

## Energy: Collisions Introduction

### Bumper Cars

Mylo woke up early on Saturday morning and hurried to get dressed and eat breakfast. He had been waiting all week for this day to finally arrive. Mylo, Angelina, and Suzi were going to an amusement park with Suzi's mom. After breakfast, he worked quickly to finish his list of chores—recycling, cleaning his room, and walking the dog.



By 10:00, Mylo was sitting on the front porch of his apartment waiting for the others to show up. Soon he saw the car coming down his road.

“Mom, my ride is here,” Mylo shouted through the screen door.

His mother came to the door and waved at Suzi's mom, thanking her for taking the friends for a fun day.

As they walked into the amusement park, Suzi's mom asked, “So, what are you looking forward to the most?”

Mylo couldn't wait to ride the roller coaster. Suzi was looking forward to finding a ride where you got really wet.

Angelina said, “I really want to ride the bumper cars. My cousin Manny said that they are really fun. You get to drive the bumper car and actually crash it into other cars.”

Mylo and Suzi were not so sure that they shared Angelina's excitement when they got close to the bumper cars. They watched as the riders steered their cars around the enclosed area crashing into others. Some of the riders appeared to be trying to crash into cars, while others seemed to be trying not to be hit.

“From this view, it doesn’t look very safe,” exclaimed Mylo. “Does it hurt when you crash?”

“I don’t know if it hurts, but look how the people are thrown forward when two cars crash. What keeps them from being thrown out of the car?” Suzi inquired.

Angelina replied, “Look closer. They are wearing seat belts to keep them in the car.”

Suzi added, “They are wearing helmets also. I guess that protects your head.”

The three friends talked about how the cars have rubber bumpers all around them to protect the cars when they crash. They noticed that the riders were laughing and that no one appeared to be injured when the rides ended.

After watching for a while, Angelina asked, “Anyone ready to join me on the bumper cars?”

Mylo and Suzi said, “I am!” at the same time.

The three friends fastened their helmets and their safety harnesses. They all listened closely for the instructions from the ride operator. Soon the ride began and the chase was on!

When the ride came to an end, they were laughing and trying to decide which of the three friends was in the most crashes. As they headed for the next ride, they continued to talk about their first bumper car ride.

“It’s really cool how the cars bounce away from each other when they crash!” Suzi commented.

Angelina added, “I agree. It was really fun, but it was also really loud! I guess it was from all of the cars running into each other in that enclosed area. I couldn’t hear anything but crashes and people laughing!”

Mylo agreed with the girls. “I wasn’t so sure about riding the bumper cars when I first saw them. I could really feel how the safety belts kept me in the car when we crashed.”

“That’s true,” Suzi remarked. “It makes me think about how seat belts work in real car crashes.”

While Suzi was talking about real car crashes, it reminded her of a class project their teacher, Ms. Morales, had just assigned. The class was going to be designing a restraint system for a vehicle.

“Maybe we can use some of this experience to help us design the restraint systems that Ms. Morales described this week,” Suzi commented.

Mylo asked, "Aren't our passengers going to be eggs?"

"That's right," added Angelina. "We are going to have to design something that will protect the egg if the vehicle crashes."

"Wow, that sounds hard," Mylo said as he scratched his head. "How do you know where to start designing something that could keep an egg from cracking?"

Can you help the three friends follow the engineering design process to solve the problem and answer Mylo's question about where to start?