Air pressure

Predict

Name _____ Date _____

Air is around us. Air pressure is the push of air on an area. We cannot see air, but we can observe what it does. In this investigation, you will build a model and compare readings over five days.



Draw the pushes you predict.

Add arrows to show where you think air pushes

W1 Where might air push on a sealed juice box? Add arrows or words in the blank box.

My prediction:

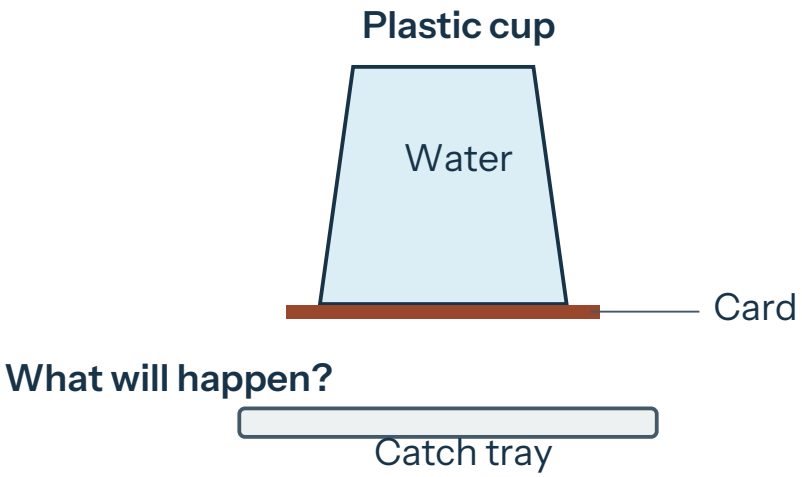
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Cup and card

Predict, then observe

Name _____ Date _____

Teacher only: watch a plastic cup of water and a card over a tray. Do not copy this demonstration.



Teacher-only plastic cup and card over a tray. Predict before any explanation.

O1 Predict what will happen when the teacher lets go of the card.

Prediction:

What I observed:

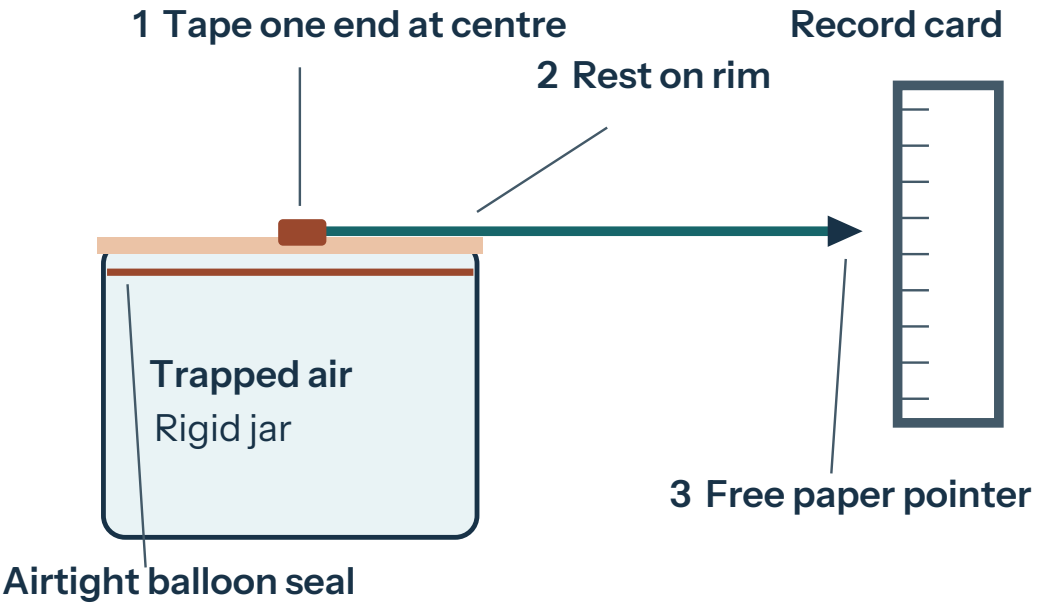
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Jar-barometer parts

Read the model diagram

Name _____ Date _____

A barometer tracks air pressure. In this model, the membrane is a thin, stretchy cover. The rim is the jar's top edge. The paper pointer helps us notice small movements.



Taut membrane, rubber band, straw taped at centre, straw resting on rim, free paper pointer and paper scale.

- Teacher prepares the balloon membrane and checks latex allergies.
- Use a stable unbreakable rigid jar, or teacher-handled glass.
- No needles, toothpicks, piercing, or hot water.

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Build and mark Day 1

Five safe steps

Name _____ Date _____

- 1. Stretch the teacher-prepared balloon tightly over the jar opening.
- 2. Secure it with one rubber band for a tight seal.
- 3. Tape one straw end at the membrane centre.
- 4. Let the straw rest lightly on the rim. Tape on a paper pointer; it must hang free over the edge.
- 5. Place the jar in a steady shaded location. Add a paper scale. Do not touch or move it after the baseline mark.

Day 1 baseline mark and time:

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Guided model checks

Observe, then explain

Name _____ Date _____

Use your model or the diagram. Assume the jar stays sealed and its temperature stays the same.

Q1 **Where does air push on the membrane? Describe it or draw arrows.**

Q2 **If outside pressure is higher, what might happen to the membrane and pointer? Explain.**

Q3 **If outside pressure is lower, what might happen to the membrane and pointer? Explain.**

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Winnipeg climate normals

Long-term averages, not today's weather

Name _____ Date _____

Winnipeg, 1991–2020 averages	Pressure (kPa)
Station annual	98.6
Sea-level annual	101.6
January sea-level	102.0
July sea-level	101.2

Reference for comparison: NOAA standard sea-level pressure is 101.325 kPa.

Station pressure is measured at Winnipeg's elevation (238.7 m). Sea-level pressure is adjusted for altitude so places can be compared. Climate normals are long-term averages; they cannot predict tomorrow's weather.

Q4 January or July: which has higher sea-level pressure? How much higher?

Q5 Why might Winnipeg station pressure and NOAA standard sea-level pressure differ?

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Five-day record

Day 1 launch, then 2 minutes on Days 2–5

Name _____ Date _____

Day	Time	Compared with prior reading	Weather / room note
1	___	Baseline line ___	___
2	___	Up / down / same	___
3	___	Up / down / same	___
4	___	Up / down / same	___
5	___	Up / down / same	___

Read without touching the jar. A leak, moved straw, loose seal, or warmer/cooler room can change the pointer. One change is evidence to investigate, not a forecast; record conditions beside it.

No-build fallback: use this clearly hypothetical practice record only: Day 1 at the starting mark; Day 2 below that mark; room warmer. It is not a class observation or forecast.

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Make a careful claim

Evidence supports a cautious claim

Name _____ Date _____

Choose one observation from the five-day model record or one number from the Winnipeg climate table. A single observation cannot forecast tomorrow's weather.

I observed:

This could suggest: _____ because:

Another possible cause is:

To check, I would:

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Evidence and exit

Claim and limit

Name _____ Date _____

Q6 A pointer moved down once. What could that mean? Why is it not a forecast?

E1 Choose: (a) air pushes down only, (b) air pushes in all directions, or (c) gravity stops. Give one model detail.

E2 Write one claim a barometer can support and one claim it cannot support alone.

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