



# Preliminary Earth and Environmental Science Assessment Task 1.

## Scientific Report – Properties of Water

### The Task:

To produce a Scientific Report to analyse a series of experiments to be performed in class studying the properties of water.

### Due Date:

Thursday 28<sup>th</sup> February

### Weighting:

30% Preliminary Assessment mark

### Assessor:

Mr. Anthony Neenan

### Syllabus Dot Point:

investigate the unique properties of water that make it such an important component of the Earth's systems, including:

- boiling point
- ability to act as a solvent
- density
- thermal capacity
- surface tension

### Outcomes Assessed:

**EES11/12-3** conducts investigations to collect valid and reliable primary and secondary data and information

**EES11/12-7** communicates scientific understanding using suitable language and terminology for a specific audience or purpose

**EES11/12-6** solves scientific problems using primary and secondary data, critical thinking skills and scientific processes

**EES11-10** describes the factors that influence how energy is transferred and transformed in the Earth's systems

### The Experiments:

	Aim:
1. Boiling point	To determine the effect of dissolved salt on the boiling point of water
2. Ability to act as a solvent	To determine the effect of temperature on solubility of salt
3. Density	To compare the density of water as a solid and liquid of different temperatures
4. Thermal capacity	To compare the heat capacity of water and vegetable oil
5. Surface tension	To observe the effect of detergent on the surface tension of water
6. Buoyancy	To investigate Archimedes' Principle

### Further details:

Each of the experiments will be explained and demonstrated by the teacher. You will perform the experiments in class, record observations and results and complete a scientific report for each experiment. Some class-time will be available for the write-up but you will be expected to complete the task in your own time.

### Components of Report:

For *each experiment*, your report should include these elements:

- Title
- Aim – a single sentence aim of the experiment - what you hope to find out.
- Method – a detailed step by step procedure. Include a diagram.
- Results – include both a *table of results* and a *graph* if relevant.
- Conclusion – a one paragraph statement about what you found out. Refers directly to the aim.
- Explanation and discussion –
  - Explain the Science behind the phenomenon we tested. E.g what is surface tension?
  - Relate the importance of the phenomenon to Earth's systems. E.g. Salinity and temperature differences of Earth's oceans helps drive ocean currents
  - Discuss any aspects of your results (especially if your results disagreed with the science)
- Reference Table – At least three (3) references for each experiment from a variety of texts

### Making Rubric for each report

Aspect	Details	Available marks
Title	A succinct title for experiment.	1
Aim	A succinct single sentence aim of the experiment outlining what you were investigating	1
Method	A detailed step by step procedure. Include a diagram. Another experimenter could follow your method to replicate the experiment.	3
Results	A well communicated results table and graph if relevant. Results are reliable and based on precise measurements and attention to detail.	3
Conclusion	A single paragraph that refers to aim and outlines what you found out. Do not discuss results in this section.	2
Explanation and Discussion	The science behind the experiment has been communicated well. Diagrams have been used to help convey information. Relate the phenomenon to Earth's systems. Include references Discuss results. Did they agree with the Science. Could we improve experiment to get more reliable results?	4
Knowledge and understanding	Your writing communicates a deep understanding of the Science.	2
Language and sentence structure and formatting	Writing is legible. Sentence structure makes work readable. There are no spelling mistakes. Formatting is neat, eye-catching and well presented.	3
References	All assertions are referenced using Harvard referencing (Author, Date) and each experiment report has a reference list containing at least 3 references from a variety of texts	1
	Total marks	20

