You are required to **conduct** a scientific investigation and **report** on your research using the **scientific report genre**.

**This report should be hand-written and submitted on this document.**

(Other than the CiteAce references, which can be printed and attached in the appropriate place)

Your group is to investigate either:

1. the relationship between parachute size and descent time, or  
2. the relationship between parachute mass and descent time.

**Some things to research for your introduction:**

1. What are the forces that influence falling objects?  
2. How do Newton’s Laws relate to this experiment?  
3. What is a parachute and how can parachute design influence descent time?  
4. What variables will need to be controlled to make a fair test?  
5. What variable will be manipulated? (Independent variable)  
6. What variable will be measured? (Dependent variable)  
7. How many trials will be needed?  
8. How will I mathematically process the results?  
9. How will the results be displayed?

**Final copy due date: ____________________**

<table>
<thead>
<tr>
<th>Science Understanding</th>
<th>Science Inquiry skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall, explanation &amp; linking of key concepts</td>
<td>Display &amp; interpretation of data</td>
</tr>
<tr>
<td>Experimental design, implementation &amp; review</td>
<td>Communication</td>
</tr>
<tr>
<td>/ 10</td>
<td>/ 10</td>
</tr>
<tr>
<td>Total / 10</td>
<td>Total / 30</td>
</tr>
</tbody>
</table>
Scientific Laboratory Report format checklist – Year 7

- All practical reports should include name, the date and the title of the experiment

- **Introduction:** background research on the topic and link this to a brief description of the purpose of the experiment. Should include references.

- **Aim:** one short sentence that describe the background or reason for doing the experiment. The aim may begin something like:
  - To find out . . .
  - To investigate . . .
  - To compare . . .
  - To make . . .

- **Hypothesis:** a guess about the results of an experiment/investigation. 
The hypothesis is a **statement**.
The hypothesis is often a statement that follows the format:
If ........................ then ........................

- **Materials:** A list of the equipment and/or chemicals used, written with dot points.

  **Method:** The set of steps you followed to do the experiment. The method should include a control and demonstrate fair testing to ensure results are valid.
  Scientific diagrams or drawings are used to describe how equipment was set up. The method needs to be clear enough so that anyone reading the report would be able to repeat the experiment. Method is written in 3rd **person, past tense**.

  Example:
  - Correct: ‘The Bunsen burner was lit’
  - Incorrect: ‘I lit the Bunsen burner’

- **Results:** measurements and observations made during the experiment. Measurements can be recorded in a table, and then represented in a graph (refer to page 3 for information on constructing an accurate graph). A **minimum of 3 trials of 3 different values of the independent variable should be done**.

- **Discussion:** What the results show and a possible explanation of the results.
  Any difficulties that were experienced or ideas for improving the experiment are also written in this section.
  The following questions must be answered in the discussion:
  - What is the explanation for the results? How does the theory from the Introduction explain your findings?
  - What possible errors were there? (and how did these affect the results)
  - What improvements could be made?
  - Further investigations could be done?

- **Conclusion**
  A short statement describing what was found out. **The conclusion must relate back to the aim.**
Eleven point graphing checklist – Year 7

- Write the TITLE of the graph, centred immediately above the graph.
- Choose a suitable scale for the x axis and calibrate it, i.e. put the tick marks on the axis.
- Number the divisions on the x axis
- Label the x axis; for example, age
- Add units to the x axis label; for example, weeks
- Choose a suitable scale for the y axis and calibrate it, i.e. put the tick marks on the axis.
- Number the divisions on the y axis.
- Label the y axis; for example, height
- Add the units to the y axis label; for example, millimetres (mm).
- Plot the points as accurately as you can.
- Draw the line of best fit. Is it a straight line or a curve? Do not connect the points as in a “join the dots” puzzle.

An example of a correctly produced graph is below:

