

Activity 2.3 When Pushes and Pulls Collide

Teacher Notes

Introduction

Imagine kicking a soccer ball with your foot. Your foot collides with the ball. What happens when objects collide? What does this event do to the motion of the objects?

In this activity you are going to read a story about every day pushes and pulls. You will also give a push or a pull to wooden blocks to discover what happens in collisions.

Equipment

- Launch Log
- Chart paper
- Markers
- iPad® tablet (teacher only)
- Tablet applications
 - SketchBook Express® app (optional for activity)
 - Stage™ document camera app (optional for activity)
 - Kindle app (if *Newton and Me* was purchased electronically)
- *Newton and Me*, by Lynne Mayer
- Set of wooden blocks, separated into 6 equal sets and including a variety of shapes

Procedure

Part 1: Read and Reflect

1. The teacher reads the story *Newton and Me* aloud for the students. The story is available in print or through the Kindle app. If purchased electronically, the teacher may choose to project the image of the book while reading. If purchased in print, the teacher may choose to use the document viewer on the tablet to project an image of the book while reading.
2. Students discuss in small groups or as a class the pushes and pulls they remember from the story.
3. The teacher records examples of pushes and pulls from the story on chart paper or in the SketchBook Express app on the tablet.

Part 2: Exploring Collisions

1. The teacher shows the students the last page in the *Newton and Me* book and asks the students to make predictions about what is going to happen in the story.
2. The teacher introduces the word *collisions*. A collision occurs when two objects collide or bump into each other.

3. The teacher explains that students will have blocks like the ones shown on the last page and will be able to stand them up side by side.
4. The teacher then guides the students through exploring different ways to line up the blocks as shown in the book and then applying a push or a pull to knock them down.
5. Students explore different collisions with the blocks. Students may wish to roll the cylinder down one of the triangular blocks to apply a push on the blocks set up in rows.
6. The teacher observes students as they explore. Questions for the students to consider as they explore:
 - When you tap the first block, are you giving it a push or a pull?
 - What causes the next block or blocks to fall over? Is that a push or a pull?
 - Can you slide a block across the table or floor and have it push on another block?
7. The teacher directs the students to regroup and leads a discussion with the conclusion questions.
8. To demonstrate their understanding of collisions, guide students to the Launch Log where they will complete a drawing activity. An image of dominoes just before being pushed is shown. Students are asked to draw an after picture. The students complete the drawing activity in their Launch Logs.
9. Lead students in a discussion of what happens when objects collide. Guide them to think of everyday collisions.

Conclusion Questions for Discussion

Note: The conclusion questions may be for discussion and can be documented as a whole class.

1. What is an example of a collision?
2. Can a collision be a push or a pull? Explain.
3. When would a collision help you solve a problem?