

Green ² Troops - Rollercoaster Design Challenge Badge

Goal: Build a model rollercoaster using creativity, teamwork, and reused materials—*without waste!*

Girl Scout Mission Connection: Rollercoasters are exciting, just like the adventure of making something from scratch. By using recycled items, we help protect our Earth while learning how things move!

What You'll Need (All Waste-Free or Repurposed)

- Paper tubes (toilet paper, paper towel)
- Scrap cardboard or paperboard
- Tape (reuse leftover rolls or paper-friendly options)
- Marbles, small balls, or buttons for “riders”
- Books, boxes, or furniture for support (no cutting or gluing needed)

Step 1: Learn How Things Roll

Badge Step: *Learn about rollercoasters*

Watch a short video or look at a photo of a rollercoaster. Notice how it goes up, down, around, and curves!

Girl-Led Prompt:

What makes it fun? What makes it safe?

Step 2: Design Your Track

Badge Step: *Plan and build a model*

Use paper tubes and cardboard to create your own track. Stack books to create ramps or drops—*no glue or permanent attachment!* Just balance and adjust.

Pro Tip: Use rubber bands, twist ties, or paperclips to gently hold things in place without creating trash.

Step 3: Let It Roll!

Badge Step: *Test your rollercoaster*

Try rolling a marble or button down your track. Does it zoom? Or stop too soon? Adjust as needed without making trash—just reposition and rebuild.

Girl-Led Prompt:

What's the most exciting part of your coaster? Can you make it longer or twistier?

Step 4: Fix and Improve

Badge Step: *Make it better*

Test your design a few times. Change the angle, height, or curves. Each time you try again, you're being an engineer!

Step 5: Share Your Design

Badge Step: *Share what you built*

Show it off to a family member or record a short video explaining your design. Bonus: challenge someone else to build a coaster using only recycled stuff too!

Optional Bonus Challenge:

Use your leftover coaster pieces to build a **second design**—a new theme or a silly twist (like a zigzag or loop)!

Badge Complete When:

1. You used recycled or repurposed items only
2. You tested and improved your design
3. You shared your rollercoaster with someone else
4. You didn't create any waste—way to go, Engineer Daisy!