

IYNT 2022: Additional problems for Science Fight 4

August 24, 2022

21. Sinking paper clips

In a well-known physics demonstration, small metal objects (e.g. paper clips, pins, or needles) stay afloat on water. If a small amount of soap is then added to water, some of the floating objects instantaneously sink. Investigate the critical conditions for sinking.

22. Flight of a cylinder

A hollow paper cylinder rolls down on an inclined desk. Investigate the motion of the cylinder after it reaches the edge of the desk and starts the free fall.

23. Soap film

Use the available chemicals to produce a soap film of the largest possible surface area.

24. Sound of towels

It is sometimes argued that the sound of a towel snapping is due to the towel breaking the sound barrier. Test the validity of this hypothesis and investigate the sound.

25. Red berries

The garden of Buckswood School has trees with red berries. Identify the exact species of the plant. Is it possible to conclude whether the trees have been planted in the garden by humans? Are the fruits edible or poisonous?

26. Balloon pressure

Determine the pressure of air inside an inflated balloon.

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

- metal paper clips
- metal pins or needles
- soap or detergents
- chemicals in test tubes
- glycerol
- textile towels
- rubber air balloons
- plastic hoses
- various reservoirs
- water