



A Middle School CER Argumentative Inquiry Lab

AS AN INTRODUCTION TO RELATIVE HUMIDITY

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Background Check

- how to create and write claim statements
- know the difference between qualitative and quantitative data
- know how to create various charts/graphs to display data
- how to write an evidenced based reasoning statements

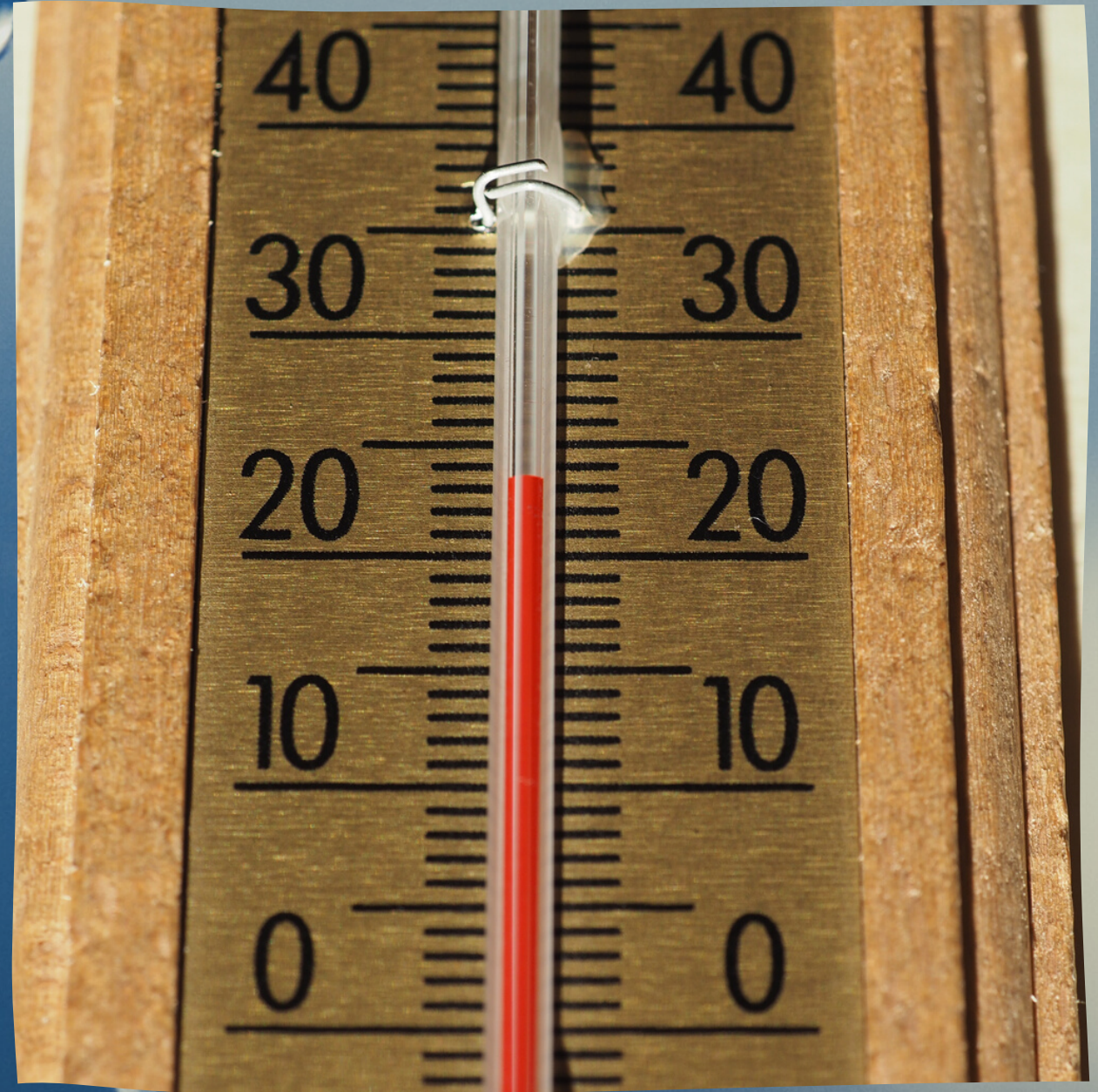


Expectations and Objective

Students will create their own authentic experimental design to construct knowledge of the relationship between air temperature and the amount of water the atmosphere can hold.

