

Cloud Weight - The Surprising Science

Lesson Plan

Overview

This home education lesson plan explores the surprising science behind cloud weight. Learners will discover how something that looks so light can actually weigh hundreds of tonnes. Through guided learning, practical tasks, and deeper thinking, children and teens will understand cloud formation, air resistance, and why clouds don't fall from the sky. It also links directly to our full topic on cloud weight here: <https://lenara.uk/science/cloud-weight-the-surprising-science>

Learning Objectives

- Understand what clouds are made of
- Learn how scientists estimate cloud weight
- Explain why clouds float despite being heavy
- Explore how cloud weight relates to rain and storms
- Use scientific vocabulary like mass, vapour, and density

Estimated Time

60-90 minutes, or split across two sessions

Starter Activity

Ask: "How much do you think a cloud weighs?"

Then: Watch a cloud outside or in a photo and guess together. Encourage your child to explain their reasoning. Write the guesses down to revisit later.

Read and Learn

Clouds are made of tiny water droplets or ice crystals. Even though they float in the sky, they can

weigh hundreds of thousands of kilograms! This happens because water has mass, and even small droplets add up. But because they're spread out and very small, clouds don't fall like solid objects. Instead, they hover thanks to air resistance and rising warm air.

Think about:

- How is a cloud different from steam or mist?
- Why don't we feel the cloud's weight when we walk outside?
- What would happen if cloud droplets were larger?

Guided Learning

Explain together: The water in clouds comes from oceans, rivers, and plants. It evaporates into gas (vapour), then cools and forms droplets. These gather in the sky to become clouds. The more droplets, the heavier the cloud. But they stay afloat because warm air pushes up and the droplets are tiny.

Use this example: Imagine holding one droplet - it weighs almost nothing. But now imagine holding a billion of them!

Key words to explore: mass (how much matter something has), density (how tightly packed it is), buoyancy (what makes things float)

Activities (with comprehension questions)

Activity 1 - Compare Weights: List common things and their weights (e.g. elephant = 6,000 kg). Compare these to a cloud's estimated weight (500,000 kg).

Activity 2 - Build a Water Cloud: Fill a jar with water and add shaving foam on top. Gently drop food colouring onto the foam until it 'rains'. This shows how clouds release rain when too full.

Comprehension Questions:

1. What are clouds made of?
2. Why do they float even though they're heavy?
3. How do scientists know a cloud's weight?
4. What causes clouds to release rain?
5. Why is understanding cloud weight important?

Deeper Thinking

Big Question: "If something is heavy, does it always have to fall?"

Explore: Use a balloon and a rock as examples. Why does one float and the other fall? What does this tell us about how air and weight interact?

Creative Projects

- Draw and label a diagram showing how a cloud forms
- Make a comic strip about a water droplet's journey from ocean to cloud to rain
- Write a short poem or story from the point of view of a droplet stuck in a heavy cloud

Review & Reflect

Ask your child:

- What surprised you the most?
- If you could float in a cloud, what would you see?
- How does cloud weight help us understand weather?

Revisit your cloud weight guesses from earlier. Were they close?

Continuation Of The Topic (Homework)

- Look up different types of clouds and their shapes (e.g. cumulus, cirrus)
- Create a chart showing cloud types and whether they usually cause rain
- Watch a weather forecast and spot references to clouds or rain - can your child explain why rain

might happen?