

Biography

Reach for the **STARS**

by Dominic Ashton



Mc
Graw
Hill

**PAIRED
READ**

Melina Shows Her Mettle

STRATEGIES & SKILLS

Comprehension

Strategy: Reread

Skill: Problem and Solution

Vocabulary Strategy

Greek and Latin Roots

Vocabulary

communicate, essential,
goal, motivate,
professional, research
serious, specialist

Content Standards

Science

Technology

Word count: 1,024**

Photography Credit: Cover NASA.

**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.



Essential Question
Why are goals important?

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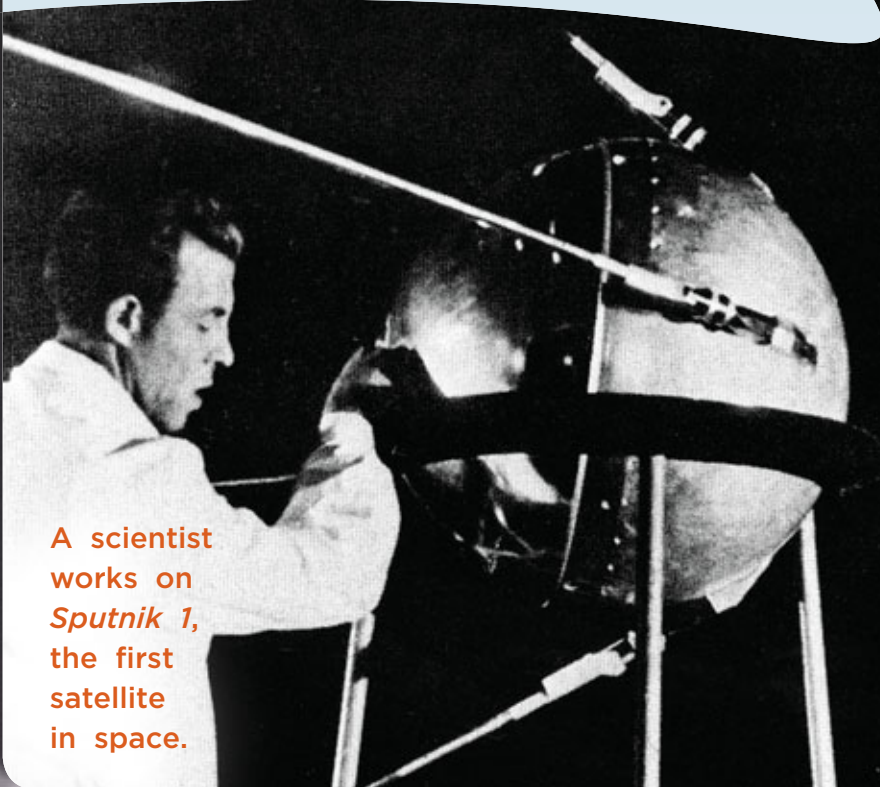
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Chapter 1

A SPARK IS IGNITED

When Franklin Chang Díaz was seven, he found out some exciting news. The Soviet Union had launched the first **satellite** into space. It was the beginning of space exploration. Franklin rushed outside and climbed a tree. He looked up into the sky. He hoped to see a light from the satellite. That night, Franklin decided to become an astronaut.



A scientist works on *Sputnik 1*, the first satellite in space.



**Franklin Chang Díaz (top right)
is pictured here with his family.**

Franklin was born in Costa Rica in 1950. When Franklin was young, the family moved to Venezuela. Later, the family moved back to Costa Rica because the schools were better. When Franklin was a child, he and his cousins played space games. They pretended that boxes were spacecraft. They pretended they were flying, and discovering new planets.

Franklin worked hard at school. He did well. But his parents did not have enough money to send him to college. Franklin was serious about his goal of being an astronaut. He knew it would be hard. But he had his dream to motivate him.

During high school, Franklin wrote to a scientist in the United States. The man was a specialist in rocket research. Franklin asked how to become an astronaut. The scientist wrote back. He said that Franklin should study math and science. He also said that Franklin needed to learn English.

