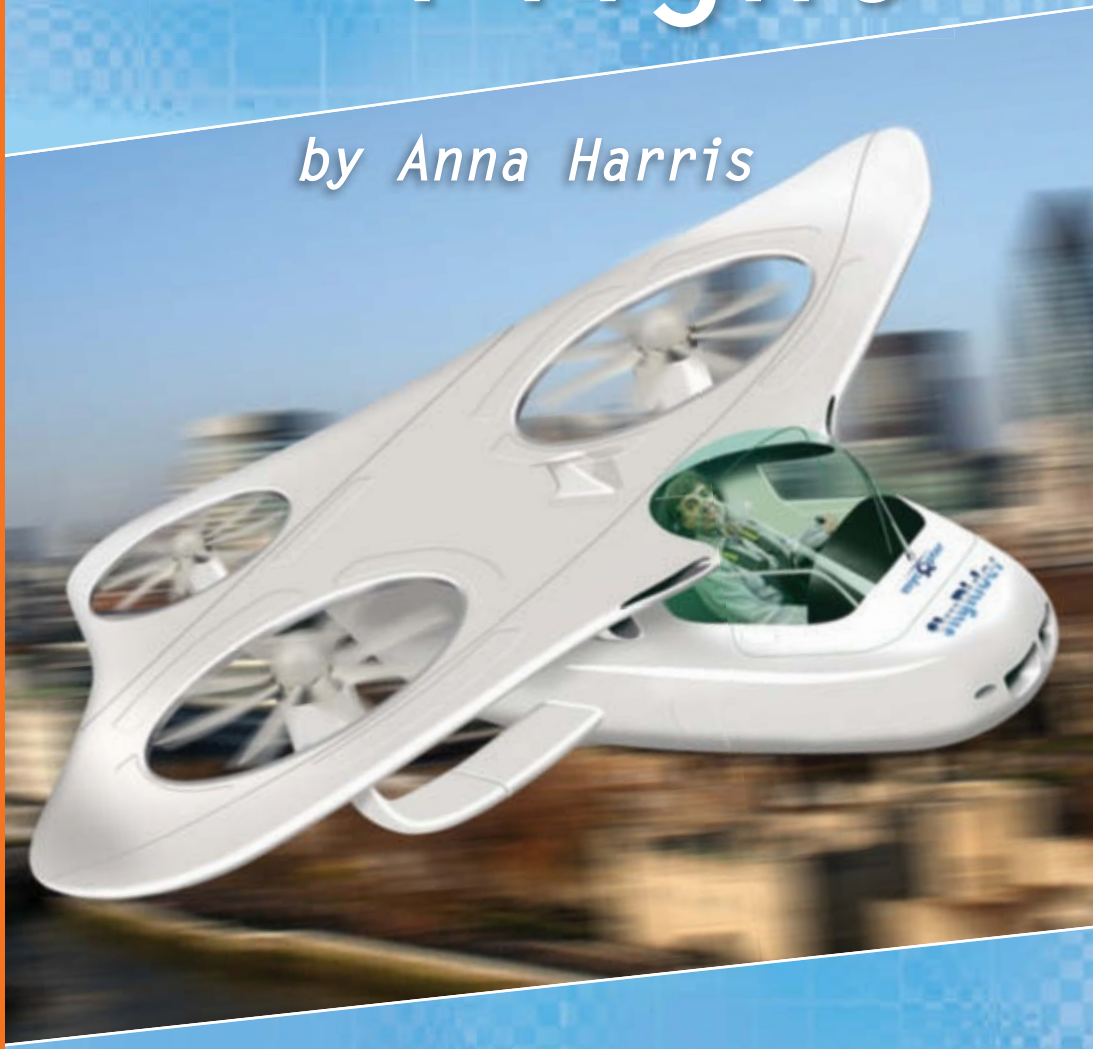
Expository Text

The Future of Flight

by Anna Harris



Mc Graw Hill

PAIRED READ

The Cloak of Feathers

STRATEGIES & SKILLS

Comprehension

Strategy: Reread
Skill: Cause and Effect

Vocabulary Strategy

Multiple-Meaning Words

Vocabulary

controlled, direction, flights, impossible, launched, motion, passenger, popular

Content Standards

Science
Technology

Word count: 924**

Photography Credit: Cover Gareth Padfield/Flight Stability and Control (University of Liverpool, United Kingdom) www.mycopter.eu

**The total word count is based on words in the running text and headings only. Numerals and words in captions, labels, diagrams, charts, and sidebars are not included.

