



Mechanical Engineering: Model Car

Badge Overview

Build a model car and test the friction of your car on different surfaces to prepare for a Troop Car Chase! When you've earned this badge, you'll have learned about friction by building and testing model cars. You will know how to design and test new things that you invent.

Badge Components

1. Design and build model cars

Get your creative juices flowing! Design and build your car. Here are some ideas to inspire you:

- [Milk Carton Car](#)
- [Water Bottle Car](#)
- [Styrofoam Car](#)

2. Use model cars to test the friction of different surfaces

Tie a string to the front and try dragging your cars across different surfaces e.g. tile, linoleum, carpet, rug, grass, gravel, sofa, blanket etc.

- Which surfaces work the best?
- What are the common properties of the fastest surfaces?

Friction is the resistance of motion when one object rubs against another. Anytime two objects rub against each other, they cause friction. Friction works against the motion and acts in the opposite direction. When one object is sliding on another it starts to slow down due to friction. The smoother the surface the less friction is caused.

3. Race your cars!

Challenge someone in your house to a race!

- You can make them a car too or maybe they would like to design and make one for themselves.

Materials

- Milk Carton Car**—Milk carton, Straws, Dowels/Bamboo skewers, Glue gun, String/Yarn, Paint/Markers, etc. for decoration
OR
- Water Bottle Car**—Water bottle, Sandpaper, Cutter/Craft knife, Straw, Scissors, String/Yarn, Dowels/Bamboo skewers, Bottle lids and Paint/Markers, etc. for decoration.
OR
- Styrofoam Car**—Styrofoam, Dowels/Bamboo skewers, String/Yarn, Buttons, Plastic lids, Styrofoam or Plastic cups or maybe old Lego wheels, Cutter/Craft knife, Glue gun, and Paint/Markers, etc. for decoration.

Florida Educational Standards

The content of all Girl Scout national proficiency Badges and Journeys have been correlated by grade level to national and state learning objectives.

Click here for more information on how Girl Scout Badge-work supports Florida's educational standards.



We love to see Girl Scouts in action. Snap a photo and send it to marcomm@gssef.org.

Include her name, troop# and the name of the badge she's working on and we'll feature her.

Finished with your badge? Now buy it for your Girl Scout Uniform. Order online at <https://www.girlscoutshop.com/SOUTHEAST-FLORIDA-COUNCIL> and we'll ship it for free.

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