Science on tourne!

34th EDITION

PROVINCIAL FINALS
April 30 and May 1, 2027

cégep drummond.

THE GREAT GAP

THE CHALLENGE:

Design an autonomous device capable of traveling the greatest possible distance across a gap.

PRESENTED BY

CENTRE DE DÉMONSTRATION EN SCIENCES PHYSIQUES
CÉGEP GARNEAU

AN ASSOCIATED PROJECT OF
RIASQ

Scienceontourne.com

INTERCOLLEGIATE SCIENTIFIC COMPETITION

CONTEST DETAILS

TEAM COMPOSITION

- A team is made up of maximum 4 members and must be composed of the same members during local finals and provincials.
- A student cannot be a member of more than one team or present more than one device.
- Teams must give an original name to their device. This name cannot be changed between local finals and provincials. Brand names are prohibited.

TWO CATEGORIES

- ***Professional*** **category:** This category is for college students in Quebec of all ages, from both public and private institutions, registered full time or in continuing education in any program or discipline. The student must be registered for the winter 2027 semester.
- ***Amateur*** **category:** This category is for staff members of any public or private college in Quebec.

RESOURCES

- **Each college will have a resource person:** This person can answer questions regarding the competition. For the resource persons' contact information visit scienceontourne.com.
- ***FAQ section:*** You can also regularly look up the *FAQ* page online at scienceontourne.com (Le défi / FAQ).



PRIZES AND GRANTS

PRIZES
PROFESSIONAL CATEGORY

CHALLENGE PRIZE

$3000 for the team who achieves the highest score. **Awarded by the ministère du Développement économique, de l'Innovation et de l'Énergie.**

Free enrolment to the Forum international Sciences Société for each member of the winning team as well as a reimbursement (up to $100) to cover travel costs. **Awarded by Acfas**.

INGENUITY PRIZE

$1000 for the team who is able to develop an original concept for their device which best leverages the rules and regulations. **Awarded by the Ordre des technologues professionnels du Québec (OTPQ)**.

DESIGN PRIZE

$1000 for the team who best develops a functionally and esthetically pleasing device. **Awarded by the École de technologie supérieure (ÉTS)**.

SUSTAINABILITY PRIZE

$1000 for the team who best applies the concept of Ecodesign in the construction of their device in order to mini¬mize their ecological footprint. **Awarded by Honda Canada Foundation and *Science, on tourne!*.**

COMMUNICATION PRIZE

A $1800 mobility grant for a scientific trip in France, awarded to each member of the team which best stands out by the quality of their communications (both written and oral). **Awarded by the Office franco-québécois pour la jeunesse**.

MERIT PRIZE

$1000 for the team which stands out in the following five categories: device performance, ingenuity, design, sustainability and communication. **Awarded by the Fédération des cégeps and *Science, on tourne!*.**

JURY'S SPECIAL MENTION PRIZE

$1000 to the team specially selected by the jury. Evaluation criteria are at the discretion of the members of the jury. **Awarded by Polytechnique Montréal and *Science, on tourne!*.**

PEOPLE'S CHOICE AWARD

$1000 to the team which will be designated by an audience vote at the finals. **Awarded by the McGill University Faculty of Engineering and *Science, on tourne!*.**

MURPHY PRIZE

Symbolic prize awarded to the team whose device did not function as it should. **Awarded by Cégep Drummond.**

PARTICIPATION PRIZE FOR GIRLS

$500 for a female student whose name will be selected at random in the list of participants in the local finals. **Awarded by Fondation Familiale Trottier.**

PARTICIPATION PRIZE FOR BOYS

$500 for a male student whose name will be selected at random in the list of participants in the local finals. **Awarded by Fondation Familiale Trottier.**

GRANTS
PROFESSIONAL CATEGORY

A $1500 grant applicable on tuition fees is **awarded by the École de technologie supérieure (ÉTS)**.

A $1500 grant applicable on tuition fees is **awarded by Polytechnique Montréal**.

GRANTS
AMATEUR CATEGORY

YVON FORTIN PRIZE

Symbolic prize awarded to the team who achieves the highest score in the *Amateur* category. **Awarded by Cégep Drummond**.

OVER $15,000 IN PRIZES TO BE WON!

The criteria for awarding prizes are described on the competition Website: scienceontourne.com (Finale nationale / Prix et critères d'évaluation).

