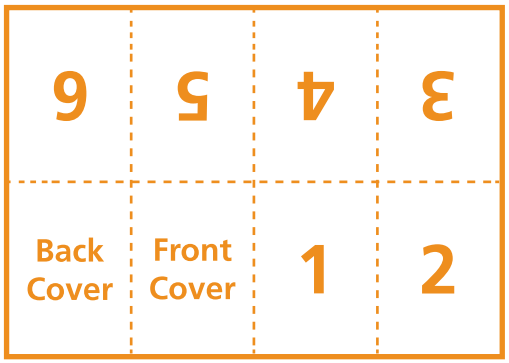
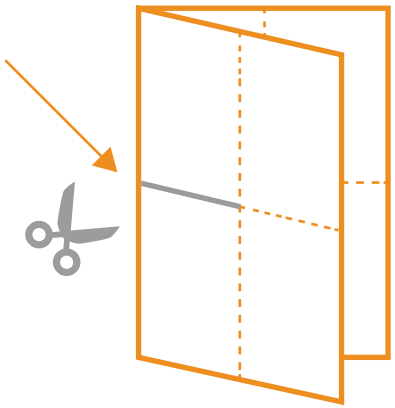
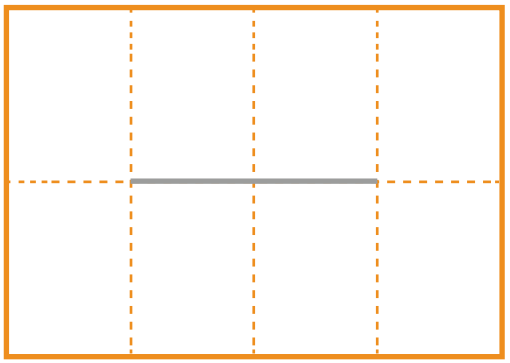
How to Fold the Pocket Guide



1. Fold the paper into 8 equal sections.

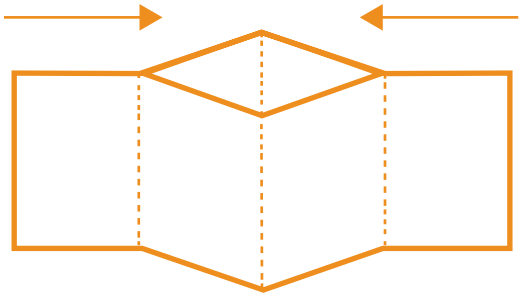


2. Fold it in half and cut along the line indicated by the arrow.

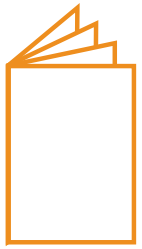


3. This creates a slit in the middle.

4. Fold it in half lengthwise.



5. Push the ends together to form a booklet.



6. Done. Your pocket guide is complete.

Talking Science in the Wild

A Pocket Guide

By STEMCELL™ TECHNOLOGIES

Science is for sharing, including outside of the lab.

Right now, conversations about science matter more than ever. Misinformation travels faster than facts, research funding faces constant pressure, and public trust in science can feel fragile. But trust isn't built in press releases. Nor is it built in confrontation, conflict, or debate. It's developed in moments of curiosity and connection.

Every conversation about science is a chance to build understanding and trust. When you read the room and connect before you correct, people listen. That's how we keep science—and trust—alive in the wild.

This pocket guide is your handy reference sheet for when science steps outside the lab.

"Before You Speak" Checklist

- Who am I talking with?
- What do they actually care about?
- What's the one thing I want them to remember?
- Am I using language that will resonate with them?
- Have I given them a reason to care?

Tips for Talking Science in the Wild

Stay Curious, Not Combative:
Ask, "What makes you think that?" *before* responding with facts.

Facts Need Feelings:
People trust people, not PDFs. Share *why you care* about the topic.

Policy vs. Public:
Remember your audience. Policymakers need the *so what* (impact, cost, outcomes). The public wants to know *why it matters* (human connection, relevance).

When the Feed Gets Wild:
Don't feed social media trolls. Your fingers may itch to write an essay to a misinformed keyboard warrior, but remember that **curiosity** > **combat.** You're modeling how scientists *think*, not just what they *know*.

Common Misconceptions and Suggested Conversations

Scientific Theory = Guesswork

Goal: Highlight that in science, the word *theory* means tested explanation, not hunch.
The Approach: Explain that although in everyday language, a theory might sound like a guess, in science, it's the *opposite*. For example, you could say: "In science, the word *theory* means the strongest kind of explanation we have; one that's supported by lots of evidence and used to make predictions. Theories can evolve as we learn more, but they're rarely thrown out entirely. Think of the *theory of gravity*, the *theory of relativity*, or the *germ theory of disease*; they are all rock-solid explanations that guide real-world science. If you're talking about an untested idea, that's called a *hypothesis*, and when something's proven to always happen under certain conditions, that's a *law*."

Change = Mistakes

Goal: Demonstrate that scientific discovery is a process and that information evolves as more studies are done.
The Approach: Use an analogy to show that updating conclusions is a sign of progress, not confusion. You might say: "Science works a lot like GPS navigation. When it gets new information (like a road closure or faster route), it updates your directions. It doesn't mean your GPS was wrong before; it just means you know more now. Science is the same way: as we learn more, we refine the path."

Correlation = Causation

Goal: Help people separate coincidence from cause.
The Approach: Use an obvious example. One classic is the link between ice cream sales and drowning: as ice cream consumption rises, so do drowning rates. But ice cream doesn't cause drowning—warm weather drives both. Scientists are trained to look for these hidden variables. Check out Spurious Correlations at www.tylervigen.com/spurious-correlations, for more quirky examples.

Natural = Safe / Artificial = Dangerous

Goal: Help people understand that misused marketing language can lead to dangerous misconceptions.
The Approach: Invite people to laugh with you at a relatable example. For example: "It's funny how people associate the word 'chemical' as something scary, when water is a chemical too! So is arsenic, which is about as natural as it gets. In science, 'natural' just describes where something comes from, not whether it's safe or healthy."

The Placebo Effect

Goal: Explain how hope or expectation alone can create real physical or emotional effects.
The Approach: Offer a compelling example of the placebo effect. A popular one comes from a 2007 study from Harvard, where hotel housekeepers were told that their daily work (vacuuming, scrubbing, lifting) counted as exercise. A month later, without changing anything they did prior to being told that "work = exercise," the housekeepers had lower blood pressure and weight, reminding us that mindset alone can shape real physiological outcomes (Crum & Langer, 2007, Psychol Sci 18:165-71).

"Scientifically Proven"

Goal: Show that scientific confidence grows through evidence, not declarations, and that's what makes it trustworthy.
The Approach: Use a relatable analogy to show that scientific confidence is cumulative, not final. For example: "Science is more like building a sturdy bridge than flipping a switch. Each study adds a plank and, over time, the bridge gets stronger. We don't call it 'proven,' we call it 'well-supported.' When new data come along, we continue to learn and refine."

Anecdote = Evidence

Goal: Illustrate that you can't draw a conclusion from one data point.
The Approach: To convey that scientific conclusions require large, reproducible datasets, reflect on something else that makes the scale of evidence required to draw a conclusion clear. Provoke contemplation by framing your point in the form of a question. For example: "Would you trust a fitness tracker that only recorded one day? Probably not; you'd want to see a trend over time. It's the same idea in science: one story or result isn't the whole picture."