

Part A: Swab the Deck

Get this: one alcohol prep swab packet
one cotton ball dipped in water



Do this: Tear open the packet and pull out the prep swab. Do **NOT** unfold the swab. Drag the swab and across the table top to make a wet streak about one foot long.

Observe: Watch the streak for a minute or two. Talk to your group for a moment about what you observe.
Then, In your science notebook, describe what you see and smell. Use words and pictures. (Do NOT try to *explain* what happens; just *describe* what happens.)

Explain: 1. For a moment, think silently about what happened to the alcohol streak. **You should think about the particles in the alcohol.** Then discuss your thinking with ONE partner from your group.

Now share with your group your PARTNER's thinking (not YOUR thinking).

Then discuss with your group what the group agreed on and disagreed on.

In your science notebook explain what happened to the alcohol streak. Give your best guess:

Where do you think the alcohol went? Why did it do this? **Use words and pictures.** Your explanation should include the word **particles**.

2. In question 1, you came up with an explanation. Now think of an **alternative explanation** – a different way to explain where the alcohol went. This might be an explanation you heard from someone in your group, or it might be a way someone else would explain what happened to the alcohol.

Write this alternative explanation **in your science notebook**. **Use words and pictures.** Again, the explanation should use the word **particles**.

3. In questions 1 and 2 above, you came up with two ways to explain what happened. We would like to test these two ideas to see which explanation is better. **Think of some simple experiments** that you could do to test these two explanations. **Describe these tests in your science notebook.**

4. In your group, **carry out at least one of these experiments.** Describe the results in your science notebook. Can you eliminate one of the explanations?

5. Let's construct **an argument** from your explanation **in your science notebook**. An argument consists of:
- **Claim** (what you think happened to the alcohol)
 - **Evidence** (what you observed that supports the claim)
 - **Reasoning** (a description of how the evidence supports the claim)
6. Time to expand our particle model

Do This: Now we will investigate if the same thing happens to water on the desktop.

Two members of your group should be prepared to AT THE SAME TIME drag the swab and cotton ball across the table top to make a wet streak about one foot long. Wait for the signal to start.

Observe: Watch the two streaks, the water and the alcohol. Talk to your group about what you observe. Do the two streaks behave similarly?

Explain: Why did the alcohol and the water behave differently? Think for a moment, and record your thinking in the chart below where it says Think.

Record your partner's thinking where it says Pair.

Now discuss your answers and arrive at an agreement. Put that agreement in the box labeled Share. If you cannot agree, explain how you disagree.

| | |
|---------------|--------------|
| THINK: | PAIR: |
| SHARE | |

Part B: Swab Balance

- Get these:**
- thick marker pen (such as a white board marker)
 - masking tape
 - plastic ruler
 - new alcohol prep swab packet



Do this: *Read these three steps first BEFORE you start doing any of them:*

- Step (A): Lay the marker pen on its side on the table top, and tape the pen onto the table so that it cannot roll. Lay the ruler across the pen so the ruler balances horizontally on top of the pen (the pen acts as a fulcrum).
- Step (B): Now open the alcohol swab packet, pull out the prep swab – DO **NOT** unfold the swab – and immediately lay the wet swab on the right end of the ruler. Notice that this makes the right half of the ruler drop down, since the swab makes the right half heavier than the left half.
- Step (C): QUICKLY but carefully reposition the ruler slightly on the fulcrum (the pen) so that the ruler is **perfectly balanced horizontally**; now there should be a little more of the ruler's length on the left side of the fulcrum than on the right side, to compensate for the extra weight of the swab.

As soon as the ruler is perfectly balanced, **do not touch it.**

- Observe:** 5. Watch the balance for a few minutes. What happens? Describe it in your notebook; don't explain.
- Explain:** 6. Suppose Pam says, "I think matter is made of tiny particles." Do your observations in question 5 seem to agree with Pam? Why or why not? Answer in your notebook.
- Predict:** 7. The activity on this page used alcohol. If you tried this activity with *water* instead of alcohol...
- a) ... in what ways do you think the results would be the *same* as for the alcohol?
 - b) ...in what ways do you think the results would be *different* from the alcohol? Why?