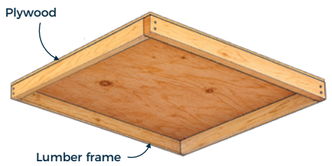
1. THE CHALLENGE

1.1. Design an autonomous device capable of traveling the greatest possible distance across a gap.

2. COMPETITION AREA

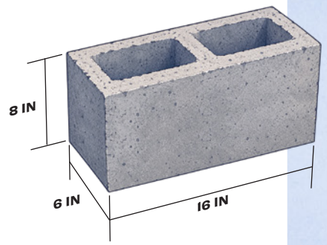
2.1. Limits: The competition area consists of a rectangular floor surface measuring 150 cm by 500 cm. The outer boundary of the competition area is defined by the inner edge of a strip of colored adhesive tape. During the national finals, the competition area will consist of a floating floor. A maximum unobstructed height of 300 cm above the competition area is guaranteed, measured from the surface of the competition area. During the national finals, the absence of obstacles is not guaranteed beyond the imaginary rectangular prism whose base is the competition area (150 cm by 500 cm) and whose height is 300 cm.

2.2. Platforms: Two platforms are placed on the surface of the competition area: the starting platform and the landing platform. Each platform consists of ¾-inch-thick plywood, cut to dimensions of 100 cm × 100 cm, with the finished side facing up.



The plywood is mounted on a frame made of lumber commonly referred to as "2 × 4". The positioning of the two platforms is left to the discretion of each team. However, both platforms must be entirely contained within the competition area.

2.3. Platform Height: Each team selects the height of the starting and landing platforms from the four (4) configurations provided in the table. Where applicable, the platform is supported by four (4) legs, each consisting of a hollow concrete block measuring 16 in × 6 in × 8 in. The hollow concrete block used during the national finals is shown below.



2.4. Starting Volume: The starting volume is an imaginary rectangular prism whose base is the top surface of the starting platform (100 cm × 100 cm) and whose height is 200 cm.

	STARTING CONFIGURATION	H_x VALUE	ARRIVAL CONFIGURATION
H_A	Placed on four (4) concrete blocks positioned horizontally, with the openings facing upward	STARTING PLATFORM (A) → 1 → ARRIVAL PLATFORM (B)	Placed on four (4) concrete blocks positioned horizontally, with the openings facing sideways
H_B	Placed on four (4) concrete blocks positioned horizontally, with the openings facing upward	STARTING PLATFORM (A) → 2 → ARRIVAL PLATFORM (B)	Placed on four (4) concrete blocks positioned horizontally, with the openings facing upward
H_C	Placed on four (4) concrete blocks positioned horizontally, with the openings facing sideways	STARTING PLATFORM (A) → 2,5 → ARRIVAL PLATFORM (B)	Placed on four (4) concrete blocks positioned horizontally, with the openings facing upward
H_D	Placed directly on the floor	STARTING PLATFORM (A) → 3 → ARRIVAL PLATFORM (B)	Placed on four (4) concrete blocks positioned horizontally, with the openings facing upward

3. POINTS

3.1. The formula used to calculate the final score (**P**) is as follows:

$$P = H_X \times D$$

3.2. H_x is the platform-height configuration selected by the team for both the starting and arrival platforms.

3.3. D (in centimetres) is the shortest distance between the starting platform and the arrival platform. This distance is determined by the team. The two closest points on the platforms are used to measure the distance between them.

4. DEFINITIONS

4.1. Device: An assembly, mechanical apparatus, machine, system, vehicle, etc. designed to travel from the starting platform to the arrival platform without touching the floor.

4.2. Activation of the device: an action performed by a team member to activate the device at the beginning of an official trial.

4.3. Activation tool: a tool, distinct from the machine, used to perform the start-up action. Such a tool is permitted, but not required.

5. RULES

A team may be disqualified, lose an official run or terminate an ongoing run if they break one of the following rules:

DEVICE

5.1. The device, tools, activation device (if applicable), and all other technical equipment must fit inside one (1) or two (2) boxes of the type used to hold 5,000 sheets of 8.5 × 11 in. paper. The boxes must be able to close completely and retain their original dimensions of 43 cm long × 28.5 cm wide × 23 cm high (interior dimensions).

5.2. The mass of the device must be between 200 g and 4000 g (±1 g).

5.3. The device must operate safely and pose no hazard. The use of personal protective equipment, particularly safety glasses, is strongly recommended during the construction of the device and throughout the local and national finals. It is also recommended to wear sturdy shoes and work gloves during the local and national finals.

ENERGY SOURCE

5.4. All forms of energy may be used, except combustion, for safety reasons.

5.5. Any generation of lift that results in upward motion (such as in drones, airplanes, airships, etc.) is prohibited.

IMMEDIATELY BEFORE THE DEVICE'S ACTIVATION

5.6. All parts (components) of the device must be completely contained within the starting volume.

5.7. The activation device (if applicable) may be held by a team member outside the competition area. It may also be placed in the starting area or placed on the playing field and kept stationary to hold the device in place.