Question:

Does air temperature affect the amount of water the atmosphere can hold?



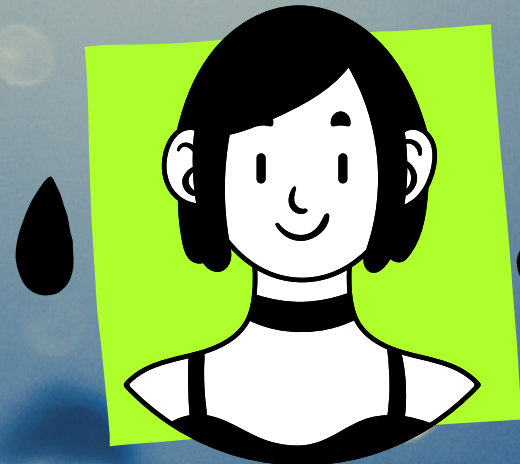
Materials for In-Person Classroom:

Note: Pre-Covid

- 1 10x12 White Dry Erase Board per group
- 4 3M A21 Sponges per group
- 1 bowl of hot water per group
- 1 bowl of cold water per group
- 1 thermometer per group
- 500 mL graduated cylinder
- 2 spoons per group
- 2 styrofoam, plastic, or paper plate per group
- 1 bucket of hot water (placed at front of class)
- 1 bucket of ice water (placed at front of class)

Time Required?

Two 40-45 minute sessions



1st Session: Creating claim, conducting experiment/collecting data, creating reasoning statement

2nd Session: Group Socratic Seminar

Cost?

\$4.00 per group



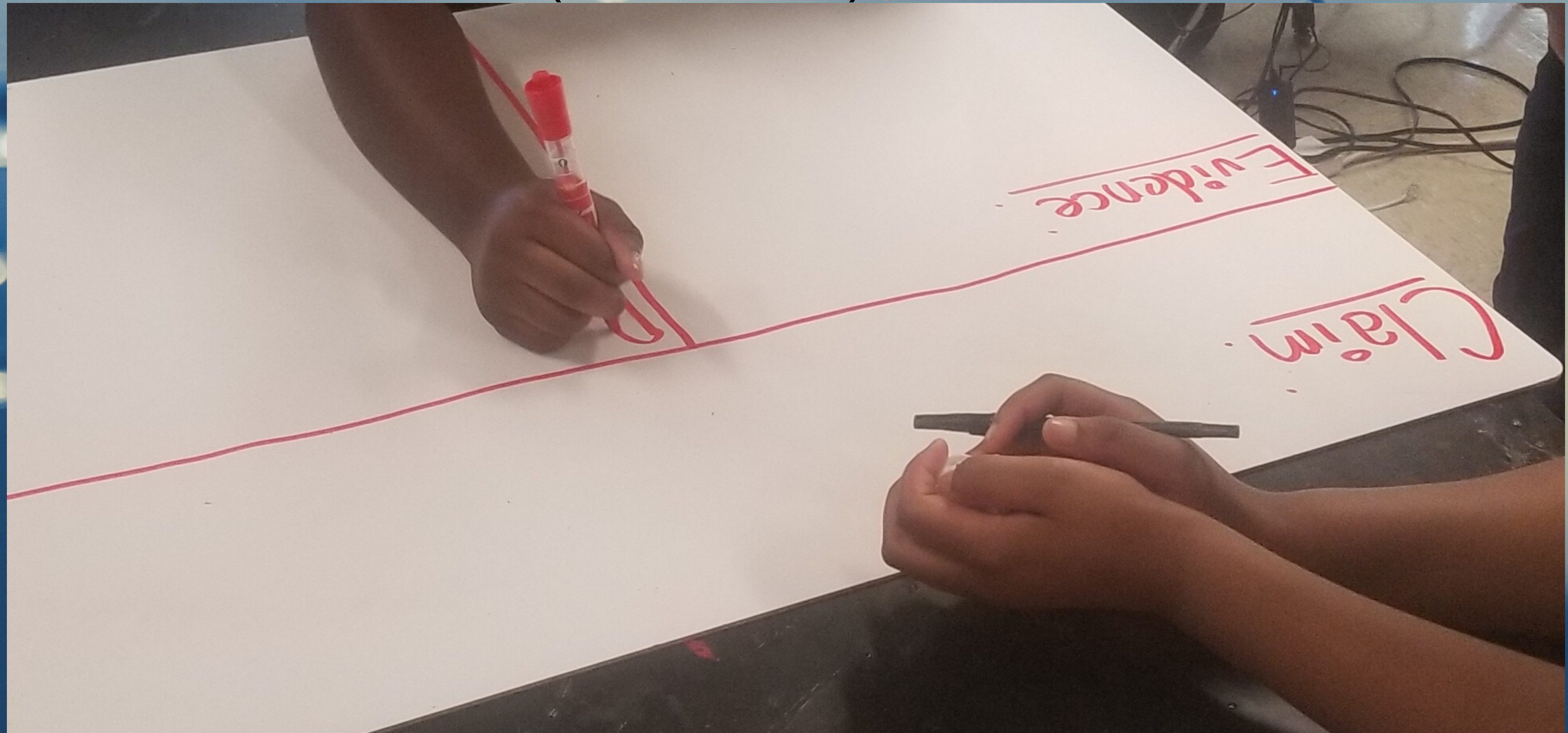
Group Size:

