

Description

Children will explore the interactions of opposing forces as they experiment with home-made wrecking balls.

- Age: 3-5
- Time: 20 min

Objectives

- Children will be able to identify a force and demonstrate the effects of forces on the buildings they engineer.



Vocabulary

- Force: a push or a pull
- Gravity: a force that pulls objects down to Earth

Materials

For Shared Use

- String
- Rubber bands
- Tape
- Various sizes and shapes of balls (e.g. tennis ball, ping pong balls, golf balls etc.)
- Tables/chairs
- Blocks or cups, anything that can be stacked into a taller structure

Materials Preparation

- To create the wrecking balls: tie one end of a piece of string around a rubber band. Secure the rubber band around a ball. Tape the other end of the string to a table or chair, such that the wrecking ball can swing freely 2-6 inches above the floor.

Room Preparation

- This activity works best with 1-3 children per wrecking ball.

Implementation

Introduction

Have children stand up and demonstrate a "push" with their hands. Have them repeat the word "push" as they do it. Do the same for the word "pull." Now introduce the word "force." A force is a push or a pull. Introduce "gravity" by saying that "gravity is a force that *pulls* things down towards the Earth" (have children quickly squat down to demonstrate). Play a game of Simon Says and ask children to act out the four words: push, pull, force, and gravity.

Procedure

1. Place piles of blocks/cups near the wrecking ball(s).
2. Challenge children to use force to build a tall tower.
3. Once completed, challenge children to use force to knock down their towers, but they can't use their hands.
4. Allow children to freely construct and demolish their creations, adding additional challenges such as "can you build a tower so strong that the ball can't knock it down?"

Questions to Prompt Inquiry

1. Where do you see a force? What is it doing?
2. Where do you see gravity?
3. What happens if you hold the wrecking ball higher? Lower? On a different side?
4. Can you make the wrecking ball stay in the air? What makes the wrecking ball fall?
5. What would happen if I removed the ball and just used the string?

Conclusion

Discuss with your children what they observed. Where did they see forces? What made a tower harder to knock down? What made a tower easier to knock down? What happened when they switched out the ball? Did it provide more force or less force? What do we think wrecking balls would be used for in real life?

Tips and Suggestions

Activity Extensions

- Try using different wrecking balls: does a ping pong ball act the same as a tennis ball?
- Try changing the length of the string: what happens to the wrecking ball?
- Watch a video of a real wrecking ball in action: how is it the same as our wrecking ball? How is it different?

Learn more!

- a. Links to learn more: <https://www.youtube.com/watch?v=-GemToDuVbA>
- b. Reading recommendations:
 - a. Goodnight, Goodnight, Construction Site by Sherri Duskey Rinker
 - b. Demolition by Sally Sutton

