Additional Problems for Science Fight 4

21. Lung volume
Determine the lung volume of a human with the best possible precision. Is it possible to detect differences in lung capacities for each member of your team? Is it possible to apply your method to determine the lung volume of your opponent during the Science Fight?

22. Montgolfière
To heat air for a simple hot air balloon, one can even use a heater. Build such a buoyant object. Explain the results of your experiments and determine important parameters.

23. Magdeburg hemispheres
Prove the existence of atmospheric pressure using various beakers, a piece of paper, and other equipment of your choice. Is it possible to estimate the value of the atmospheric pressure?

24. Mysterious catalase
An enzyme called catalase influences on the rate of decomposition of hydrogen peroxide. Make tests to identify catalase-positive and catalase-negative organisms and materials.

25. Damped pendulum
Determine the decay time of a pendulum.

26. Dominoes
Stand a number of domino tiles in a long row and topple the first tile. Investigate the speed of toppling dominoes. Does it depend on the distance between the tiles?
Materials

Buckets ☐
Potatoes ☐
Scissors ☐
Paper ☐
Electric heater ☐
Metal bobs ☐
Glasses and cups ☐
Syringes ☐
Elastic tubes ☐
Threads ☐
Onions ☐
Light bulbs ☐
Yeast ☐
Hydrogen peroxide ☐
Test tubes ☐
Glaves ☐
Rulers ☐
Boiler ☐
1L bottles ☐
Garbage bags ☐
Big glasses ☐
Chiken meat ☐
5L bottles ☐
Filter paper ☐
Dominoes ☐
Apples ☐
Adhesive tape ☐
Grater ☐