent/Teacher Initials



notes



Adventure 6

aviation work

Adventure Goals:

- Learn About Different Jobs in Aviation



aviation **occupations**

The airport is a very busy place. There are lots of travellers going to all kinds of different places.

There are also lots of people who work at the airport doing all sorts of different jobs. From pilots and flight attendants to ground crew, maintenance technicians and engineers, all of these people are working hard to keep us flying.



Technician



Ground Crew



Flight Attendant



Pilot

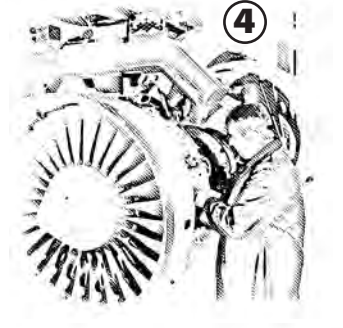


KNOW? Every 3 seconds an aircraft takes off.



career **connect**

Every picture below shows someone doing a different job in aviation. Look at the pictures below and match the picture to the job title.



Pilot # _____ Ground Crew # _____
 Flight Attendant # _____ Aircraft Engine Technician # _____
 Refueller # _____ Aircraft Welder # _____

Date _____ Parent/Teacher Initials _____



reinventing your invention

Use what you have learned through this logbook to improve your flying machine. Draw a new picture of your invention.

Date

Parent/Teacher Initials

notes



notes

Lined area for taking notes on page 6-6



notes

Lined area for taking notes on page 6-7