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Genre Expository Text

Essential Question
How are people able to fly?

The Future of Flight

by Anna Harris

Chapter 1

Where to from Here?

People have imagined all kinds of strange spaceships.

Have you watched movies that are set in the future? If so, you might have seen flying cars or people using spaceships to travel to other planets. Could these movies show what air and space travel will be like in the future?

Brand X Pictures/PunchStock

A user wears a jetpack like a large backpack.

Imagine the year is 2040. You need to go to the store. How will you get there? You might use a jetpack to fly there.

People have already built some kinds of jetpacks. One can make flights that last 30 minutes. The driver controls the direction with two joysticks. The jetpack can travel about 20 miles.

Martin Jetpack

Most experts think jetpacks won't be good for everyday travel. What will we use instead? At a project called myCopter, scientists are studying very small aircraft. The aircraft could be like small flying cars. People could use them for short trips. MyCopter wants to figure out how small aircraft could work.

This picture shows what a myCopter aircraft might look like.

Gareth Padfield/Flight Stability and Control (University of Liverpool, United Kingdom) www.mycopter.eu

The inside of this futuristic aircraft looks a lot like the inside of a car.

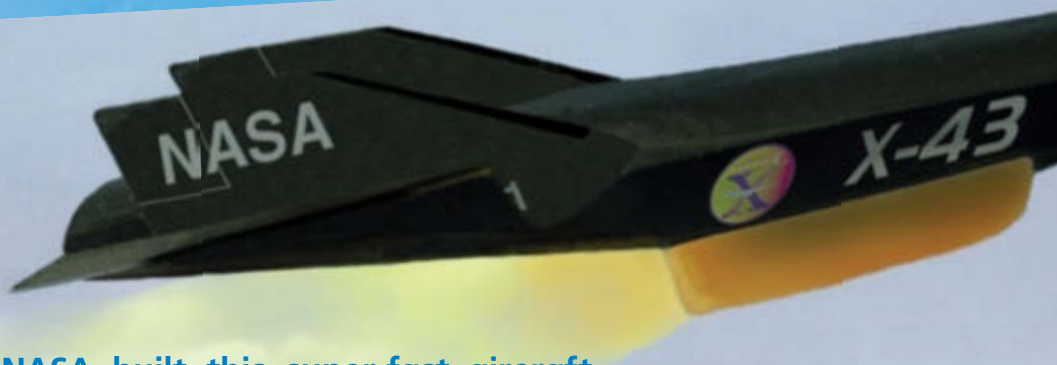
Everyone would need to be able to fly small aircraft. So the scientists picture aircraft controlled by computers. The driver will pick where to go, and the aircraft will fly there. It will also be able to send out signals to other aircraft nearby. This will help them all to keep a safe distance from each other.

STOP AND CHECK

Describe one kind of aircraft you learned about in this chapter.

Chapter 2

Around the World



NASA built this super-fast aircraft.

What will passenger jets be like in the future? Today, most passenger jets travel at 500 to 600 miles per hour. Scientists are working on planes that can go faster.

In 200l, NASA built a very fast aircraft. It had a new kind of engine called a **scramjet engine**. The aircraft wasn't controlled by a pilot. Its flight path was programmed before it took off. Its top speed was almost 7,000 miles per hour!

Steve Lighthill/NASA/Dryden

There are problems with scramjets. Even so, some people think passenger jets of the future will have scramjet engines.

