Curiosity Guide #610
Bowling Science

Accompanies Curious Crew, Season 6, Episode 10 (#610)

Design Bowling Shoe Soles

STEM Challenge

Description

Bowling shoes have special soles for sliding and for gripping the floor at the right moments. Create a design for a new bowling shoe sole that will knock those bowlers' socks off!

Materials

- Plastic
- Felt
- Leather
- Rubber
- Cotton
- Scissors
- Tape
- Scotch pad
- Sandpaper
- Styrofoam
- Paper
- Wood sole template
- Wood heel template
- Ankle weight
- Polished wood ramp
- Measuring tape
- A team of friends

Procedure

1) Work with others to determine what materials will provide a slippery sole and a sticky base.
2) Attach the selected materials to the wooden templates.
3) Set up the polished wood ramp on an angle.
4) Place a piece of tape 10 inches from the top edge of the ramp, running perpendicular to the ramp. This will serve as the starting line.
5) To test the bases, place the ankle weight on top of the template. Gently push the template toward the tape line and release.
6) Measure how far the template traveled and record the data.
7) Then, using the heel templates, repeat the test.
8) Redesign as necessary to improve the slide of the sole and the breaking of the heel.

My Results

Explanation

Bowling shoes are usually made from a combination of leather soles and rubber heels. Having a slippery sole helps the bowler to ensure a smooth approach and release. The heel is meant to act like a brake, to prevent the bowler from sliding over the foul line, and to stop the bowler when the ball is released.

Think about this: Bowling shoes are an important part of the sport and renting them is one of the first things you do when you play. The bottoms of the bowling shoes are designed to slide a bit to maintain the momentum of the approach. But the shoe bottoms can't be too slippery; otherwise you could slide right over the foul line or fall down. So, engineers use a combination of leather soles and rubber heels. The leather is slippery, while the rubber heel acts like a brake and stops the shoes when the ball is released. Those soft bowling shoes do a lot to protect the bowling lanes, too. What a great design!

Parents and Educators: use #CuriousCrew #CuriosityGuide to share what your Curious Crew learned!

WKAR