3 to 4 students per group

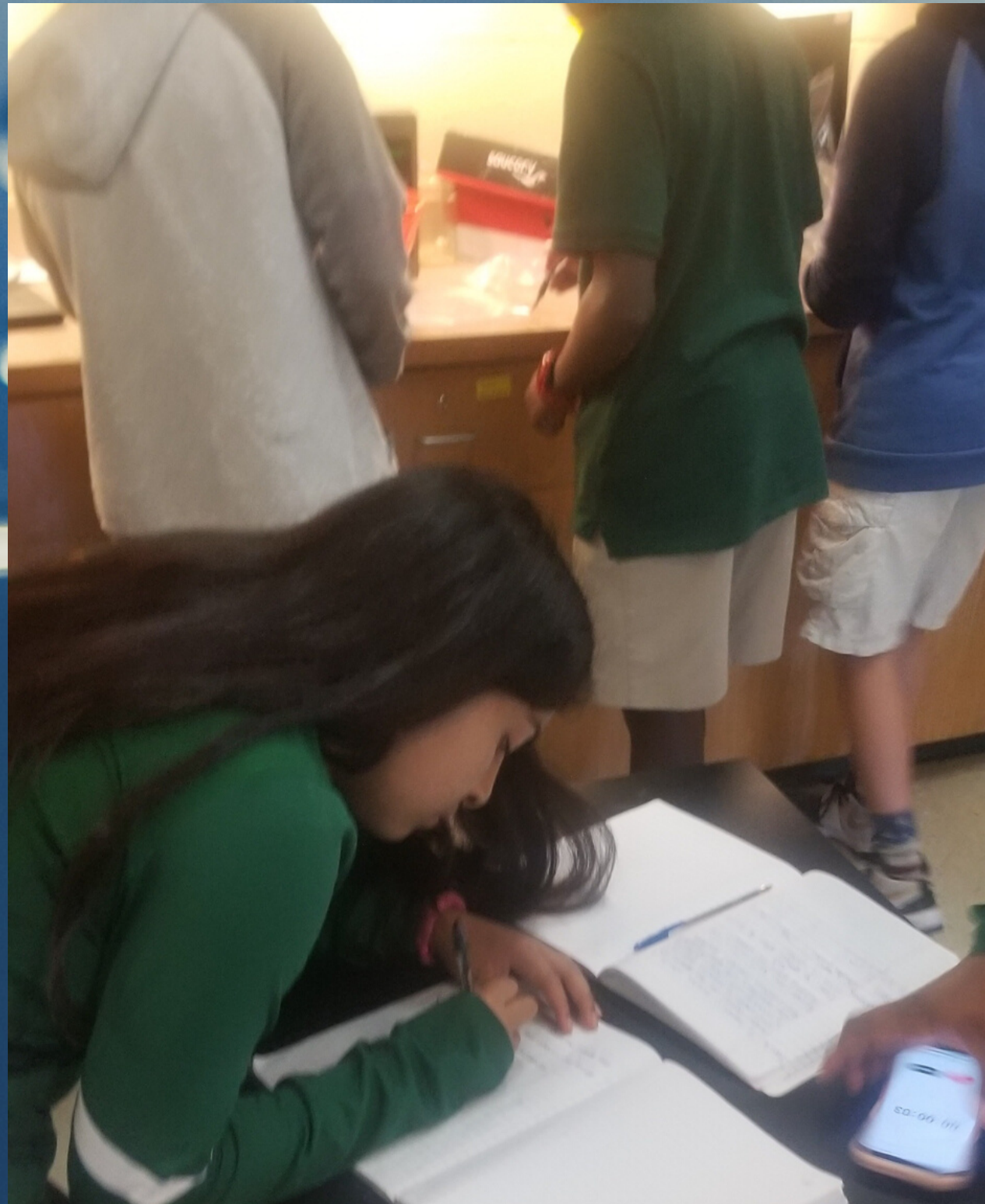
Should students use ALL materials?

