



Energy Mapping Challenge

Instruction booklet 2022

<https://energymap.sustainededucation.org/>

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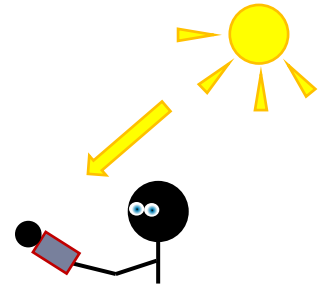
Measuring sunlight and wind speed:

Tools:

- Pen/pencil
- Lab notebook
- Anemometer (wind instrument)
- Luxmeter (sunlight instrument)

Safety:

- **Never look directly at the sun.** Harmful light from the sun can cause permanent damage to your eyes, even when wearing sunglasses.
- All sunlight measurements will be carried out with your back to the sun, to maximise safety and minimise risk. **All great science is safe science!**



Experimental procedure:

1. Sun measurement:

- A. Go outside with your partner. What is the weather like today? Decide whether it is **sunny, partly sunny, cloudy** or **rain**? Write your findings in the notebook.



Sunny



Partly Sunny



Cloudy



Rain

- B. Switch on the light meter by pressing the “**Φ**” button.

- C. Practice with the light meter. Hold it flat in your hand and look at the number of LUX displayed. This is a measure of how much light is shining on the white dome of the light meter. What happens when you cover the white dome with your hand?



Be careful when reading the numbers! On the left, the light meter displays 159.6 Lux. On the right, the light meter displays $25.4 \times 10 \text{ Lux} = 254 \text{ Lux}$. Which light meter is receiving more light?

If it is **Sunny** or **Partly Sunny**:

Look at your shadow on the ground. Turn to face your shadow. Hold the light meter in front of you so that the sun shines on the white dome. Press “**MAX**” to freeze the number on the screen. This is your measurement of the light from the sun! Write it in your notebook.

If it is **Cloudy** or **Rainy**:

You can't see your shadow because clouds are scattering the sunlight in all directions! We can still use energy from this scattered light. Hold the light meter so that the white dome faces directly upwards. Press “**MAX**” to freeze the number on the screen. This is your measurement of the light from the sun! Write it in your notebook.