[Graph of Plant growth showing height (mm) on the y-axis and age (weeks) on the x-axis, with data points plotted and a line of best fit drawn.]
<table>
<thead>
<tr>
<th>E</th>
<th>D</th>
<th>C</th>
<th>B</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.5</td>
<td>2.5</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>No reference OR no use of Cite Ace</td>
<td>1 reference listed with Cite Ace</td>
<td>2 references listed with Cite Ace</td>
<td>3 relevant sources listed correctly with, or 4 sources but no book</td>
<td>4 relevant sources listed correctly with Cite Ace (including 1 book)</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>AIM HYPOTHESIS MATERIALS</td>
<td>Not completed</td>
<td>most components completed in correct format and but with some irrelevant/missing information</td>
<td>All components completed in correct format, in sufficient detail and with relevant information.</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1.5</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAFETY</td>
<td>No risk assessment</td>
<td>Very general statement of risk</td>
<td>Some consideration of risk</td>
<td>Thorough risk assessment</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>METHOD</td>
<td>Very unclear and/or no method written</td>
<td>Three requirements for an A level are missing.</td>
<td>One requirement for an A level is missing.</td>
<td>Very clear. Format: Steps. Correct sequence. 3rd person. Past tense.</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>DIAGRAM</td>
<td>No Diagram</td>
<td>Two requirements for an A level are missing.</td>
<td>Title. Dia. in 2D. Accurately drawn. Correct size. Pencil used. Labelled. Ruled with straight lines.</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1.5</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESULTS – table</td>
<td>Four or or more requirements for an A level are missing</td>
<td>Three requirements missing from ‘B’ level</td>
<td>One major/two minor requirements missing from ‘B’ level</td>
<td>Title and headings. Indep. variable in first column. Data recorded accurately. No units listed in table. Average determined if relevant</td>
</tr>
<tr>
<td>0</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>RESULTS - GRAPH</td>
<td>No Graph.</td>
<td>Three or more requirements for an A level are missing.</td>
<td>Two requirements for an A level are missing.</td>
<td>One requirement for an A level is missing.</td>
</tr>
<tr>
<td>0</td>
<td>1.5</td>
<td>3</td>
<td>4.5</td>
<td>6</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>No evidence of integration of research and data. Results restated</td>
<td>Some integration of research and data. Results restated</td>
<td>Some integration of research and data. Reasonable attempt at explaining results.</td>
<td>Detailed integration of research and experimental data that attempts to explain results</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Explanation of results</td>
<td>0 - 1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISCUSSION</th>
<th>No errors identified</th>
<th>Identification of only basic errors. No link to future improvements/experiments</th>
<th>Identification of only basic errors. Some link to future improvements/experiments</th>
<th>Some identification of errors in order to refine/extend the method. Correct genre</th>
<th>Detailed identification of errors in order to refine/extend the method. Correct genre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Errors/improvements</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</table>

<table>
<thead>
<tr>
<th>CONCLUSION</th>
<th>Irrelevant statement.</th>
<th>One requirement for an A level is missing.</th>
<th>Accurate statement of findings. Relevant to aim. 3rd person. Past tense.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPELLING and GRAMMAR</th>
<th>Very poor spelling/grammar; significant errors of even simple words</th>
<th>Poor spelling/grammar; major errors including some simple words</th>
<th>Satisfactory spelling/grammar; some errors mostly of more difficult words</th>
<th>Minor spelling/grammatical errors</th>
<th>No spelling/grammatical errors errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMAT AND PRESENTATION</td>
<td>Very poor format: most sections in incorrect order and very little effort put into presentation</td>
<td>Poor format: only some sections in correct order and little effort put into presentation</td>
<td>All sections in correct order; only basic presentation</td>
<td>All sections in correct order; some extra effort put into presentation</td>
<td>All sections in correct order; attractive and exceptional presentation</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**TOTALS:**

Science Understanding / 10

Science Inquiry Skills: Display & interpretation of data / 10

Science inquiry skills: Experimental design & review / 20

Communication: / 12

/52
**Scientific Investigation – Air Resistance**

**Introduction:** background research on the topic and link this to a brief description of the purpose of the experiment. Should include references in CiteAce form.

Background research on the topic: (include definitions of key words of the topic). Some questions have been added as a guide.

What forces influence falling objects?

______________________________
______________________________
______________________________
______________________________
______________________________
______________________________

How do Newton’s Laws of Motion relate to this experiment?

______________________________
______________________________
______________________________
______________________________
______________________________
______________________________

What is a parachute and what impact does it have on forces?

______________________________
______________________________
______________________________

Describe the variables related to this experiment

______________________________
______________________________
______________________________
Other relevant information


References: Presented in correct CiteAce format.
Aim: one sentence that describe the reason for doing the experiment. The aim may begin something like: To investigate . . .

Hydrothesis: a guess about the results of an experiment/investigation. The hypothesis is a statement that follows the format: If .........., then ..................

Materials: A list of the equipment and/or chemicals used. Use these to design the experiment

__________________________________________  __________________________________________

__________________________________________  __________________________________________

__________________________________________  __________________________________________

__________________________________________  __________________________________________
Method: The set of steps followed to do the experiment. The method needs to be clear enough so that anyone reading the report would be able to repeat the experiment.

*Method is written in 3rd person, past tense.*

Example:
- Correct: ‘The Bunsen burner was lit’
- Incorrect: ‘I lit the Bunsen burner’

In point form (step 1, step 2, etc), list the method in the space below.
Sketch a diagram in the space below to show how the equipment was set up for the experiment. 
Ensure the diagrams are labelled and done in pencil.
Results: collected in class on the day of the experiment. Remember to include space for trials and averages. Construct a data table in the space below, then fill this with the data collected by the group.

Represent this information in the graph below. Refer to the information on page 3 to ensure the graph is constructed correctly.
Discussion:
In paragraph form and in 3rd person, past tense, address each of the points below as part of your discussion.

Attempt to explain the results using the theory from the Introduction

List experimental errors
Suggest improvements / further experiments

Conclusion:

END OF INVESTIGATION