

Topic: Our Planet Earth in our Solar System

Learner Handout and Experiment Worksheet

Your mission: use Springbot to investigate how sunlight affects the air around us.

1 Mission Briefing

Earth is a planet in our Solar System. The Sun gives Earth natural light and heat. Earth also has an atmosphere, which is the layer of air around our planet. In this activity you will use Springbot to compare sunlight, shade and indoor or deep shade conditions.

You will measure three things: light intensity, air temperature and relative humidity. Then you will use your data to present results, findings and conclusions.

2 Key ideas

- The Sun is our closest star and gives Earth light and heat.
- Light intensity tells us how bright the light is.
- Air temperature tells us how hot or cold the air is.
- Relative humidity tells us about water vapour in the air.
- Scientists collect data before making conclusions.

3 Science words

- Prediction: what you think will happen before you collect data.
- Observation: something you notice using your senses or instruments.
- Data: measurements or information collected during an investigation.
- Finding: a pattern or important result in the data.
- Conclusion: your answer to the investigation question, supported by evidence.
- Fair test: an experiment where you try to keep things the same except for the thing you are testing.

4 Investigation question

How do light intensity, air temperature and relative humidity differ between sunlight, shade and indoors or deep shade?

My prediction:

5 Method

1. Work with your partner and collect one Springbot.
2. Choose three safe measurement places: sunny, shaded and indoor or deep shade.
3. At each place, hold or place Springbot at about the same height.
4. Wait about one minute for the readings to settle.
5. Read light intensity, air temperature and relative humidity from the OLED screen.
6. Record your readings in your worksheet or in the CSV template provided by your facilitator.
7. Repeat readings if your facilitator asks you to do this.
8. Compare your results and prepare a short presentation.

6 Data to record

Use the CSV data sheet provided, or draw a simple data table in your notebook with these headings: team name, date, time, location, light intensity, air temperature, relative humidity, and notes.

Remember to write units if your facilitator provides them. For example, temperature is measured in degrees Celsius and relative humidity is measured as a percentage.

7 Safety reminder

- Never look directly at the Sun.
- Stay with your group and follow your facilitator's instructions.
- Handle Springbot carefully and keep it dry.
- Do not run during data collection.

8 Analyse your data

Answer these questions using your measurements.

Which location had the highest light intensity?

Which location had the lowest light intensity?

Which location had the highest air temperature?

Which location had the highest relative humidity?

Did the highest light intensity match the highest temperature? Explain your answer.

What surprised you about the results?

What could have affected the readings?

How could you make the experiment fairer next time?

9 Graph your results

Choose one graph to show your results. Younger teams can draw a bar graph for the three locations. Older teams can draw three bar graphs or a grouped bar graph showing light, temperature and humidity. Your graph must have a title, labels and units.

Graph title: _____

What my graph shows:

10 Presentation guide

Prepare a 2-minute presentation. Use this structure:

- Our question was...
- We predicted...
- Our method was...
- Our results showed...
- Our main finding was...
- Our conclusion is...
- If we repeated the experiment, we would improve...

11 My conclusion

Write your conclusion using evidence from your data.
