



Junior Skills Gravity Vehicle Challenge



Revised: October 2023

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 feet 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?

Specifications:

Vehicle:

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, 152 mm (6 inches) high and 304mm (12 inches) long. There is a **600 gram** weight restriction on the vehicle.

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.

The only commercially manufactured or 3D printed parts allowed will be wheels and/or hubs.

All ballast weights must be secured solidly to the vehicle.

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 above.

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

- overall weight
- length
- Height
- 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.

Remember, there is a **600 gram weight restriction on the vehicles.*

1. Some schools and regions run a round robin tournament where winning cars advance to compete against winning cars.
2. Some schools and regions use a timing system. Two cars can race at once but are scored by their Elapsed Time.

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 region is guaranteed one spot at the regional 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 Provincial JrSkills Gravity Vehicle Competition:

In regions with over fifteen teams participating, 1st and 2nd place teams will advance to the Provincial JrSkills Gravity Vehicle Competition. In regions with less than fifteen teams participating, the 1st placed team only will advance to the Jr. BC Skills Competitions.

Supplied by Skills Canada BC:

Entry Forms T-shirts for all competitors

Jr. Skills Challenge, rules, photos, and specifications for gravity track

Supplied by School:

Material for building vehicle

Method for testing vehicle – drawings of a track have been supplied on the Skills BC website and photos are available by contacting jmaxwell@skillscanada.bc.ca for those schools/districts interested in building a track to allow the teams to test their designs in advance of the competition.

Supplied by Regional Host:

Track for contest, Tournament arrangement

Provincial Technical Chair

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