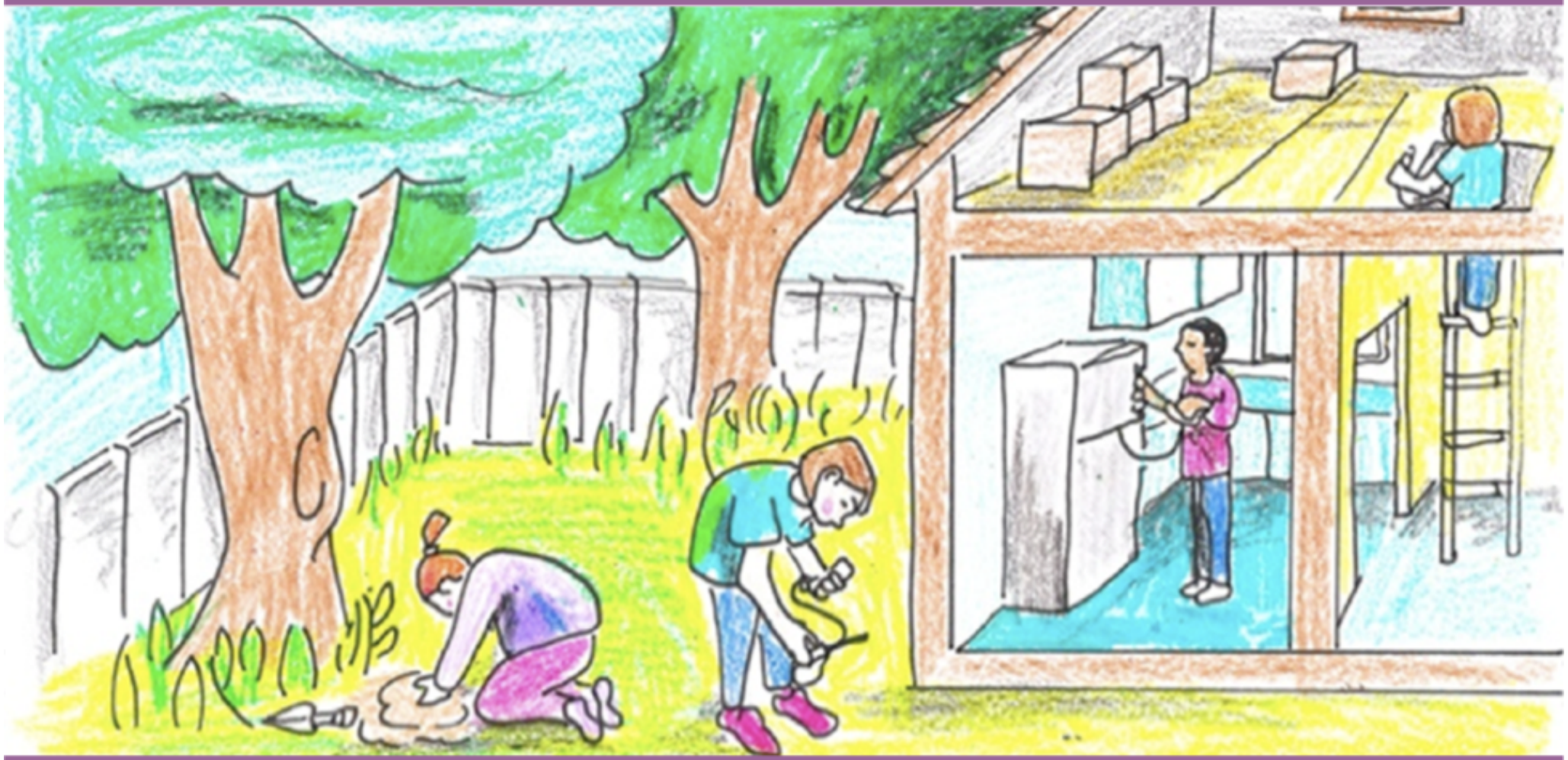


Exploring Environmental Temperatures

012-11010 r1.04

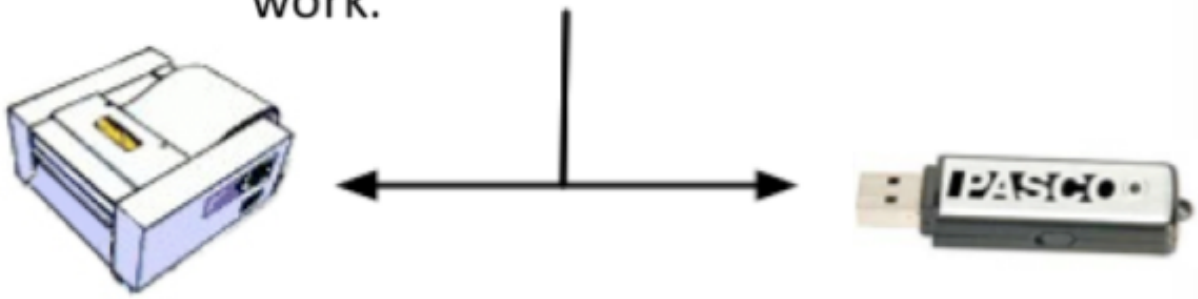
Introduction

Journals and Snapshots

The Snapshot button is used to capture the screen.

The Journal is where snapshots are stored and viewed.

The Share button is used to export or print your journal to turn in your work.



SNAPSHOT

This image is a reminder to Tap to take a snapshot of the page after you have entered your response.

Note: You may want to take a snapshot of the first page of this lab as a cover page for your journal.

Driving Question

What are the temperatures in my environment?

