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DATE _____

CLASS _____

HISPANIC HERITAGE MONTH

Franklin Chang Díaz

From a Cardboard Rocket in Costa Rica to Seven Trips to Space

The Boy Who Would Not Give Up

Franklin Chang Díaz was born in San José, Costa Rica, in 1950. As a boy, he read everything he could about space. He and his friends would climb into a big cardboard box, count down, and pretend it was a rocket blasting into space.

Franklin wanted to be a real astronaut. When he was a teenager, he moved to the United States. He had very little money and spoke almost no English. He learned English, finished high school, and kept studying. He went on to college and earned a **doctorate**, the highest degree a university gives, in science.

In 1980, NASA chose Franklin to be an astronaut. He flew on the space shuttle **seven** times. Only one other astronaut has flown that many times. He helped build the International Space Station and did science experiments in space.

Today, Franklin leads a company that is building a new kind of rocket engine. It uses **plasma**, a gas heated until it is super hot. A regular rocket gives one huge push and then mostly coasts. A plasma engine gives a tiny push, but it can keep pushing for months. Out in space, that steady push could carry people to Mars faster.

WORDS TO KNOW

- **doctorate:** The highest degree a university gives. It takes many years of study and research.
- **plasma:** A gas heated so hot that it carries electricity. Lightning and the Sun are made of plasma.
- **astronaut:** A person trained to fly and work in space.

Part 1 • Reading Comprehension

1. Where was Franklin born? What did he and his friends pretend as kids?

2. Name two things that were hard for Franklin when he moved to the United States.

3. How many times did Franklin fly on the space shuttle?

4. How is a plasma engine different from a regular rocket?

Part 2 • Engineering Challenge: Big Push or Steady Push?

Remember: a regular rocket gives one huge push. A plasma engine gives a tiny push that keeps going for months. On Earth, gravity pulls hard on a rocket. Out in space, there is almost nothing to slow a spacecraft down.

- 1 You need to lift off the ground on Earth. Which engine would you choose — the huge push or the tiny push? Why?

- 2 You are already in space and want to travel to Mars. Which engine could get you there faster? Why?

- 3 Franklin worked for many years, step by step, to become an astronaut. How is that like a plasma engine?

Part 3 • Think About It

Franklin moved to a new country as a teenager and could barely speak English, but he still became an astronaut. What do you think helped him most? Use a detail from the reading.
