



Up and Away

You are a trainee circus performer.

Can you make objects float in the air as if by magic?

You have:

Bendy straws

Light chocolate balls Hair dryer

Balloons

Different size and shaped balls e.g. table tennis

balls, rubber balls (as many different types as possible)

Activity

1. Bend the straws into an 'L' shape. Place the long end in your mouth and let the short end point straight up.
2. Stand against a wall and practice blowing a steady stream of air through the straw. Use your hand to feel the air.
3. Whilst blowing, place a balloon in the stream of air. (Stand very still -you may have to practice!)
What happens?
4. Try again with different shaped balloons and balls (light chocolate balls work well too!). The balloons and balls should hover in the stream of air.
5. Try with a hair dryer set on cold. This will provide a constant air stream and enable you to try to balance more than one balloon or ball.
See which is the easiest to keep hovering.

If you are really struggling to stay still, lie down, straighten the straw and blow up towards the ceiling.

Explanation

The objects hover as the air in the centre of the stream is faster than the air around the sides.

The fast moving air has less pressure than the air at the sides, so if the balloon starts to drift the slow moving air pushes it back to the centre.

Useful Questions

- Why does the ball/balloon not just blow away? (Clue: another force is acting on it!)
 - Do you have to blow harder if the balls are bigger?
 - How could you test this?
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Investigate!

- Can you make the balls hover without a straw?
- Why is it easier with a straw?
- Can you make other shapes or objects hover?

Research Opportunities

- Where is this phenomenon used? (Clue: hospital operating theatre)
- What factors effect the height of hover. Remember fair test!
- Discover the pathway of air through the body.
- How do insects/worms take in oxygen?

Useful Websites

Use this website to give you plans to make a hovercraft that really works
<http://www.genuineideas.com/ToyIdeas/balloonhovercraft.html>

Can you think of any improvements?

Look at this site to learn more about a man who had some great ideas
<http://www.mos.org/sln/Leonardo/LeoHomePage.html>

creativeminds The Creative Minds project works with museums libraries and archives across the Yorkshire region, to provide young people with learning opportunities in Science, Technology, Engineering & Maths (S.T.E.M.). This ground-breaking project is the first of its kind in the country and is managed by MLA Yorkshire. This pack was developed by Creative Minds and Eureka! The Museum for Children with funding from Yorkshire Forward.