In 2011, an aircraft company announced plans for a new passenger jet. It said the jet would travel more than 3,000 miles per hour! Today, it takes about 12 hours to fly from London to Tokyo. The new plane would take only two hours.

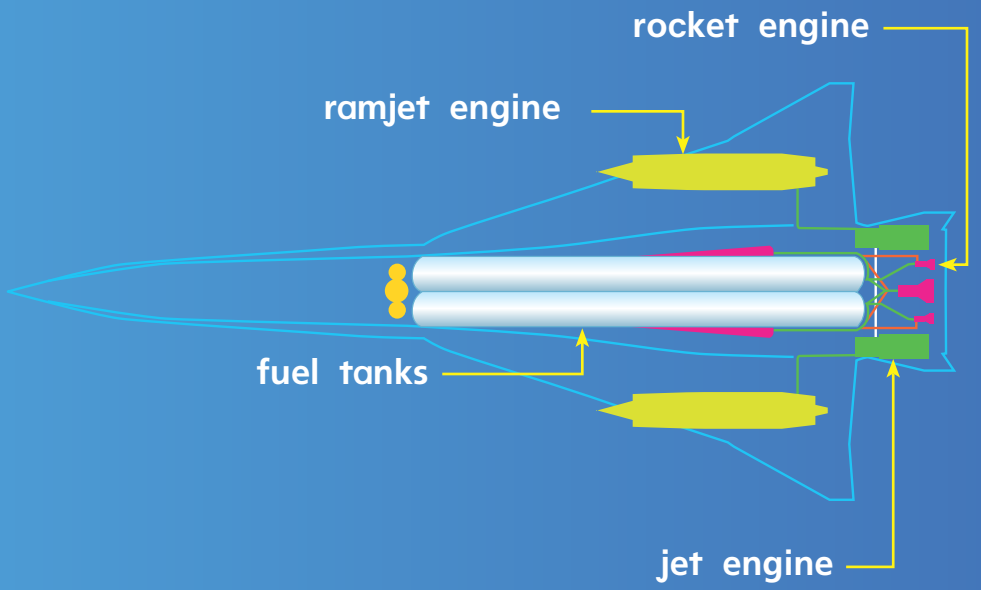
How High They Fly

Future passenger jet
20 miles high
3,000 mph

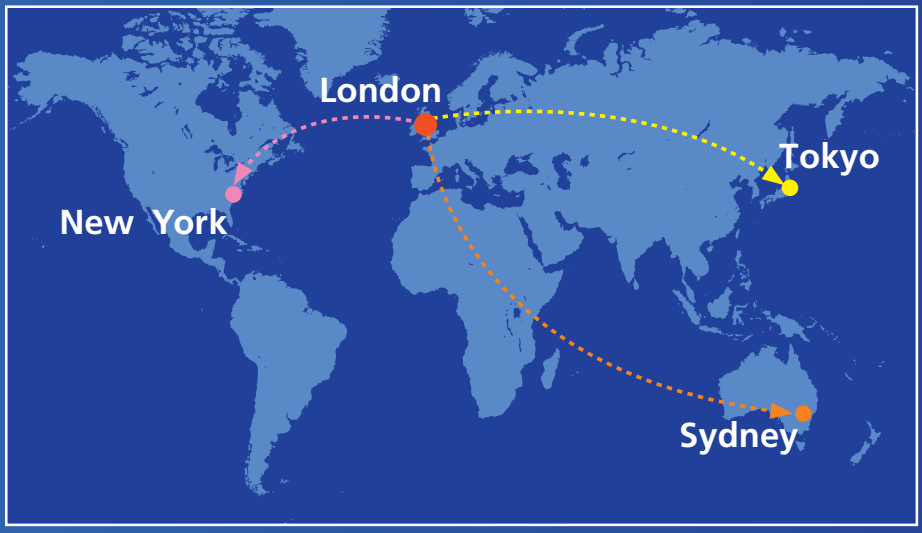
Boeing 747
6–8 miles high
500–600 mph

The new passenger jet will use three different kinds of engines. One kind will be a jet engine. The second kind will be a lot like a **rocket engine**. The third kind will be a ramjet engine. This plane won't pollute the planet as much as today's aircraft do, but there's a catch. It won't be ready until 2050.

