

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	<input type="checkbox"/>
Potatoes	<input type="checkbox"/>
Scissors	<input type="checkbox"/>
Paper	<input type="checkbox"/>
Electric heater	<input type="checkbox"/>
Metal bobs	<input type="checkbox"/>
Glasses and cups	<input type="checkbox"/>
Syringes	<input type="checkbox"/>
Elastic tubes	<input type="checkbox"/>
Threads	<input type="checkbox"/>
Onions	<input type="checkbox"/>
Light bulbs	<input type="checkbox"/>
Yeast	<input type="checkbox"/>
Hydrogen peroxide	<input type="checkbox"/>
Test tubes	<input type="checkbox"/>
Gloves	<input type="checkbox"/>
Rulers	<input type="checkbox"/>
Boiler	<input type="checkbox"/>
1L bottles	<input type="checkbox"/>
Garbage bags	<input type="checkbox"/>
Big glasses	<input type="checkbox"/>
Chicken meat	<input type="checkbox"/>
5L bottles	<input type="checkbox"/>
Filter paper	<input type="checkbox"/>
Dominoes	<input type="checkbox"/>
Apples	<input type="checkbox"/>
Adhesive tape	<input type="checkbox"/>
Grater	<input type="checkbox"/>