



# Cariboo Junior Skills Competition

Scope Document

*Gravity Vehicle Race 2023*

Thompson Rivers University  
March 3, 2023



# Gravity Vehicle Race 2023

## Eligibility:

This competition is open to teams of students in grades 6 through 9. Each team may be comprised of up to four (4) students.

## Purpose of the Challenge:

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

## The challenge is to:

- work as a team to design, build and name a Gravity Vehicle.
- submit drawings and/or photos of the vehicle while under construction and upon completion.
- prepare a presentation that indicates how gravity, weight, friction, aerodynamics, etc., influenced the design of the vehicle.
- convey, during an oral presentation to the judges, the important aspects of vehicle design.

**Note:** The vehicle entered in the competition must be accurately represented in the drawings or photos

## Judging Criteria:

There are two sets of criteria: Track Performance and Technical Presentation.

### Track Performance:

The vehicle will be judged by how fast it travels on a 32-foot long track. The race will be monitored by a video camera positioned over the finish line of the track. The vehicle of the team that wins the most races will be declared the winner.

### Technical Presentation:

Whereas Skills BC believes that Junior Skills Competitions should include math and science skills each team is requested to prepare drawings and/or photos of the construction and finishing of the vehicle and that the team is prepared to make an oral presentation. Each member of the team that has the best drawings/photos and gives the best oral presentation will receive a \$10 gift card.

## Equipment, Tools, and Materials

### Supplied by the school

- Material for building the vehicle
- Materials for developing design drawings display
- Materials for developing marketing poster

### Supplied by Cariboo Regional Skills Coordinator:

#### Before the competition

- Gravity Vehicle Scope Document
- Judging criteria
- Specifications for gravity vehicle track

#### On the day of the competition

- T-shirts for all competitors
- Track for contest
- A competition schedule
- Electronic Timing Device
- Panel of Judges

### Vehicle:

The only source of energy is the potential energy from gravity as the vehicles sits at the top of the track. To fit in the track, the maximum size of the vehicle is 100mm (4 inches) wide. The underside of the nose of the car (the most forward point of the vehicle) must be no higher than 25 mm (approximately 1 inch) off the surface of the track when the vehicle is sitting on its wheels, to ensure that the most forward part of the car comes in contact with the starting gate ensuring that all competitors have an equal start and can be judged equally.

**NOTE: The maximum weight of the finished vehicle is 600 grams.**

### Technical Presentation:

The presentation may be on poster paper which cannot exceed 24"x36" or in digital format. All images utilized must be created by the team and may include:

- Photos.
- Drawings or sketches.

- Text.

### **Design Drawings:**

The design drawings may be on poster paper which cannot exceed 24"x36" or in digital format. All images utilized must be created by the team and may include, accurate to scale, top, side and front views of the vehicle.

### **Oral Presentation:**

The oral presentation should be approximately 5 minutes long. It should describe the design decisions made, the construction of the vehicle and other items of interest.

### **Rules:**

- Each vehicle will be weighed as the teams arrive.
- The vehicles will be kept on a judges table separate from the teams until the start of each race.
- Only the judges will have access to the vehicles once they arrive on site.
- No modifications to the vehicles that fundamentally change the appearance of the vehicle will be allowed once the teams arrive at the competition. With permission from the Technical Chair minor changes may be allowed as long as the core design of the vehicle is not changed and racing is not delayed. The car must pass another inspection before it is allowed to race.
- Only repairs approved in advance by the judges may be made to vehicles once the competition begins.
- At the conclusion of the racing, each vehicle will be weighed again. This weight must match the original weight, or the vehicle will be disqualified.

### **Race Protocol:**

The Technical Committee members will conduct all races. They will

- produce the race schedule
- ensure the cars are placed fairly in the starting gate
- start the race
- determine the winner of each heat.



- determine the winner of the competition

**Technical Committee Chair:**

Jason Schapansky – [jschapansky@tru.ca](mailto:jschapansky@tru.ca)