5.8. The device must be stationary and in contact only with the top surface of the starting platform.

5.9. Team members must remain outside the competition area. They cannot touch the device to stabilize it or hold it in place.

DURING THE DEVICE'S ACTIVATION

5.10. The activation must be performed by a team member using a single action and one hand.

5.11. The activation must not provide energy to the device.

5.12. The activation must be completed before the device leaves the starting volume.

DEVICE COURSE

5.13. The device must be autonomous.

5.14. The device must remain intact and cannot separate into multiple parts.

5.15. The device must always remain in contact with the top surface of at least one of the two platforms. It must not touch the floor.

5.16. The device must not damage the competition area or the competition venue. It must not pose a hazard to anyone present.

5.17. Extending beyond the outer boundaries of the competition area does not result in a penalty.

END OF THE DEVICE COURSE

5.18. The device must be stationary and in contact only with the top surface of the arrival platform.

6. PROCEEDINGS

The proceedings are the same whether it is an *Amateur* or a *Professional* competition run.

VERIFICATION OF THE DEVICES

6.1. Before each competition, the participating teams must proceed to a verification of the conformity of their device and explain its functions to the referees.

QUALIFICATION ROUNDS

6.2. The order in which teams compete is determined randomly.

6.3. When a team is called to prepare, it has seven (7) minutes backstage to assemble and prepare its device. A table and an electrical outlet will be provided.

6.4. When the team is called on stage, it has two (2) minutes to present its device to the audience.

6.5. The team then has five (5) minutes of competition time to:

- Position the two platforms within the competition area at the desired locations and select one of the four (4) possible platform-height configurations. The distance between the platforms and their height configuration may be changed from one trial to the next, at the team's discretion;
- Set up and prepare the device;
- Conduct unofficial trials. There is no limit to the number of unofficial trials that may be conducted, provided time permits;
- Conduct a maximum of two (2) official trials. Each official trial has a maximum duration of two (2) minutes. Both official trials must be completed within the total five (5)-minute competition time.

6.6. Once both official trials have been completed or the five (5)-minute competition time has elapsed, the team places its device on the scale so that the official can measure its mass. The team then leaves the stage.

6.7. The best result (**P**) from the two official trials, if applicable, is used for the final ranking. In the event of a tie, the mass of the device will be used as the tiebreaker, with the higher-mass device receiving the advantage.

FINAL ROUND

6.8. The five (5) teams with the highest scores in the qualifying round advance to the final round.

6.9. The order in which teams compete is determined by the reverse order of their ranking in the qualifying round.

6.10. The same steps as those in the qualifying round are repeated, except for the presentation of the device to the audience, which has already taken place.

6.11. The winning team is determined by the best result (**P**) achieved in the final round. In the event of a tie, the mass of the device will be used as the tiebreaker, with the higher-mass device receiving the advantage.

DESCRIPTION OF AN OFFICIAL RUN

During the five (5)-minute competition time, when the team is ready to conduct an official trial, its representative informs the official and states the distance between the two platforms. The entire team then moves away from the competition area. The competition clock is stopped at this point.

The official verifies that the competition area and the device comply with the rules and confirms that the distance stated by the team is correct. Once everything is in order, the official blows the whistle. The competition clock then resumes, and the team representative may perform the start-up.

The official trial ends at the earliest of the following events:

- If the maximum official-trial duration of two (2) minutes is reached;
- If the maximum five (5)-minute competition time is reached;
- If the official determines that the device has come to a stop;
- If the team representative requests that the official trial be ended;
- If a rule is violated.

After the official trial, the competition clock is stopped to allow the official to calculate the score obtained.

PROVINCIAL FINALS
April 30 and May 1, 2027
DRUMMONDVILLE

cégep drummond.

LOCAL FINALS
Each college will organize their own local finals between February 1st and April 2nd 2027. Teams will compete against each other in their respective categories. The nature of the prizes awarded to the winners of local finals is up to the college's discretion.

PROVINCIAL FINALS
The team from each college who wins their local finals, for each category, will be invited to attend the provincial finals.

THANK YOU TO OUR PARTNERS

PRESENTED BY
Québec

MAJOR PARTNERS
Fondation familiale Trottier Family Foundation
cégep drummond.

GOLD PARTNERS
ÉTS
Ordre des technologues professionnels du Québec

SILVER PARTNERS
Polytechnique Montréal
ofqj Office franco-québécois pour la jeunesse
Fédération des cégeps
McGill Faculté de génie
Honda Fondation Honda Canada

BRONZE PARTNER
UQTR École d'ingénierie