The New Passenger Jet



Traveling Around the World



TRAVEL TIMES TODAY

London to New York ..... 7 hours
London to Tokyo, Japan ..... 12 hours
London to Sydney, Australia ..... 23 hours

TRAVEL TIMES IN THE FUTURE

London to New York ..... 1 hour
London to Tokyo, Japan ..... 2 hours
London to Sydney, Australia ..... 3.5 hours

STOP AND CHECK

What might passenger jets be like in the future?

Chapter 3

Traveling into Space

These astronauts are working outside the ISS.

Today, mostly astronauts travel into space. They are launched into space on rocket ships. Many go to the International Space Station, or ISS. The ISS is in **orbit** around Earth.

Now, one company has built a spaceship that will take passengers into space. The spaceship has been on test flights, which included going into space for a short time.

NASA

The spaceship needs help to get off the ground. A plane will carry it down a runway. The plane will lift it 50,000 feet into the sky. Then, the plane will let go of the spaceship. The spaceship's rocket engines will fire up, and it will blast into space. Later, it will glide back down to the ground like a normal plane.

The plane and the spaceship have been on test flights. The spaceship is in the middle.

David Paul Morris/Bloomberg/Getty Images

These people are testing out a life-size model of the inside of the spaceship at a science museum.

Each flight will take two and a half hours. The spaceship will travel 68 miles above Earth. The pull of **gravity** is not as strong when objects are that far away from Earth. Passengers will float around inside the plane for about five minutes.

The flights will be popular. More than 400 people have already bought tickets. Tickets cost over $250,000.

Daniel Berehulak/Getty Images News/Getty Images

People have been exploring new places for a long time. They have built clever machines that allow us to travel faster and farther than before. So, where to from here? Right now, the ideas in this book might seem impossible. Who knows what will happen in the future?

Could people land on Mars one day?

NASA/Pat Rawlings, SAIC

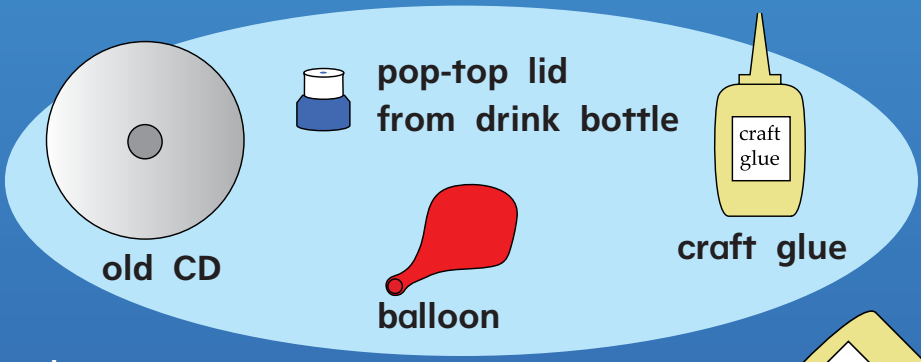
STOP AND CHECK

Describe the flights the spaceship will make.

How to Make a Balloon Hovercraft

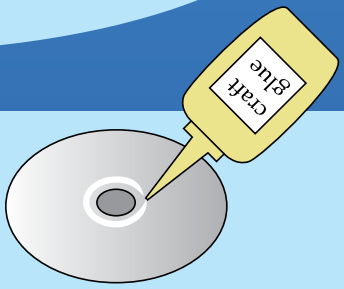
Follow the steps to build a toy aircraft.

