**Extended Response Task 1:** Weighting 5%

**Discovering the Structure of the Atom**

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

### **Science as a Human Endeavour**

**Properties and structure of atoms**

Findings from a range of scientific experiments contributed to the understanding of the atom, enabling scientists, including Dalton, Thomson, Rutherford, Bohr and Chadwick to develop models of atomic structure and make reliable predictions about the mass, charge and location of the sub-atomic particles.

### **Science Inquiry Skills**

* interpret a range of scientific and media texts, and evaluate processes, claims and conclusions by considering the quality of available evidence; and use reasoning to construct scientific arguments
* communicate to specific audiences and for specific purposes using appropriate language, nomenclature and formats, including scientific reports

**Atomic Structure Timeline Poster** **[15 marks]**

The model of the atom has changed over the centuries, with the most popular and commonly known models being the Rutherford and Bohr models. However, the first model of the atom dates back to 400 BCE, when Democritus proposed that matter consists of indestructible, indivisible units called atoms.

In this task, you will be asked to research how we arrived at the Bohr model. You will need to research the following scientists:

* John Dalton
* J. J. Thompson
* Ernest Rutherford
* Niels Bohr
* James Chadwick

As well as any experiments that they did to confirm their theories. While the creation of the periodic table is also useful and happened at the same time that we developed the atomic model, your response should **ONLY** cover the structure of the atom.

The format of this assessment will be a poster made on an A3 sheet of paper that will serve as a timeline that will be worth 20% of your overall mark (see attached rubric) – you may only use one side. This timeline **MUST** be hand-written.

**Atomic Structure Timeline Validation**

You will then sit a validation test based on what you have researched, and both the poster and validation will be submitted at the same time. You may reference the poster during your validation. The validation is weighted at 80% of your overall mark, and the date of the validation will be set on SEQTA.

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|  | 4 | 3 | 2 | 1 |
| Timeline /2 |  |  | Timeline is in chronological order; all important times included | Timeline is not in chronological order OR some important times not included |
| Scientists /4 | Contributions of all of the following scientists are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick | Contributions of 4 of the following scientists are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick | Contributions of 3 of the following scientists are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick | Contributions of 1 or 2 of the following scientists are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick |
| Experiments /4 | Experiments done by all of the following scientists that informed the atomic model are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick | Experiments done by 4 of the following scientists that informed the atomic model are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick | Experiments done by 3 of the following scientists that informed the atomic model are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick | Experiments done by 1 or 2 of the following scientists that informed the atomic model are discussed: John Dalton J. J. Thompson Ernest Rutherford Niels Bohr  James Chadwick |
| Diagrams /3 |  | Diagrams drawn and labelled for any experiments where relevant | Diagrams drawn or labelled incorrectly for any experiments where relevant | Diagrams included but not labelled |
| Resources /2 |  |  | At least 2 sources used, referenced in correct format. | <2 sources used, poorly referenced. |