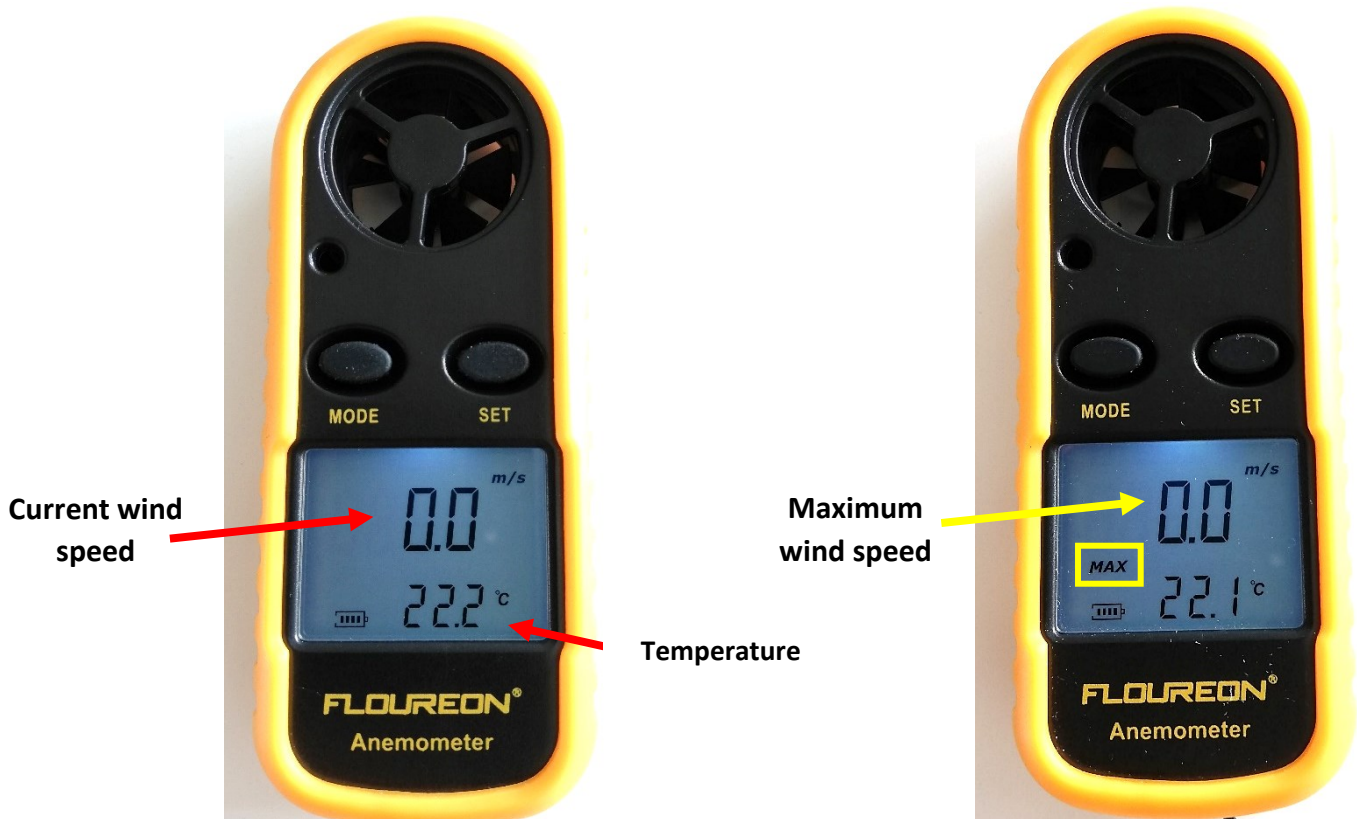


Good work!



2. Wind measurement:

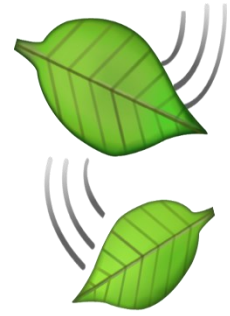
- A. Switch on your wind meter by pressing the “**MODE**” button for 2 seconds. Select the “Current wind speed” setting. Ask your teacher to help with this.
- B. Your wind meter measures how fast the air is moving through the fan, in metres per second. Blow into the wind meter. How fast can you make the air move?



- C. Try moving with the wind meter in your hand. How fast is the air moving through it now? Does it matter what direction you move or how fast you move?



- D. Work with your partner to find out what direction the wind is blowing. Hint: try dropping a leaf or some grass and watching what direction it falls...



- E. Select the “Maximum wind speed” setting. Ask your teacher for help with this. The wind meter will now display the highest wind speed it has measured. To reset the value to zero, press “**MODE**” for 5 seconds then press “**MODE**” again.

Turn to face the direction the wind is blowing. Hold out the wind meter in front of you for **15 seconds**. The number it displays is your measurement of the wind speed, in metres per second! Write it in your notebook.



Data collected!



Wind meter instructions for teachers:

- Press and hold the **"MODE"** button for 2 seconds to switch on.
- To select "Current wind speed": Press and hold **"MODE"** for 5 seconds (until the numbers disappear). Press **"SET"** multiple times until **"Cu"** appears at the bottom of the screen. Press **"MODE"**.
- To select "Maximum wind speed": Press and hold **"MODE"** for 5 seconds (until the numbers disappear). Press **"SET"** multiple times until **"MAX"** appears at the bottom left of the screen. Press **"MODE"**.
- To reset the "Maximum wind speed" to zero, press and hold **"MODE"** for 5 seconds. Press **"MODE"** again.
- The units on the right of the screen should be displayed as **"m/s"**. If this is not the case, press and hold **"MODE"** for 5 seconds. Press **"SET"** multiple times until **"m/s"** is displayed at the top right of the screen. Press **"MODE"**.