

Static Charge and Balloons

P4-P7 Integrated Science | Estimated time: 45-60 minutes | Pack version 2026-07-28

HOW TO USE THIS PACK

Follow the learning sequence: Predict, Simulate, Build and Explain. The simulation can be completed online before this pack is downloaded. The practical activity and written pages work without internet access.

Learning goals

- Describe attraction caused by static electric charge.
- Compare rubbing time while keeping materials the same.
- Record observations using a fair-test table.
- Explain that charge transfer is not the same as current from a socket.

Materials

- 1 clean balloon
- dry cotton or wool cloth
- small dry paper pieces
- paper, pencil and timer
- dry work surface

LOCAL SUBSTITUTION

A clean plastic comb may replace the balloon. Results are weaker in humid air; record the weather condition.

SAFETY RULE

Keep balloons away from faces, latex allergies, flames and very young children. Broken balloon pieces are a choking hazard.

Learner or safe alias	Class / club	Date

1. Predict and simulate

PREDICTION CHALLENGE

Will a balloon rubbed for 20 seconds attract more paper pieces than one rubbed for 5 seconds? Explain your idea.

My prediction and reason

Simulation steps

1. Start with a neutral balloon and neutral wall.
2. Rub the balloon for 5 seconds and observe charge movement.
3. Repeat for 10 and 20 seconds using the same virtual materials.
4. Move the balloon near the wall and explain why attraction can occur.

My simulation evidence

Trial	Rubbing time (s)	Paper pieces attracted	Distance (cm)	Observation
1	0			
2	5			
3	10			
4	20			

What pattern do the numbers show?

Which variable did you change, and which did you keep the same?

2. Build the idea safely

BEFORE TOUCHING MATERIALS

Keep balloons away from faces, latex allergies, flames and very young children. Broken balloon pieces are a choking hazard.

Practical steps

1. Cut or tear equal small paper pieces before starting.
2. Hold the balloon by the knot and rub it with the same cloth.
3. Bring it near the paper without touching the paper first.
4. Count the pieces lifted and estimate the closest attraction distance.
5. Repeat each rubbing time twice and compare results.

Hands-on results

Trial	Rubbing time (s)	Paper pieces attracted	Distance (cm)	Observation
1	0			
2	5			
3	10			
4	20			

Draw or label the setup

3. Explain, assess and teach

Evidence explanation

Write a claim, use at least two observations or measurements as evidence, and explain the scientific reason linking the evidence to the claim.

Claim: _____

Evidence: _____

Scientific reason: _____

Teacher assessment rubric

Criterion	0 - none	1 - beginning	2 - developing	3 - secure	4 - exceptional
Observation					
Variable control					
Use of evidence					
Explanation					

Teacher decision

Total: _____ / 16 ☐ Changes requested ☐ Approved (minimum 12 / 16)

Feedback: _____

Teacher answer and discussion guide

- Expected model: rubbing transfers charge; unlike charges attract and like charges repel.
- The wall may be attracted because charges in it redistribute, creating a closer opposite-charge region.
- Humidity can reduce the effect and is a useful real-world limitation to discuss.
- A fair test keeps balloon, cloth, paper size and distance method consistent.

FAMILY OR PEER TEACHING QUESTION

When have you noticed a small static shock or clothes sticking together? Discuss conditions that made it more likely.