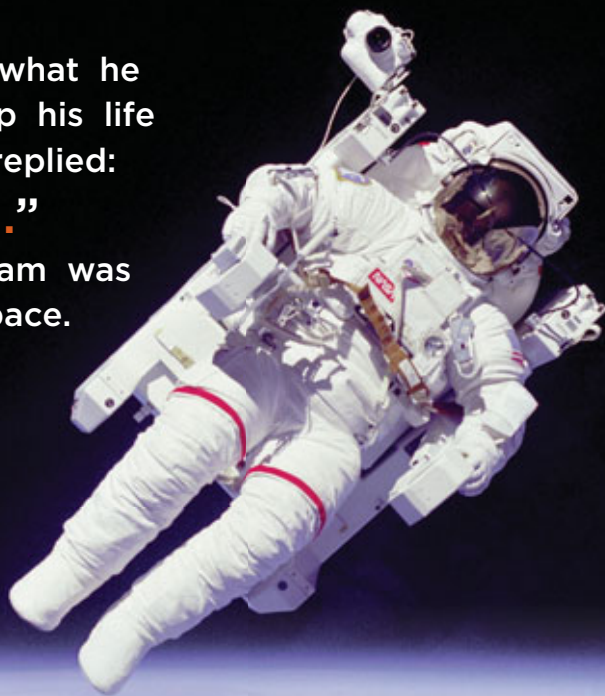
After high school, Franklin moved to Connecticut to live with relatives. Here he is with his Uncle Lino and Uncle Noel.



When asked what he would give up his life for, Franklin replied:

“a dream.”

Franklin’s dream was to go into space.



When Franklin finished high school in Costa Rica, he went to the United States. He went back to high school to learn English. But Franklin did not just take English classes. He took other classes, too. At first, Franklin failed his classes because he couldn't understand English. But soon he was getting As in all his classes. He won a scholarship to college.



Franklin studied science in college. He also developed plans for a rocket engine.

Franklin came to the United States when he was 17. He couldn't speak English. Nine years later, he spoke English well. He had a science degree. And he was a United States **citizen**. Franklin was on the way to making his dream come true. He applied to train as an astronaut at NASA. But he was turned down! Franklin didn't give up. He kept applying.

Astronaut Training

Trainee astronauts study math, science, and technology. They learn how to survive on land and in water. They learn to deal with the weightlessness of space. Astronauts learn how to operate the computers that control spacecraft.

STOP AND CHECK

What made Franklin want to be an astronaut?

Chapter 2

HE DID IT!

“He did it! He did it!” That is what Franklin Chang Díaz’s mother shouted when he was chosen for the **space shuttle** program. Dr. Chang Díaz spent six years at NASA before he went into space. During that time, he trained as an astronaut. He also did research into rocket design.

Dr. Chang Díaz trains for walking in space.



Dr. Franklin Chang Díaz flew his first **mission** in 1986. He flew on the space shuttle *Columbia*.

Dr. Chang Díaz said that the first flight was the most interesting because it was the first time he had seen Earth from space. “What I had prepared for all my life was actually happening,” he said.



Dr. Chang Díaz said that seeing Earth from space is “the most beautiful thing you ever saw. It is **worth all the effort** and all the trouble and all the difficulty.”

On each space mission, the crew has special jobs to do. On Dr. Chang Díaz's second mission, the space shuttle launched the *Galileo* spacecraft on its six-year journey to explore Jupiter.

On his sixth mission, the space shuttle took supplies to the Russian **space station**. It also collected seven astronauts. They had spent more than two years on the space station.

Dr. Chang Díaz (right) and a fellow astronaut hold up a sign to show that each of them has spent 1000 hours in space.



On Dr. Chang Díaz's final mission, the space shuttle went to the International Space Station (ISS). It brought new crew and supplies. Dr. Chang Díaz walked in space for the first time.

Franklin Chang Díaz flew seven space missions. At the time, that was as many as anyone had flown.

STOP AND CHECK

Which mission did Franklin Chang Díaz find the most interesting, and why?

