



## Activity 1

### Can You Explain?



When is the last time you rode in a car, bus, or train? How do you think that vehicle started? What does it take to stop a vehicle? As you begin this unit on motion, think about what you already know about force and energy.

How do forces act on a starting and stopping object?

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#### Life Skills

I can share ideas I am not yet sure about.



## Activity 2

## Ask Questions Like a Scientist

## Truck versus Airplane

Have you ever wondered how something that is moving very fast slows down or stops?

**Use** the text provided to **investigate** the forces involved in starting and stopping. Then, **write** two questions you have.

Have you ever seen a jet flying overhead? What about a truck driving along a motorway? Which do you think is moving faster?

The engines on a jet are much more powerful than the engine in a truck. Normally, jets fly much faster than a truck can drive. So what would happen if you put a jet engine on a truck? The truck featured, named the Shockwave, has been fitted with three jet engines. It can reach speeds of over 500 kilometers an hour—about five times faster than the trucks you see driving down the motorway.

The powerful engines help this truck start moving and reach record speeds, but how does it stop? To solve this challenge, the truck's engineers turned to rocket designs. They installed three parachutes that deploy to help slow down the truck quickly.



What makes the truck move? How does the truck start and stop?

**Write** your questions you have, and **share** them with the class.

I wonder . . .

**Life Skills** I can ask questions to clarify.



## Activity 3

## Observe Like a Scientist

## Making Things Move

Imagine a ball lying on the ground, a closed door, and a bicycle leaning against a wall. All of these objects can move. What do you think causes an object to move? **Use** the text that follow to **investigate motion**. **Share** your ideas with your class.

A ball lying on the ground untouched does not move. When you kick it, your foot pushes the ball to make it roll. A closed door untouched also does not move. When you grab the handle and pull, the door swings open. Push and pull forces can sometimes be easy to observe.



What about air? Can air provide enough **force** to move an object? Consider wind blowing through the leaves on a tree. Now picture a cart on the road. Could air, or wind, move a cart? The investigative engineers tested this question. Instead of waiting for the wind to blow, they strapped fire extinguishers onto a cart. As they release air from the extinguishers, the cart begins to roll. How fast and how far do you think the cart could move?



**Talk Together** Now, talk together about how the forces cause the objects to move?

**Life Skills** I can ask questions to clarify.