

Balloon on Thumbtack



Science
Film
Festival

Knowledge
Through
Entertainment

Mass

Pressure

Science Film Festival Films

► **Dino Dana – Mega Tooth**

Learning Goals

- To understand the principles of pressure distribution.

Explanation of Scientific Principles

When you pop the first balloon with one thumbtack or pins, all of the pressure is concentrated on one point of the balloon so the balloon easily pops. When you place the balloon on the bed of thumbtacks, the pressure points are spread all across the surface of the balloon. As long as you push the balloon down into the middle of a set of pins you should be good to go.

Explanation of Connection to the Film

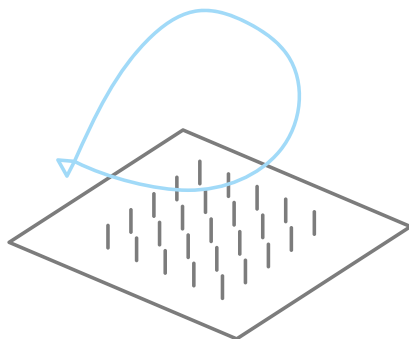
Sharks have pointed fangs to tear the flesh of their target, the strength of this tear movement is also affected by the jaw. A strong jaw is a function of force, while a pointed tooth has a small surface area (a function of surface area). The function of a large force versus a small surface area produces a large pressure.

Materials

- 2 balloons
- Cardboard
- 20 pieces of thumbtack or pins or more as possible

Preparation

- 1 Cut out a small square (about 10 cm wide) of cardboard.
- 2 Very carefully pop your drawing pins through in an even fashion so the pins are about 1 cm apart.
- 2 Carefully turn your 'bed of pins' over so you can see your pins evenly spaced and sticking up into the air.



Safety Note: Be careful not to push your hand down onto the drawing pins. If you think that might happen then just wear some gardening gloves for extra safety.

1

Inflate a balloon.

2

Demonstrates what happens when the balloon is pushed onto just one pin or thumbtack.

3

After the balloon pops, inflate a second balloon.

4

Lightly push your balloon down onto the center of your carpet of pins or thumbtacks. As long as you spread the load equally your balloon should be just fine.