

Stability and Motion: Science of Flight

Introduction

Part 1: The Adventure Begins

Mom!” Angelina yells from inside the back porch door. “I’m going over to Suzi’s house.”

Angelina taps her foot while waiting for a reply. “Mom!”

“I hear you, dear,” Angelina’s mother says as she enters the kitchen. “And what will you do when you get there?”

“I will ask Suzi’s mom to call you so you’ll know I got there okay,” Angelina rolls her eyes. Suzi is almost nine. Is her mother ever going to stop treating her like a first grader?

“Goodbye, dear. Have fun.”

The walk to Suzi’s house is only a block and half, but it still gives Angelina time to think. Their friend Mylo will be meeting them, and they are taking Suzi’s little brother to the park down the street.

As Angelina turns the corner, a loud noise comes up from behind her. She quickly looks up into the sky and sees a huge airplane as it is approaching the airport nearby. “Could it be a 747?” she wonders. While the noise is loud at times, it is kind of neat living close to an airport. Angelina’s father often takes her to watch the planes take off. He has been helping her learn how to identify the different types of jets and small prop planes and to see how they actually work.

“Is Mylo here yet?” Angelina asks as she walks into Suzi’s house.

“No, he called and said he would be a little late,” Suzi says. “He’s walking a dog for his neighbor. That’s how he’s earning money for space camp next summer.”

“I wish I was going to space camp next summer!” Angelina exclaims.

A few minutes later, Mylo arrives, looking like he has run the entire five blocks that separate him and Suzi.

“Sorry I’m late,” he says, still out of breath. “On my way here, I saw Ms. Morales, and she told me something very interesting about what we will be doing in class soon. Did you know that her mother lives one block from here?”

“No,” Suzi answers, “What did she say about class?”

“She said that we would be starting to learn about stability and motion,” Mylo says. “Part of the module involves learning about flight.”

“That’s great!” Angelina says excitedly. “I’ve always wanted to know how airplanes and other things fly. I mean, how does that work anyway?”

“I don’t know,” says Suzi. “I know it must take a lot of force to get an airplane off the ground.”

“You are right,” says Mylo. “A force is a push or a pull, but what can push or pull something like a 747 hard enough to make it fly across the country?”

“I know!” shouts Angelina. “Jets have engines! That’s how they fly.”

“Okay, that explains jets, but how do gliders fly?” asks Suzi.

“I don’t know, but it sounds like we will have a lot of questions for Ms. Morales on Monday,” says Mylo.

Note to student: Like Angelina, Suzi, and Mylo, you and your class will soon begin to learn about stability and motion. You and your friends will also have the opportunity to learn many interesting things about how airplanes and gliders are able to fly through the atmosphere of the Earth.

As you go through the lesson with your teacher, you will read more about Angelina, Suzi, and Mylo and their adventures.

Part 2: Forces and Flight

“I can’t believe that we are really going to get to make our own glider,” Mylo says. “That is going to take a lot of creativity.”

“I think it’s going to be fun to write in our Launch Logs about what we are learning,” Suzi says. “We’ll be able to make sketches and show the others in the class what we are doing.”

During class Ms. Morales lectures about the forces that work during flight. “There are four forces that work on an airplane during flight,” she says. “Raise your hand if you can name one of them.”

“Would weight be one?” Mylo asks.

“Yes, that’s right. Others?” Ms. Morales waits a moment or two and then says, “Well, let’s review them together. They are *lift*, *weight*, *thrust*, and *drag*. Each one plays a very special part in the overall ability of an airplane to fly.”

“The most important part,” Ms. Morales continues, “is how the forces interact. In order for flight to take place an airplane has to overcome weight with enough lift and overcome drag with enough thrust.”

Over the next couple of days, Angelina, Mylo, and Suzi work hard on their designs, creating the parts of their gliders using the 3D modeling software that is part of the unit they are studying. They also make sketches and notes in their Launch Logs to identify different parts of their design.

Part 3 Disaster Relief

“Testing the gliders was really fun,” Mylo says.

“Yes, I think this was the best project we ever did,” Suzi says.

“I am really excited about the problem we are going to solve using gliders,” Angelina says. “Launching our gliders was great, but I love using our skills to find solutions to problems.”

Mylo added, “I agree! We learned how to get our glider to fly longer distances, but now we get to come up with a glider design that could be used to bring disaster aid to people in a remote area. That is really cool!”

“You guys are right,” said Suzi. “I can’t believe we get to spend more time on gliders. Solving the problem won’t be easy, but we can use what we learned in the glider project.”

Angelina, Mylo, and Suzi spend the rest of the afternoon talking about what kind of design would deliver the greatest number of boxes of supplies. Suzi works on sketching the ideas as Angelina and Mylo talk nonstop about all of the possibilities.