Dr. Chang Díaz takes his first walk in space.





Dr. Chang Díaz's final mission was on *Endeavour*. The ISS is a backdrop to this photo of the crew.

Missions Flown by Franklin Chang Díaz

Date	Length	Orbits of Earth	Distance (millions of miles)	Shuttle
1986	6 days	98	2.5	<i>Columbia</i>
1989	4 days	79	2	<i>Atlantis</i>
1992	7 days	127	3.3	<i>Atlantis</i>
1994	8 days	130	3.4	<i>Discovery</i>
1996	15 days	252	6.5	<i>Columbia</i>
1998	9 days	155	3.8	<i>Discovery</i>
2002	13 days	217	5.8	<i>Endeavour</i>

Chapter 3

ROLE MODEL

Franklin Chang Díaz left NASA in 2005. But he carried on with his professional life. He is interested in research. He is developing a special rocket. He says the rocket will make space travel easier.

At present, spacecraft cannot travel far into space because they run out of fuel. The rocket developed by Dr. Chang Díaz would let spacecraft go farther. The spacecraft would also be able to go faster.

Dr. Chang Díaz (front right) shows visitors around his rocket laboratory in Costa Rica.



Dr. Chang Díaz is also interested in **tropical** illnesses. He works with other scientists to find cures. Some of the research takes place in space. It is easier to produce medicines in space.

In 1986, Dr. Chang Díaz (second from left) was given the Medal of Liberty. Only 12 people have ever received it.



Mars in 39 Days

Today it would take a spacecraft eight months to travel to Mars. The rocket being developed by Dr. Chang Díaz and his team would let the spacecraft go much faster. It would take only 39 days to get to Mars.

Franklin Chang Díaz wants to help young Costa Ricans. He tries to communicate to them that they should follow their dream, as he did. He believes that it is essential to have a goal and determination. Dr. Chang Díaz says that if he could do it, anybody can.

**Franklin Chang Díaz
overcame many
problems to become
an astronaut.**



STOP AND CHECK

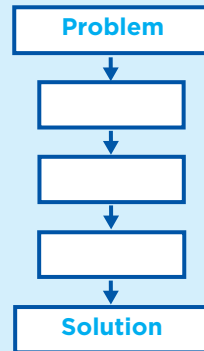
What has Dr. Chang Díaz done since he left NASA?

Respond to Reading

Summarize

Summarize the important events in Franklin Chang Díaz's life.

Use your Problem and Solution Chart to help you.



Text Evidence

1. How do you know that *Reach for the Stars* is a biography? **GENRE**
2. Reread pages 4 and 5. What problem did Franklin Chang Díaz have? How did he solve it? **PROBLEM AND SOLUTION**
3. The root word *astr-* means stars. How does that help you understand the meaning of *astronaut* on page 2? **GREEK AND LATIN ROOTS**
4. Write about how Franklin Chang Díaz became an astronaut. What problems did he face? How did he solve them? **WRITE ABOUT READING**

Compare Texts

Read about another person who had a dream.

Melina Shows Her Mettle

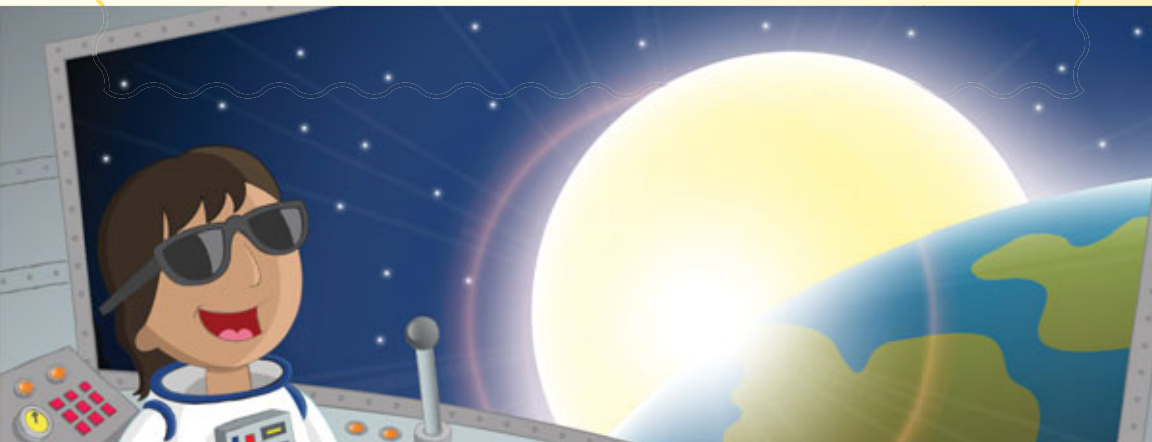
Melina always wanted to be an astronaut. Her great-great-grandfather, Franklin Chang Díaz, was a famous astronaut. He flew a long time ago, when space travel was new.