Thinking about the question

- Is the temperature in the attic the same as the basement?
- What is the difference between the temperature in the shade versus in direct sunlight?
- How does the ground's surface temperature differ from that below the surface? How different is the temperature next to a window and that near a heating or cooling vent?
- Is the temperature warmer above or below a rock?
- Discuss with your lab group members what you have observed about temperature variations in your local environment.

In this lab you will measure temperatures at various locations around your school.

Background

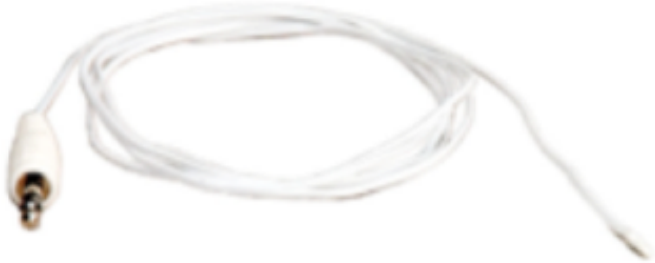
- The temperature sensor will permit you to observe temperature variations as small as 0.10 of a degree Celsius.
- As conditions change in your surroundings, the temperature sensor allows you to measure changes in temperature.
- Humidity, pressure, airflow, environmental pollutants, and time of day are just a few of the factors that can alter your readings.
- The materials that objects are made of and their size also affects their temperature as heat energy from the sun is added.

Weather will affect the temperature of your environment.

Materials and Equipment

Collect all of these materials before beginning the lab.

Temperature Sensor



Safety

Add these important safety precautions to your normal laboratory procedures.

Care should be taken to not disturb the environment.

Setup

- Choose at least five sites to investigate that will provide you with different temperature readings as a result of changing conditions or factors in the surrounding environment.
- Possible sites include different parts of rooms and buildings, open and wooded areas, and locations around buildings.
- **When you see the SNAPSHOT icon take a snapshot of that page for your journal.**

	Measurement Location	Observed Conditions
	Run 1	Run 1
1	Write place name here	Write observations here
2		
3		
4		
5		
6		
7		
8		
9		

Describing Locations

1. Write the location name in column 1 for each location.
2. Write descriptions and observations for each location in column 2. Consider sunlight, color, surface materials, protection from wind and weather.

***To Enter Data into a Table:**

1. Tap  to open the tool palette.
2. Tap  then tap a cell in the data table to highlight it in yellow.
3. Tap  to open the Keyboard screen.

	Measurement Location	Observed Conditions	Prediction (°C)
	Run 1	Run 1	Run 1
1	Write place name here	Write observations here	
2			
3			
4			
5			
6			
7			
8			
9			

Making Predictions

1. Predict the temperature at each location in column 3.

SNAPSHOT

	Measurement Location	Observed Conditions	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here	Write observations here	
2			
3			
4			
5			
6			
7			
8			
9			

Collect Data

1. Tap ▶ to begin collecting the temperature data.
2. Place the temperature sensor at your first location.
3. Wait until the reading stabilizes, then tap ✓ to record the temperature.
4. Go to each of your remaining locations in order and record the temperature by tapping ✓ after the readings stabilize.
5. After you have recorded the last measurement tap ■ to stop collecting data.

SNAPSHOT

	Measurement Location	Prediction (°C)	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here		
2			
3			
4			
5			
6			
7			
8			
9			

Analysis

Q1: Discuss with your partners how temperatures vary from location to location. List any patterns or findings below.

SNAPSHOT

The patterns I noticed were . . .

	Measurement Location	Prediction (°C)	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here		
2			
3			
4			
5			
6			
7			
8			
9			

Analysis

Q2: How did your temperature predictions compare to the actual temperatures? If there were differences, explain why you think they occurred. SNAPSHOT

My predictions were. . .

	Measurement Location	Observed Conditions	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here	Write observations here	
2			
3			
4			
5			
6			
7			
8			
9			

Analysis

Q3: How does the amount of sunlight affect the temperature of a location?

SNAPSHOT

Temperatures in sunlight were . . .

	Measurement Location	Observed Conditions	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here	Write observations here	
2			
3			
4			
5			
6			
7			
8			
9			

Analysis

Q4: How does protection from surrounding objects, buildings, or trees affect the temperature of a location?

SNAPSHOT

Temperatures in protected areas were . . .

	Measurement Location	Observed Conditions	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here	Write observations here	
2			
3			
4			
5			
6			
7			
8			
9			

Analysis

Q5: How does the type of material covering the location affect the temperature?

SNAPSHOT

The warmest materials were . . .

	Measurement Location	Observed Conditions	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here	Write observations here	
2			
3			
4			
5			
6			
7			
8			
9			

Analysis

Q6: How does the color of the location affect the temperature?

SNAPSHOT

The warmest colors were . . .

	Measurement Location	Observed Conditions	Temperature (°C)
	Run 1	Run 1	--
1	Write place name here	Write observations here	
2			
3			
4			
5			
6			
7			
8			
9			

Analysis

Q7: How did local weather conditions affect the temperature of each location?

SNAPSHOT

Weather affected
the temperatures . . .

Conclusion

Q8: Discuss with your partners how temperatures vary from location to location. List any patterns or findings below. Be prepared to share your findings with the class.

SNAPSHOT

I found the following patterns . . .

Congratulations!

You have completed the lab.

Please remember to follow your teacher's instructions for cleaning-up and submitting your lab.

References

ALL IMAGES WERE TAKEN FROM PASCO DOCUMENTATION, PUBLIC DOMAIN CLIP ART, OR WIKIMEDIA FOUNDATION COMMONS:

1.SUN THROUGH STRATUS CLOUDS- http://commons.wikimedia.org/wiki/Image:Sun_through_stratus_clouds.jpg

3.PRINTER http://www.freeclipartnow.com/office/paper-shredder.jpg.html