

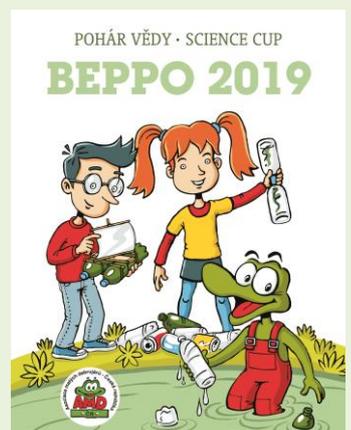
SCIENCE CUP – BEPPO 2019



**POHÁR VĚDY
SCIENCE CUP**

Category 1 – Pre-School

1st round – January – deadline 31. 1. 2019 23:59



Introduction

Dear competitors, welcome in the first round of the already eighth year of the Science Cup – BEPPO 2019. Before you start working, please spend some time on this information on tasks, solutions, and evaluation.

Every month's assignment includes creativity task (20 % of the total evaluation), theory task (30 %), and practical task (50 %). The solution procedure of individual tasks should be described with your own words and documented with your own photos or pictures.

For each assignment solution, there is always one month. The solution must be handed in on the last day of the given month before 23:59, when the assignment is closed.

The solution must be uploaded to the Science Cup web interface in the given period as one file in PDF format, not exceeding 10 MB in size. All the content of the solution (texts, drawings, schemes, photos) cannot exceed 3 pages of A4 paper format, and should be easily readable (simple font, minimal font size 11 pt.).

We can imagine you can write, draw and fill with pictures far more than only three pages. The judges, however, need to have the possibility to read and fairly evaluate all the solutions. Thus, all the solutions that would not meet the given criteria, would get, unfortunately, zero points. On the contrary, if your solution gets full marks, you can get 20 points for creativity, 30 points for theory, and 50 points for practice. In total, you can reach to 100 points in each of the four rounds of the corresponding part of the competition. Each evaluation consists also from the written feedback, so you know what your strong part was, and what you can improve for the next rounds. For the evaluation, the work of the team, not of the team leader, is crucial.

Now you can start working, good luck with the tasks and enjoy the exploring!

Yours BEPPO 2019 Team

1. Creativity (20 %)

Beppo the Frog cleaned his pond and he found: 4 straws, 2 beverage cans, 2 PET bottles with lids, one meter of a string, 2 party balloons, 2 table-tennis balls, 2 corks, 4 skewers, 4 CDs, 4 plastic beverage cups and 4 ice cream sticks. That was a big cleaning!

In addition to these things, you have also 2 A4 sheets of office paper, and 2 A4 sheets of sturdy paper, scissors, tape and a glue.

Using only the above-mentioned utilities (in maximum of the given amount) you can prepare one physical experiment, product, toy, or a model that you describe and draw or take a picture of and explain its physical principle.

Remember, you do not have to use all of Beppo's material, but you cannot use any additional or higher amount of the material than specified.

The experiment, product, model, or toy is yours to keep, you do not have to send it to us. Document your experiment, product, model, or toy with photos and pictures, eventually ask your team leader to write important things down.



illustrative photo

2. Theory and research (30 %)

Beppo the Frog tried to sink down to the bottom of his pond to clean up all the rubbish. He was not successful, however, so he took the help of the debrouillards...

a) Give and describe at least two things that you observe/feel if you dive underwater, and ask your team leader to describe us your ideas. You can make a picture as well.

b) Return to the first part of this round (Creativity) and decide which items Beppo took from the bottom of the pond, which from of its surface, and from which items both the two situations could occur (in this case, indicate when and why).



Illustration by Jacques Goldstyn

3. Practice and project (50 %)

Swimming and diving will be our playing topic also for the practical part of this round.

Obedient diver

Materials: dropper or test tube (plastic or glass), PET bottle with lid, water, and eventually also things to decorate

Procedure:

- Fill the bottle with water
- Dip the dropper (with the rubber part on top) or test tube (with opened end facing down) into the water
- Add water to the bottle so that the bottle is completely filled
- Close the bottle with a lid
- Press the bottle and see how the "diver" (dropper or test tube) sinks
- Release the bottle and see how the "diver" rises upwards
- Keep an eye on what is happening inside the "diver" when you squeeze and release the bottle and draw what you see
- Explain why the diver dives and rises
- The "diver" can be decorated, for example painted with water-insoluble markers or you can put on skirts or tentacles made of micro-bags
- If the "diver" does not dive after the bottle has been pressed, check that the bottle is full of water and that there is no air bubble under the lid, or try to take some water into the dropper/test tube



*Obedient diver made from dropper
photo: J. Houfková*

Submarine

Knowing the diver now, it will surely be an easy task for you to build a submarine from a PET bottle with a lid, a balloon, rubber band, rubber hose, and some weight (like stones). Try it and draw and take a picture of your submarine, and ask your team leader to describe us the explanation how the submarine works!

Document your experiments and experimenting with photos and pictures, eventually ask your team leader to write important things down. The best way would be to make an experimental diary where you can draw everything. The diaries would be for you, not to be sent to us.

Please do not forget that should we be able to judge all your solutions, you cannot send us anything longer than three pages!

We are looking forward to your solutions, and see you in the next round!

Describe the solution procedure of each task, the results of your team work, and any additional information, and document them with photos.

The solution can be handed in only before the deadline. Only the solutions fulfilling all the requisites given in the propositions will be judged.

If you have any questions, you can ask a category consultant in your country:

Czech Republic – Jitka Houfková – jitka.houfkova@gmail.com

Germany – Beatrice Schlegel – schlegel@ljbw.de

Turkey – Basriye Öngel – basriye.korkmaz@gmail.com

African states – Noureddine Benfarhi – noureddine.benfarhi@milset.org