Balloonatic Science

Are you a balloonatic like Professor Pickle and Doctor Pumpkin? Try these brilliant balloon experiments to find out and make your half term go with a bang!

Did you know?

Balloons inflated on foggy days are bigger than ones inflated on sunny days. Moisture in the air helps the rubber on the outside of the balloon to stretch further.

Did you know?

Helium balloons rise because helium is lighter than air.

Experiment 1: The Spinning Penny - This experiment looks at the different forces that act on a coin spinning inside a balloon and makes a rather cool noise as well…

You will need:

- A balloon
- A coin or a hexagonal nut
- A grown up to help you

1. Push a coin or hexagonal nut into a deflated balloon.

2. Ask a grown up to blow up the balloon with the coin or nut inside (make sure they are careful not to swallow it!) and tie the balloon off.

3. Holding the balloon with one hand at the top, spin it in a rapid, circular motion. Try to make the coin or nut zoom around the inside wall of the balloon. It might take a few attempts to get the right technique…

4. What noise does it make? How can you change the sound?

Did you know?

In 1982, an American man named Larry Walters was carried about 3 miles into the sky by 42 helium balloons tied to a garden chair. Now that's what we call a real balloonatic!

How does it Work?

Friction, the force that occurs when two surfaces rub together, eventually slows the coin or nut down when you stop spinning. Friction is the force that stops a car when your grown up applies the brakes.

Gravity makes the coin or nut fall to the bottom of the balloon.

Centripetal force – the centre seeking force – keeps the object moving in a circle.

The hexagonal nut makes lots of crazy noises to do its shape. As it has different surfaces, it bounces all over the inside wall of the balloon. The faster the spin, the higher the pitch of the sound!

Experiment 2: Frozen Sphere - this water experiment isn't just cold, it's a cool way of exploring the science of freezing and melting!

You will need:

- A balloon (preferably a water balloon)
- A funnel
- Water
- A freezer
- A knife
- Salt
- A bowl
- Food colouring (optional)
- A grown up to help you

1. Fill your balloon with water using a funnel, tie it off and place it in a bowl before putting it into the freezer overnight.

Did you know?

Balloons filled with helium will shrivel faster than balloons filled with air. Helium atoms are very tiny and can squeeze through the walls of the balloon.

2. Take the balloon out of the freezer and ask a grown up to help cut the rubber away.

3. What can you see? Are there patterns in the ice? How do you think they got there?

4. These patterns are formed from strings of tiny air bubbles which froze in the water as they tried to escape. How do you think you could melt the frozen ball of ice?

5. Add some salt to your frozen sphere to lower the melting point of the water and watch what happens! (To make it easier to see, you may want to add a few drops of food colouring.) Why not try one of our other balloon experiments and come back later to see what effect the salt is having?

6. What patterns can you see over time? How would you speed the melting up? What different designs of sphere can you make using flowers, glitter or even small plastic toys in the water?

Experiment 3: Balloon Hovercraft – simple balloon science!

You will need:

- A balloon
- An **old** CD (check with your grown-ups first!)
- The valve from a sports bottle
- Strong glue (you may need help with this)
- Permanent marker pens

1. Glue the closed valve over the hole in the CD. Blow up the balloon and place over the closed valve. Put the CD on a flat surface, pull the valve open and watch your hovercraft go!

How does it work?

The air forms a cushion between the CD and the floor, making it hover.

What designs can you create using your permanent markers? Can you set up a race?