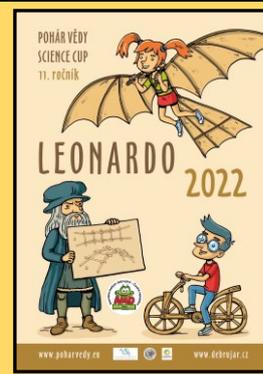


## SCIENCE CUP – LEONARDO 2022



Category 1 – Kindergarten and Pre-School

1<sup>st</sup> round – January – deadline 31. 1. 2022 23:59



## Introduction

Dear competitors, welcome in the first round of the 11<sup>th</sup> year of the **Science Cup – LEONARDO 2022**. Before you start working, please spend some time on this information on tasks, solutions, and evaluation.

Each month's assignment consists of three main tasks - Creativity and Idea (assessed with 20%) Theory and Research (30%) and Practice and Project (50%). Write down the solving process of each task in your own words and document it with your own pictures and photographs.

Solutions must be submitted no later than 23:59 on the last day of the round, 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 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, -20 points as penalization.

On the contrary, if your solution gets full marks, you can get 20 points for creativity and idea, 30 points for theory and research, and 50 points for practice and project. 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 a 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 LEONARDO 2022 Team – Jit'a H., Katka, Jit'a S., Nad'a, Andrea, Igor, and David

## 1. Creativity and idea (20 %)

This year's Science Cup is called Leonardo. It is named after a scholar, artist, inventor and scientist Leonardo da Vinci who lived, discovered, invented and created in Italy a long time ago. From January to April, we will explore together the world around us, just like he did. Your first task is to think about what you yourself would like to invent one day. Ask your grown-ups to write down your ideas and you can even draw it for us.

## 2. Theory and Research (30 %)

One of the things Leonardo was interested in was the design and construction of bridges. He designed many bridges with various interesting structures.

- What different kinds of bridges do you know? Look outside in your neighbourhood, look in books and pictures or photographs, and draw different bridges for us.
- What is the biggest and the smallest bridge close to your school or home?
- What materials are these bridges made of?
- What do these bridges cross?
- How many of you walk or drive over a bridge on your way to your school?

Draw pictures and ask your grown-ups to write your answers to our questions.

## 3. Practice and project (50 %)

In the last part of this round you will build the bridges yourself.

### Paper bridge

- Using only ordinary office paper and paper glue, build a bridge that:
  - bridges a gap at least 30 cm wide, for example the space between two benches (30 cm is slightly more than the longest side of an A4 sheet of paper, i.e. a large notebook),
  - can carry a load of at least 250 g (if you do not have a scale and weights, try to find some product of this weight e.g. a package of butter or cheese).
- Try folding (e.g. accordion folding), twisting (e.g. making rolls that can be laid or stand side by side and glued together) and gluing the paper in different ways.
- Compare different combinations of folded and rolled paper.
- Describe and draw the resulting construction of your bridge in detail.
- Take a picture of the finished bridge with the load.
- Test how much more than 250 g your bridge can carry and write it to us.

### Your own bridge

- Build a bridge using blocks or building blocks you like, or any material or combination of materials other than paper, across the longest possible gap.
- Describe and draw the construction of your bridge and the material you used to build it.
- Is there anything that surprised you when you built your bridge?

- Is there anything you have to watch out for when building a bridge?
- Take a picture of the finished bridge and ask your grown-ups to write your answers to our questions.

Document your experiments with photographs and pictures, or ask your adults to write down important things. We suggest you make research diaries, in which you will write and draw everything. You will not send us the diaries.

**Remember, however, that in order for us to be able to evaluate all your solutions, what you send us must not exceed three pages!**

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

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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 without any point loss.

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

Czech Republic: Jitka Houfková – [jitka.houfkova@gmail.com](mailto:jitka.houfkova@gmail.com) and Kateřina Vágnerová – [Katerina.Vagnerova@seznam.cz](mailto:Katerina.Vagnerova@seznam.cz)

Turkey: Basriye Öngel – [basriye.korkmaz@gmail.com](mailto:basriye.korkmaz@gmail.com)