Junior Skills Gravity Vehicle Challenge

Skills Compétences Canada British Columbia

Revised: November 2024 for the Cariboo Regional and Provincial Competitions

Skills Canada BC Gravity Vehicle Contest
Jr. Skills Rules

The registration deadline is two weeks prior to your local regional competitions. For more information regarding the regional competitions please visit www.skillscanada.bc.ca

Introduction

This challenge is open to all students in grades 6-9. The teams can be comprised of students from different grades. In this challenge you will work as a team with two to four other students to design and build a Gravity Vehicle. Your vehicle will be judged by how fast it travels on a track thirty-two ft long. Don't forget to name your vehicle!

You will be supplied by your teacher with material to build your vehicle.

Design of Your Vehicle

What will influence how fast your vehicle will travel? (If possible, you may want to test your vehicle in a wind tunnel for aerodynamics)

What will make your vehicle the most attractive and eye catching?

Track:

The track has two lanes, a manual start mechanism and results are often win/lose arranged in a tournament format. Each lane is approximately 111mm (4 3/8 inch) wide. The release mechanism consists of pins made from 5/16 inch aluminum round rod. The pins protrude 50mm (2 inch) above the track. The approximate measurements of the track are: incline 24 feet long, 8 foot run out. The height at the start of the track is 5 feet 6 inches.

Competition:

Each team will arrive with a completed Gravity Vehicle following the vehicle specifications outlined in this document.

Each team will be required to register their completed Gravity Vehicle where each vehicle will be inspected for:

- overall weight
- dimensions
- construction.

No modification(s) will be allowed once the team and team vehicle has been registered at the event. Only repairs approved by the technical chair may be made to any vehicles before and during the event. At the conclusion of racing event, each vehicle will be weighed once more. This weight must match the original registration weight. A change in weight will result in a disqualification for that team.

Vehicle Specifications: Please Note: All changes for the 2025 competition are printed in RED.

The only source of energy is the ***Potential Energy*** from gravity as the vehicle sits at the top of the track. To fit in the track, the maximum size of the vehicle is 101mm (4 inches) wide and 304mm (12 inches) long. There is no height restriction. There is a **600 gram** weight restriction on the vehicle. The center front most point of the vehicle must have NO MORE than 50mm (2 inches) of ground clearance to accommodate the starting gate.

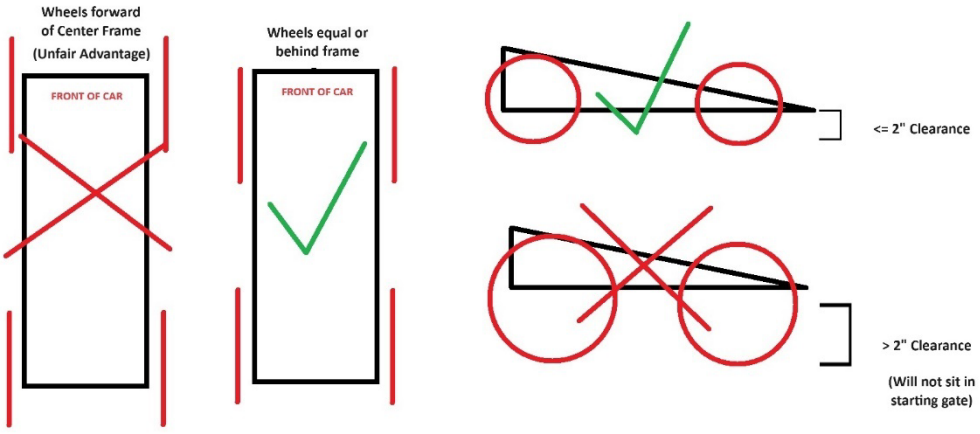
The wheels must not extend forward beyond the front most point of the car.

The vehicle can be made from any common materials found in school such as wood, metal, plastic and recycled materials from electronic devices. The vehicles must be made from scratch by the students and not be constructed in any form from any type of kits or 3D printed materials except as noted below. All ballast weights must be secured solidly to the vehicle.

The only commercially manufactured or 3D printed parts allowed will be wheel hubs. Wheels and all other connecting hardware for the wheels must be home made. (hint: CDs are good wheels when paired with the correct hubs!)

The spirit of the competition is for the youth to design and build fast cars and have a good time doing it. Any obvious defiance of the rules or the spirit of the competition must be immediately brought to the attention of the race officials to deal with. Any protests must be submitted within 5 minutes of the final race BEFORE medals are awarded.

Note** Three-wheeled vehicles do not fit the starting gate very well, as there is a ¼" x 2" slot cut in the track, it is not recommended you build a car with a center wheel.



For any questions or clarification of these rules, contact the competition tech chair as noted below.

General Contest Information

Purpose of the Challenge:

To increase student's awareness of trades and technologies careers through a hands-on competitive event.

Each school within the cariboo region is guaranteed two spots at the regional competition for a Gravity Vehicle Team. Should space permit additional teams will be entered on a first come first served basis. Please register all interested teams. If necessary schools could initiate a school based run-off to see which team will advance to the regional. Skills Canada BC will confirm with each school immediately after registration closes, two weeks prior your regional, as to how many teams will be accommodated.

Advancing to the Jr. BC Skills Competition:

In each region 1st , 2nd and 3rd place teams will advance to the Jr. BC Skills Competition.

Supplied by Skills Canada BC:

Entry Forms T-shirts for all competitors
Jr. Skills Challenge, rules, photos, and specifications for gravity track

Supplied by Students' School:

Material for building vehicle

Method for testing vehicle – drawings and photo's of a track have been supplied for those schools/districts interested in building a track to allow the teams to test their design's in advance of the competition.

Supplied by Regional Host:

Track for contest, Tournament arrangement

Cariboo Regional and Provincial Tech Chair:

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