junior tech challenge

The practical side of science and tech

Presentation of rules

SOS Pirates!

2021–2022 EDITION

A technology **challenge** for all elementary students!

Regional finals within Odyssée des sciences

A program of

Réseau TechnoScience

Together for a new scientific generation

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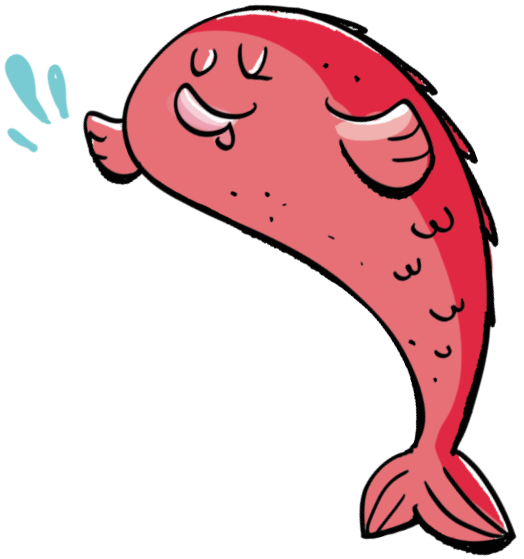

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A LES for the Class…and Much More!

The Junior Tech Challenge « **SOS Pirates!** » is a LES for the classroom, but it is also a competition that can be experienced at different levels. Teams can be registered directly to the regional finals, or in-school competitions can be held where teams can be selected to participate in the regional finals. In some areas, school service centers invite their schools to participate in finals. All the while, creating a bonding opportunity for students and staff!

The Réseau Technoscience, through its regional organizations, arranges regional finals throughout Quebec. These finals will take place in May as part of the Odyssée des sciences. Projects from the elementary level of the Hydro-Québec Science Fair, as well as animations from the Débrouillards will also be presented.

The Rules

In this document, you will find useful information, as well as the rules, to successfully complete this year's Junior Tech Challenge in class or at school.

New Challenges at Every Level of Competition

During the regional finals or some in-school competitions, the challenges may be presented in a different format. The goal in doing this is to allow the students that participate at different levels of the competition, to experience in a different way. Everything will be put in place so that students can review the notions learned in class while continuing to have fun! For example, in later stages, the items to be placed in the prototype may change, the materials allowed may differ, the maximum size of the prototype may be modified, etc.

Your Mission

Ahoy, Matey! Our treasures are in danger! Have you heard that the sea levels are rising? The loot we spent so many years gathering onto the island may be lost underwater at any moment, and we don't have enough ships to load all our precious cargo! Arr! But, it seems that you, young mate, are quite clever. If you help me, you will be greatly rewarded! I need you to build the lightest watercraft possible to support the most amount of treasure. Let's get to work! We are getting into deep water! My socks are already getting wet!

Tools for Teachers

The following teaching tools are free and designed to provide teachers with a step-by-step guide to implementing the « SOS Pirates! » challenge in class. Many of these teaching tools are available at technoscience.ca

- Teacher's Guide
- Student Handbook
- Slideshow
- Certificate
- Frequently Asked Questions (FAQ)

= New for the 2021-2022 version of SOS Pirates!

This is your first time taking on the challenge and you'd like some support?

Contact a member of the Réseau Technoscience in your area to receive all necessary information and support.

THE CHALLENGE

To build a floating prototype that can support the greatest amount of standard-size marbles *(about 1.5 cm in diameter and a mass of 5 g).*

A Mission for All!

Cycle 1
The team must use an aluminium sheet of approximately 30 cm x 30 cm to build the base of the prototype.

Cycles 2 and 3
The team must use a plastic sheet (Ziploc-type© freezer bag type) of approximately 25 cm x 25 cm to build the base of the prototype.

Different Treasures for Different Cycles!

For Cycles 2 and 3, the following starting object must be deposited in the prototype before the marbles are deposited.

Cycle 2 : A ping-pong ball

Cycle 3 : A tennis ball

Frequently Asked Questions

The Frequently Asked Questions section is where you and your students will find more details about the rules of the challenge.

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For Cycle 3 Only

IMPORTANT! The tennis ball will absorb water. To ensure that the ball has the same mass for each team, soak it in water before the start of the competition, then wring it out with a towel, before each team begins their turn.

Specific Rules

1.1. The **Junior Tech Challenge** is a Réseau Technoscience program. The latter and its regional organizations are responsible for making the rules and for holding regional finals throughout Quebec.

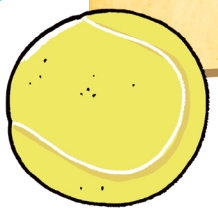
1.2. The Junior Tech Challenge is open to all elementary students.
Note : it is possible for kindergarten students to participate in the challenge by using the rules that apply to Cycle 1.

1.3. Each team is composed of one to three participants. Any team with students from two different cycles must complete the challenge from the higher cycle.

