Claim- Evidence-Reasoning (C.E.R.)

How Do Snowflakes Form?

Assignment or Topic

- This is what we are going to research or make claims about.
- What is the main **idea** we are trying to make?
- What is the **subject**?

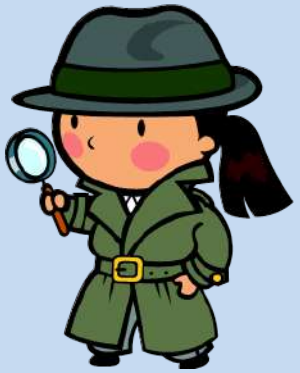
Claims

Claims are the statements that answer your original question.

- The claim must be **accurate**, **specific**, and **answer the question**.

- The claim is usually one sentence in length.

Evidence

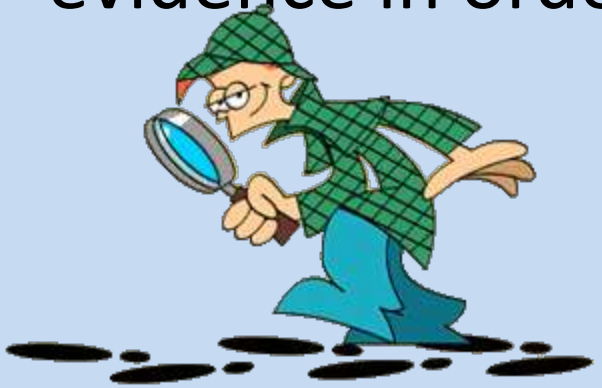


The evidence is all the scientific data that supports your claim.

- It can come from a variety of sources such as: textbook, reading selections, **videos**, lab investigations, **class notes**, etc.

- It should include both **qualitative** and **quantitative** data.

- **It is important to have numerous pieces of evidence in order to prove your claim.**



Reasoning

- Reasoning is the **explanation** that connects your claim to the evidence that supports it or why you think your claim (answer to the question) is correct .

- It shows **why** the data you chose counts as evidence.

- It shows a detailed understanding of the scientific principles involved and uses correct science **vocabulary**.

- This explanation acts as a **conclusion**.
- If evidence is from an experiment, it can be the “conclusion” of the lab.
- It is usually several sentences in length.

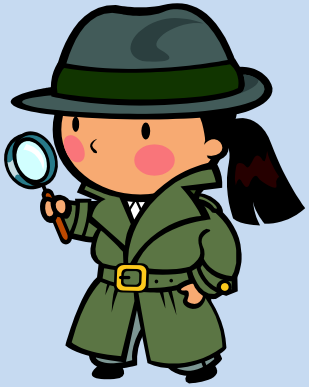
When can a CER be used?

- Use it to engage in structured, argumentation to explain a scientific concept.
- Use it after an **experiment** to explain why a **hypothesis** was proven correct or not.
- Use it to discuss claims made in videos or documentaries.

Getting Started:
Prewriting Science Ideas

- What is a possible claim?
- What science words will you want to include?
- Where will you look for your **evidence**?
- What sentence starters can you use to present your evidence?
- What reasons show that this is good evidence?
- What writing words can you use?

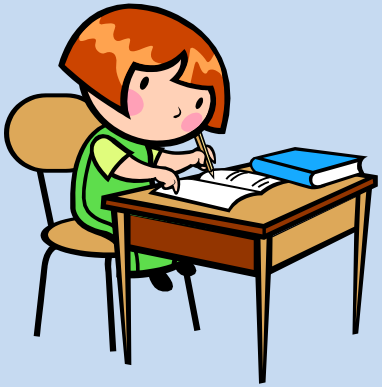
Show Your Evidence Sentence Starters



- According to the text…
- On page ___, it said …
- The author wrote…
- For instance…
- From the reading, I know that…
- Based on what I read…
- The graphic showed…
- For example…

Writing Words

- “Uncertainty” words: usually, generally, suggests, indicates
- Sequencing words: first, second, third
- Therefore
- Because
- If… Then…
- However



Claim-Evidence-Reasoning (CER)

Assignment/Topic: Write a scientific explanation that answers this question: How do snowflakes form?

Claim (Write a sentence that states how snowflakes form.)

Evidence: (Provide data about the weather conditions including quantitative data to support your claim about how snowflakes form.)

Reasoning: (Write a statement that connects your evidence to your claim about how snowflakes form.)

CER Grading Rubric

	Claim	Evidence	Reasoning
	A statement or conclusion that answers the original question/problem.	*Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.*	*A justification that connects the evidence to the claim. It shows why the data counts as evidence by using appropriate and sufficient scientific principles.*
0	Does not make a claim.	Does not provide evidence.	Does not provide reasoning.
1	Makes an inaccurate claim.	Provides inappropriate evidence. The evidence does not support the claim.	Provides inappropriate reasoning.
2	Makes an accurate, but incomplete claim.	Provides appropriate, but insufficient evidence to support claim.	Provides appropriate, but incomplete reasoning (not all evidence is accounted for).
3	Makes an accurate and complete claim.	Provided appropriate and sufficient evidence to support claim.	Provides reasoning that connects the evidence to the claim. Includes appropriate and sufficient scientific principles to explain why the evidence supports the claim.

How Snowflakes Form Resources

- ***Discovery Education Reading:*** *Where Do Snowflakes Come From?*
- **Animated Video: *How does it snow?*** https://www.youtube.com/watch?v=UJwHzEcvT5w
- **Video: *How does snow form? (Comparing snow to sleet):*** https://www.youtube.com/watch?v=Bl7K4D3ccfE
- **NBC LEARN:** *How Snowflakes Form (And Yes, Each One is Different)*
- **How Do Snowflakes Form?** http://geology.com/articles/snowflakes/
- **A snowflake primer:** http://www.its.caltech.edu/~atomic/snowcrystals/primer/primer.htm