



## **IYNT 2019: Additional problems for Science Fight 4**

August 21, 2019

### **21. Resolution of naked eye**

Introduce one or several parameters to describe angular resolution of an unaided eye. Determine the values of this parameter for each member of your team.

### **22. Cold and warm**

When dissolved in water, sodium carbonate and ammonium nitrate have a property to significantly change temperature of the solution. Obtain highest and lowest temperatures of respective solutions.

### **23. Upside down**

A glass filled with water and covered with a paper card can be turned upside down. What minimum amount of water in the glass is required for this trick?

### **24. Electromagnets**

Produce an electromagnet and investigate some of its important properties.

### **25. Paper airplanes**

Construct a paper airplane using an A4 paper sheet. Investigate the conditions ensuring the longest distance of its flight.

### **26. Candle oscillator**

Two horizontal needles are used to balance a candle so that it rotates freely. If the candle is lit at both ends, it starts to oscillate. Explain and investigate this effect.

Teams can use any equipment and materials of their own. Additionally, the following materials, items and instruments are available upon request.

- aluminum foil
- ammonium nitrate
- batteries
- beakers
- candles
- compasses
- copper wire
- lighters
- needles
- paper cards
- sodium carbonate
- steel nails
- tape measures
- thermometers
- various reservoirs