1.4. The prototype must be designed and built by the students.

1.5. Failure to follow the rules, or any other breach from the organizing committee's directives, may result in the disqualification of the students.

1.6. The answers published in the Frequently Asked Questions serve as a reference for the interpretation of the Rules.



CONSTRUCTION

2.1. Teams can only use the materials identified in the box on the right.

2.2. The prototype cannot exceed 30 cm in length and 15 cm in width. There are no height restrictions.

2.3. For Cycles 2 and 3, the starting object and the marbles must be placed in the prototype and cannot be fastened to it.

2.4. The competition area is a transparent basin *(see page 7 for more details)*. Before each team's turn, there must be 10 cm of water in the basin. No part of the prototype can rest on the basin.

Materials Permitted for the Design of the Prototype:

- Aluminium sheet of approximately 30 cm x 30 cm *(Cycle 1 only)*;
- Plastic sheet *(Ziploc-type© freezer bag type)* of approximately 25 cm x 25 cm *(Cycles 2 and 3 only)*;
- Wooden craft sticks - max 20;
- Paper clips *(any size)* – max 10;
- Pipe-cleaners – max 10;
- String – max 1 meter;
- Wooden skewers – max 10
- Straws *(paper straws preferably)* – max 15
- Oil-based clay (not water-based) – max 30 g

SCHEDULE OF EVENTS

3.1. The marbles used must all be approximately the same size and have approximately the same mass.

3.2. On the day of the competition, teams will have 45 minutes to design and build their prototype.

3.3. Each prototype must be weighed and inspected to ensure compliance with the rules.

3.4. When it's their turn, each team must drop their prototype into the basin.

3.5. Once the prototype is in the water, the team must…

Cycle 1 : deposit the marbles one at a time in the prototype.

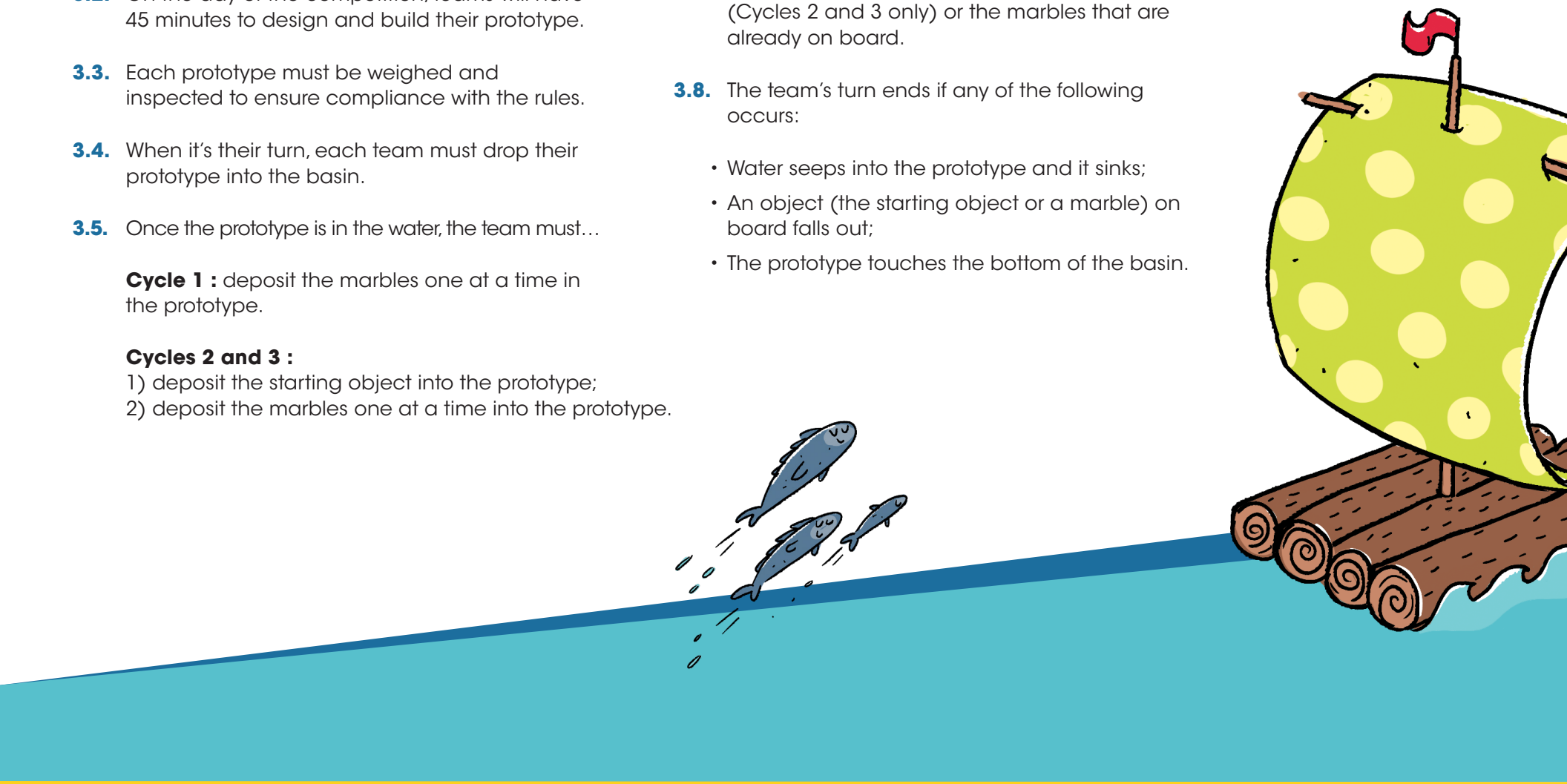
Cycles 2 and 3 :
1) deposit the starting object into the prototype;
2) deposit the marbles one at a time into the prototype.