What You Need:

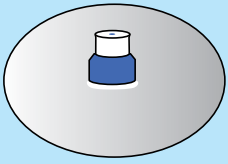


What to Do:

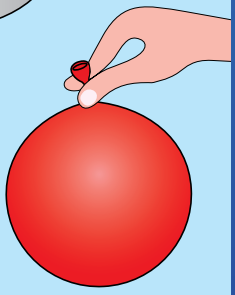
1. Glue the bottom of the lid over the hole in the center of the CD.

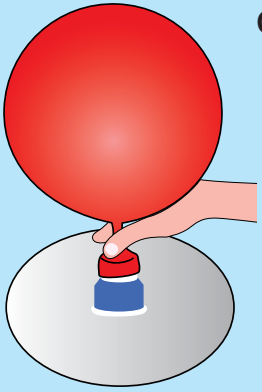


2. Close the lid. Let the glue dry overnight.



3. Blow up the balloon. Then pinch the neck so that no air can escape.





4. Stretch the neck of the balloon over the lid. Now, your balloon hovercraft is done!

Respond to Reading

Summarize

Use details from the text to summarize *The Future of Flight*. The graphic organizer may help you.

Cause →	Effect
First →	
Next →	
Then →	
Now →	

Text Evidence

1. How do you know *The Future of Flight* is expository text? Genre
2. Look at page 12. Why will people float around the plane during the flight? Cause and Effect
3. What context clues help you understand the word *space* on page 10? Multiple-Meaning Words
4. Why do people build new aircraft? Write About Reading

Genre Myth

Compare Texts

Read about how a Norse god could fly.

The Cloak of Feathers

Once, there was a goddess named Idun. Idun was the goddess of youth. She looked after the magic apples that let all the other gods live forever.

One day, Idun was captured by a giant. The giant could change into any animal. He became an eagle and carried Idun away. The gods and goddesses quickly grew old without the apples.

Illustration: Luigi Aime

The gods and goddesses had to rescue Idun. They knew a woman named Freya. She had a special cloak made of falcon feathers. Anyone who wrapped themselves in the cloak could change into a bird.

The god Loki borrowed the cloak. He turned into a falcon and flew to the land of the giants. He found Idun and changed her into a nut. In one quick motion, he gripped the nut in his claws and set off for home. When Loki looked backward, he saw that the giant had again become an eagle. The eagle was chasing him!

Finally, Loki made it home. The gods lit fires all around the walls of their city. The eagle's wings caught fire when it tried to cross the walls. It had to fly to the ocean to put out the flames. The gods had won.

Idun changed back into her normal form. Then she gave apples to all the gods. Very soon, their youthful good looks came back!

Illustration: Luigi Aime

Make Connections

How is the god Loki able to fly?

Essential Question

We have aircraft that allow us to fly. Why would people make up stories about using magic to fly? **Text to Text**

Glossary

gravity *(GRAV-i-tee)* the force that pulls objects toward Earth ***(page 12)***

orbit *(AWR-buht)* the path an object takes as it circles another object ***(page 10)***

rocket engine *(ROK-it EN-juhn)* an engine that burns fuel and oxygen to create pushes at great speed ***(page 8)***

scramjet engine *(SKRAM-jet EN-juhn)* an engine with no moving parts built for very fast speeds ***(page 6)***

Index

Focus on Science

Purpose To find out about motion.

What to Do

Step 1 Follow the procedure on page 14.

Step 2 Put the hovercraft on a desktop and push it. How far does it go?

Step 3 Open the pop-top lid and push the hovercraft. How far does it move this time?

Step 4 Make changes. Change the size of the balloon. Use a paper plate with a hole cut in the center instead of a CD. Write what you think will happen. Then write the results.

Conclusion What did you learn from this experiment?

Literature Circles

Nonfiction

Thinkmark

The Topic

What is *The Future of Flight* mostly about?

Text Structure

How does the author order the information in *The Future of Flight*?

Vocabulary

What new words did you learn? How did you figure out the meanings?

Conclusions

What are the most important things you learned in *The Future of Flight*?

Flight | Science

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