Melina had to work really hard to reach her goal. She is smart, but it took her a long time to learn to read properly. She had to work very hard at school.

Later, Melina went to the Chang Díaz Space School. Some students thought she got her place because of her name. She had to be twice as good as the other students before they would treat her as an equal.

Then Melina applied to be chosen for the new mission. It was going to be the first flight into another solar system. When Melina was chosen, she was very excited. Her parents were excited, too.

Now Melina is actually in space. It is amazing. Melina is on watch as they enter the new solar system. She is the first person ever to see this sun. The sky brightens, and Melina sees a small planet with one moon. None of the telescopes on Earth has located the small planet.



Melina feels like an explorer discovering new land. The planet has fresh water. It has trees and other plants. It has oceans. It is very much like Earth.

Like explorers on Earth, Melina names the planet she has discovered. She calls it *Pura Vida*. She chooses the name in honor of her great-great-grandfather. He was born in Costa Rica.

In Costa Rica, *pura vida* can mean “full of life.” The new planet is full of life.

“Pura vida, Great-great-grandfather,” Melina whispers.



Illustration: Max Powell



Make Connections

In *Melina Shows Her Mettle*, what problems did Melina face? **ESSENTIAL QUESTION**

What helps Franklin in *Reach for the Stars* get what he wants? What helps Melina in *Melina Shows Her Mettle* get what she wants? **TEXT TO TEXT**

Glossary

citizen (*SI-tuh-zuhn*) a person who is legally recognized as belonging to a nation, with the right to be protected by the government and the responsibility to be loyal to the nation (**page 6**)

mission (*MI-shun*) a specific task (**page 8**)

satellite (*SAT-uh-light*) an object sent into space and intended to orbit Earth, the moon, or a planet (**page 2**)

space shuttle (*SPAYS SHUH-tuhl*) a spacecraft that transports people and supplies between Earth and space (**page 7**)

space station (*SPAYS STAY-shuhn*) a large spacecraft on which people live for long periods (**page 9**)

tropical (*TRAH-pi-kuhl*) relating to the parts of the world that are near the equator (**page 13**)

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rockets, 4, 6, 7, 12, 13

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scientists, 2, 4, 8, 13

space shuttles, 7–11

space stations, 10, 11

space walks, 7, 10

Focus on Science

Purpose To find out how a parachute helps to slow down a space shuttle as it lands.

What to Do

- Step 1** → Make a parachute by cutting out a piece of plastic that is about 12 inches square.
.....
- Step 2** → Cut four pieces of string of equal length—about 8 inches.
.....
- Step 3** → Stick a piece of string to each corner of the plastic with sticky tape. Tie the other ends of the string together.
.....
- Step 4** → Pick two small toys that are about the same size and weight. Attach your parachute to one of the toys. Drop both toys from the same height, and record what happens.

Conclusion What happens when you drop the toy with the parachute? How is it different from when you drop the toy without the parachute?

Thinkmark

The Topic

What is *Reach for the Stars* about?

Vocabulary

What new word did you learn in *Reach for the Stars*?

Author's Purpose

Why do you think the author wrote *Reach for the Stars*?

Conclusions

What is the most important thing you learned in *Reach for the Stars*?