3.6. The judge will adjust the speed of the execution if it is too fast or too slow.

3.7. The team cannot touch the starting objects (Cycles 2 and 3 only) or the marbles that are already on board.

3.8. The team's turn ends if any of the following occurs:

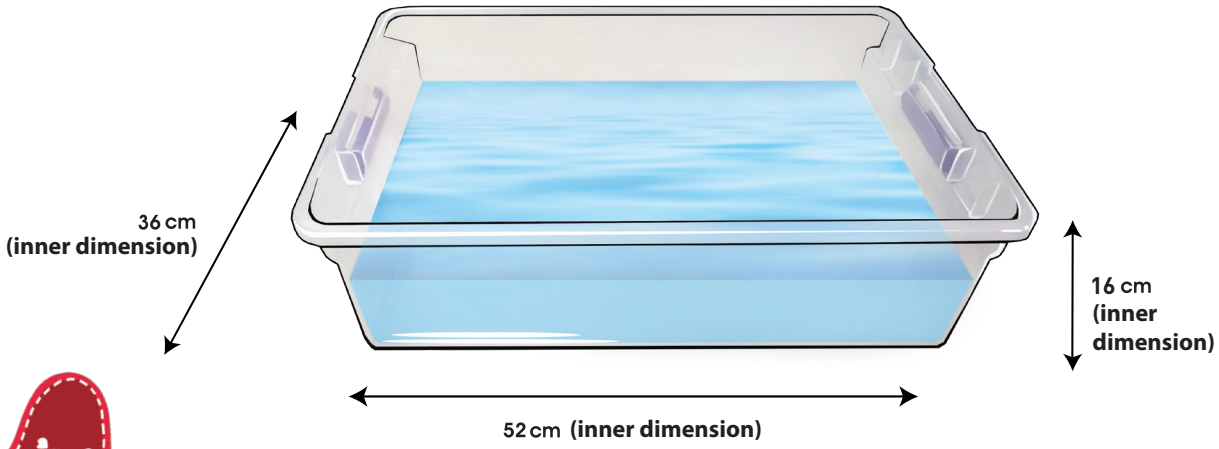
- Water seeps into the prototype and it sinks;
- An object (the starting object or a marble) on board falls out;
- The prototype touches the bottom of the basin.



COMPETITION AREA

Required:

- A transparent basin measuring at least 52 cm x 36 cm x 16 cm;
- The basin must contain 10 cm of water;
- The basin can be placed on a table or directly on the ground.



Some Eco-Responsible Tips...

Why not…

- reuse items whenever possible?
- use used intact Ziploc-type© bags instead of new ones?
- reuse the aluminum foil after the challenge?
- take the opportunity to remind students about the importance of reusing, reducing and recycling?
- encourage students to use as little material as possible to score more points *(see the Eco-Responsible Bonus on p. 8)*?

SCORING

At the end of each team's turn, the score is calculated by counting the number of marbles the prototype is able to hold. **Each marble is worth 5 points.**

The winning team is the one that accumulates the most points in its cycle.

In the Event of a Tie

The team that has the lightest prototype wins.

FINAL SCORING = The number of marbles on board x 5 points

Eco-Responsible Bonus Suggestion

To encourage students not to waste material, they are given the possibility to earn bonus points that can be added to their final score. Teams will earn one extra point for each wooden coffee stir stick, paper clip, pipe-cleaner, wooden skewer and straw not used in the making of their prototype.

For example: The team uses ...

- 18 wooden coffee stir sticks (max 20)
- No paper clip (max 10)
- 3 pipe-cleaners (max 10)
- 4 wooden skewers (max 10)
- 14 straws (max 15)

2 unused wooden coffee stir sticks
+ 10 unused paper clips
+ 7 unused pipe-cleaners
+ 6 unused wooden skewers
+ 1 unused straw
= 26 Bonus Points

HOW TO REGISTER

To register your teams for the regional final, you must contact the Regional Coordinator of the Junior Tech Challenge. The contact information is available on the website.

If your school service center is organizing a final, you must register your team with the individual responsible for the final at your respective school service center.

CONTACT US

for details about costs, registration, scheduling, etc.

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