

Bottle dragster

This short-term challenge comes from the Creative Challenge guide entitled "Relevez le défis", published by the Conseil de développement du loisir scientifique (CDLS)

All secondary-school students particularly levels I to III

Key words: car construction; propulsion; reaction of gases; force and motion; gas compression;

Space: long corridor or outdoors

Your mission

QUICK! You must get to the shopping mall as fast as possible because the store "Gadgetz" is having a 1-hour sale. This sale takes place only once a year and you're intent on coming home with those extreme motorized running shoes—the ones your parents refuse to buy!

The challenge

You have 1 hour to build a rolling vehicle that is propelled by a single balloon, that will travel the longest distance in a straight line.

Materials

- 1 plastic water or soda bottle (1 or 2 L)
- 2 round balloons whose circumference does not exceed 120 cm when they are filled with air
- 4 film container lids
- 2 elastic bands
- 6 straws
- 50 cm of fabric tape
- 2 plastic or wooden clothes pins
- 1 flexible tape measure to measure the circumference of the balloons (sewing tape measure)
- 1 7-m tape measure
- Coloured tape for the starting line and to mark off a straight line
- A few spare balloons and smaller balloons, in case a third test is needed
- A hole punch to pierce holes in the plastic WITHOUT INJURING yourself

A few rules

- You must use ALL the materials.
- Only one balloon filled with air can be used to propel your vehicle.
- The second balloon is to be used as a spare in case the first one bursts or during the second test.

Testing

- You have 5 minutes to inflate the balloon and place your vehicle in the racing lane.
- Measure the balloon to ensure that its circumference does not exceed 120 cm.
- You must allow your vehicle to roll on a flat surface (e.g. ceramic, tile, hardwood floor) and not push it.
- Once it begins to move forward, you cannot intervene.
- If you compete with friends, the vehicle that travels the longest distance in a straight line is declared the winner.
- In the event of a tie, test the vehicles a third time using smaller balloons

Want to know more?

Make a library or on-line research using the Key words at the beginning of this challenge.