No, not necessarily. Remember CER Inquiry labs allow students to create their own experiment to test their claim.

Student Groups discuss and create their claim statements
(5 minutes)



Student Groups discuss and create their experimental design procedures.
(10 minutes)



What should you see or hear?

Student Groups conduct experiment and collect evidence/data
(15-20 minutes)



What should you
see or hear?

Student Groups discuss and create evidence based reasoning statements.

Science Reasoning Rubric				
		2 pts	1 pt	0 pt
Statement	Claim An assertion that something is true	Makes a claim that is sufficient to answer the question <u>and</u> is coherent.	Makes a claim that is sufficient to answer the question <u>or</u> is coherent.	Does not make a claim <u>or</u> makes an incoherent claim.
	Explanation Describes how and why a phenomenon occurs	Provides an explanation that addresses how <u>and</u> why a phenomenon occurs	Provides an explanation that addresses how <u>or</u> why a phenomenon occurs	Does not provide an explanation.
Argument	Reasoning Provides reasons the reader should accept your claim or explanation.	Includes <u>all</u> of the following: <input type="checkbox"/> Cites sufficient and relevant evidence to support the claim/explanation. <input type="checkbox"/> Describes how the cited evidence defends the claim/explanation. <input type="checkbox"/> Reader feels compelled to accept your argument.	Includes <u>two</u> of the following: <input type="checkbox"/> Cites sufficient and relevant evidence to support the claim/explanation. <input type="checkbox"/> Describes how the cited evidence defends the claim/explanation. <input type="checkbox"/> Reader feels compelled to accept your argument.	Includes <u>one or none</u> of the following: <input type="checkbox"/> Cites sufficient and relevant evidence to support the claim/explanation. <input type="checkbox"/> Describes how the cited evidence defends the claim/explanation. <input type="checkbox"/> Reader feels compelled to accept your argument.

Figure 2: Science Reasoning Rubric

What should you see or hear?

<https://www.chemedx.org/blog/%E2%80%9Cscience-reasoning-rubric%E2%80%9D-support-argumentative-writing> heading



Day 2: Science • Socratic Seminar

1. Each group presents their claim, evidence, and reasoning.
2. Each group has an opportunity to challenge results and make suggestions.



**How will distance
learning change
this inquiry
activity?**

The background of the image is a close-up, macro shot of numerous water droplets of various sizes scattered across a smooth, light blue surface. The droplets are in sharp focus, showing their spherical shape and the way they reflect light. The overall color palette is a range of blues, from a pale, almost white light blue to a deeper, more saturated blue, creating a calm and refreshing visual effect.

Questions?

The background of the image is a close-up, macro shot of numerous water droplets of various sizes scattered across a smooth, light blue surface. The droplets are in sharp focus, showing their rounded, reflective shapes and the way they catch the light. The overall color palette is a soft, monochromatic blue, giving the image a clean, fresh, and serene feel.

Thank you!