Separating Salt from Seawater   
**Task 1** Name:

Due: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

In many industries it is useful for scientists to be able to purify different materials. This may be because a higher purity comes with more ideal properties of that material (as is the case with many medications), or it might be because you want to extract one material from another (such as metals from ores). We can also use extraction and separation techniques to monitor concentration levels of particular chemicals.

For this task you will be provided with a seawater sample that has been cleaned of any biological matter. You will then use the separation technique of distillation to verify the amount of salt in the seawater, with the method discussed and done during the experiment.

After conducting the investigation, you will be required to write a scientific report based on your findings. Use the following format to write your report:

**Introduction**Introduce theory and background of the experiment, provide context for the reader. Include a purpose for the investigation and how it can be useful in industries.

**Aim**  
State the aim of the experiment.

**Experimental Work:**Include all relevant materials, safety considerations, and method you used. Method should be written in a step-by-step format, and easy to replicate by a third party.

**Results and Discussion:**A record of your results neatly presented, with an explanation of the findings. This may include comparison of your results with others, explanation of possible errors, comment on suitability of method and future improvements.

**References:**You must use at least two valid resources and reference them at the end of your report using APA referencing. If you are struggling with this, you should seek help with using the website citethisforme.com

Note that your discussion will require you to calculate the concentration of salt so that you can compare to the known salinity of seawater. This concentration is calculated using the following equation:

An in-class validation will then be sat two days after submission of the investigation report.

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|  | 4 | 3 | 2 | 1 |
| Introduction /7 | **Discusses** how materials can be pure or combined from different components. **Compares** different methods and explains why distillation was the most suitable in this instance. | **Discusses** how materials can be pure or combined from different components. **Describes** different methods of separation. | **Discusses** how materials can be pure or combined from different components. | **Defines** what a material is and how it can be pure or combined from different components. |
|  | **Identifies** the purpose of this investigation, and **demonstrates** clear examples of how it can be useful in industries. | **Identifies** the purpose of this investigation, mentions industry but does not explain how it is useful. | **Identifies** the purpose of this investigation, does not identify uses in industry. |
| Materials and Method /3 |  | **Designed** method is coherent and easily followed. Materials are listed | Method is incoherent and hard to follow OR materials are not listed. | Method is incoherent and hard to follow. Materials are not listed. |
| Safety /1 |  |  |  | **Classifies** basic safety considerations, with specific safety precautions mentioned for chemicals used. |
| Results /2 |  |  | Results clearly **classified** in a format that is easy to understand. | Results presented but hard to follow/incorrect format. |
| Discussion /4 | Discussion covers all aspect:  -**Interprets** validity of results by comparing to expected results.  -Considers and **examines** possible errors.  -**Evaluates** the use of distillation as a method of separating salt from water | Discussion covers 2 aspect:  -**Interprets** validity of results by comparing to expected results.  -Considers and **examines** possible errors.  -**Evaluates** the use of distillation as a method of separating salt from water | Discussion covers 1 aspect:  -**Interprets** validity of results by comparing to expected results.  -Considers and **examines** possible errors.  -**Evaluates** the use of distillation as a method of separating salt from water | Discussion lacking in all aspects:  -**Interprets** validity of results by comparing to expected results.  -Considers and **examines** possible errors.  -**Evaluates** the use of distillation as a method of separating salt from water |
| Conclusion /2 |  |  | Conclusion **reflects** on data and the initial aim of the experiment. | Conclusion does not address the aim. |
| Resources /2 |  |  | At least 2 sources used, referenced in correct format. | <2 sources used, poorly referenced. |