



ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

| | |
|-----------------------|---|
| Subject | Year 9 Science |
| Topic | All topics and/or any Science area of interest |
| Class Teachers | A Routh, A Constant, J Huggett, A Paul, K Griffen, S Townsend and M Kennard |
| Head Teacher | Mr P Shea |
| Year | 9 |
| Date Given | Week 9A Term 2 |
| Date Due | Part B Week 1A 14 th to 18th of October Term 4 |
| Weighting | Part A = 30% & Part B = 30% |

Assessment Outline

You will be expected to:

Individually conduct a scientific investigation on a scientific topic of your choice. Part A will prepare you for this task and Part B will be your scientific report.

To complete your scientific investigation, you will need to:

- Identify a question or problem that you want to investigate.
- Research the question or problem.
- Write a hypothesis for your investigation.
- Design and plan your investigation.
- Conduct the investigation.
- Collect accurate, reliable and valid results.
- Communicate your results in appropriate formats such as tables and graphs.
- Evaluate and analyse your results.
- Draw conclusions from the investigation, refer to your hypothesis.
- Present your investigation in an appropriate format (see below).

You will need to submit the following:

- **Part B:** A detailed formal typed-written scientific report on A4 paper

Please note: A scaffold will be provided for students who wish to use one if they need assistance with their project. Assessment of their outcomes will be adjusted accordingly.

For additional information, please see the attached task detail outline sheet.

Non-completion of Task:

If you know you are going to be away on the day that the task is due, you must make alternative arrangements with your teacher beforehand. If you are suddenly away on the day that the task is due, you must contact your teacher or Head Teacher on your return to school. Documentation will be required in both classes.

Plagiarism:

Plagiarism, the using of the work of others without acknowledgement will incur serious penalties and may result in zero award. Any cheating will also incur penalties.

Failure to follow the above procedures may result in a zero award.
The policies and procedures that are outlined on the ROSA booklet will be followed regarding the non-completion of assessment tasks.

Outcomes Assessed

SC5-4WS Develops questions or hypotheses to be investigated scientifically

SC5-5WS Produces a plan to investigate identified questions, hypotheses or problems

SC5-6WS Undertakes first-hand investigations to collect valid and reliable data and information

SC5-7WS Processes, analyses and evaluates data from first-hand investigations and secondary sources to develop evidence-based arguments and conclusions

SC5-8WS Applies scientific understanding and critical thinking skills to suggest possible solutions to identify problems

SC5-9WS Presents science ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations

Task Detail Outline Sheet:

Year 9 Individual First-Hand Investigation

This task will contribute towards your semester grade (60 %). [Part A = 30% & Part B = 30%]
It will also contribute to your overall assessment for your ROSA.

DATE DUE:

Part B: Week 1A 14th to 18th of October Term 4 (Completed scientific report)

This section is to be completed using Part A and the feedback from your teacher.

You can choose any topic from any area of study in science. The best topics are the ones that you are interested in or an area of science that you would like to investigate further.

Where to find ideas:

The following website has a survey that you can complete to assist you in finding an appropriate investigation to conduct.

http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml

ALTERNATIVELY, you may select an idea from below:

1. Does the amount of liquid fertiliser put on a plant affect plant growth?
2. Does the concentration of the acid affect the rate a reaction occurs?
3. Does the mass of an object affect the distance it would bounce back if it is dropped from a 1 metre height?

Safety:

Your investigation must be one that is safe and does not use any dangerous or banned substances. If you have any questions please speak to the Head Teacher of Science: Mr Shea.

You **MUST** complete a risk assessment as part of your scientific investigation.

You must submit your investigation in a proper scientific report format as discussed in class.

Part B: Scientific Research Format

Use this scaffold to help you complete Part B of this task
– ‘The Experimental Report’ (Due Week 1 Term 4)

| Section of Scientific Report: | What needs to be included in this section? |
|-------------------------------|--|
| Title | <ul style="list-style-type: none"> • What is the name of your investigation? |
| Aim | <ul style="list-style-type: none"> • What are you investigating? |
| Background information | <ul style="list-style-type: none"> • Include 2-3 paragraphs of background information on the topic you have chosen to study. • Reason for choice of topic. |
| Hypothesis | <ul style="list-style-type: none"> • Predict what you think will happen. • State how the changing the independent variable will affect the dependent variable. • You could use an “If...then...” statement. |
| Variable in the investigation | <ul style="list-style-type: none"> • Controlled variables – What variable are being controlled or kept the same? • Independent variable – What variable is being changed? • Dependent variable – What variable is being measured? |
| Equipment list | <ul style="list-style-type: none"> • Detailed list of all equipment and materials used in the experiment. |
| Risk Assessment | <ul style="list-style-type: none"> • List any safety issues with conducting the investigation. • Explain how you will solve or reduce these safety issues. |
| Method | <ul style="list-style-type: none"> • Instructions that need to be carried out in order to conduct the investigation effectively. • Need to be clear, detailed and in numbered steps. • Include how the dependent variable will be measured, along with any other variables. • Include how many times the experiment will be repeated. • Include a labelled diagram of the experimental setup. |
| Results | <ul style="list-style-type: none"> • Presented in a table with appropriate headings and units. • Presented in an appropriate graph for the data collected, e.g. numerical data in a line graph, categorical data in a bar graph. • Always include a straight or curved line of best fit in your graph. |
| Discussion | <p>This should be the main part of your report. The discussion is where you analyse the results of the experiment AND evaluate the effectiveness of your investigation (e.g. was it a fair test?). To structure the paragraphs in your discussion, you should focus on using the PEEL writing strategy that you have learnt in class.</p> <p>In a discussion you should always include the following sections/paragraphs:</p> <p><u>Paragraph/section 1:</u> Interpret the results from the investigation</p> <ul style="list-style-type: none"> • What were the main findings from your investigation? • Give specific examples from the data. • What do these results mean? • How do your results link to your background research on the topic or to what you already know about the topic? • Is there a real world application for your results? Explain. <p><u>Paragraph/section 2:</u> Assess the accuracy of the investigation.</p> <ul style="list-style-type: none"> • Make a judgement about the accuracy of the investigation. • How do you know it was accurate? What makes an investigation accurate? • Give specific examples from your investigation to support your assessment of the accuracy of your results. • How would you improve the accuracy of the investigation? |

| | |
|--------------|---|
| | <p><u>Paragraph/section 3:</u> Assess the reliability of the investigation</p> <ul style="list-style-type: none"> • Make a judgement about the reliability of the investigation. • How do you know it was reliable? What makes an investigation reliable? • Give specific examples from your investigation to support your assessment of the reliability of your results. • How could you improve the reliability of the investigation? <p><u>Paragraph/section 4:</u> Evaluate the validity of the investigation</p> <ul style="list-style-type: none"> • Make a judgement about the validity of the investigation. Was it a fair test? • How do you know it was valid? What makes an investigation valid? • What variables did you control and how did you control them? • What problems did you have with your investigation that may affect its validity? • Give specific examples from your investigation to support your assessment of the validity of your results. <p><u>Paragraph/section 5:</u> Comparison of your results with other studies/research</p> <ul style="list-style-type: none"> • Do your results match with other scientists' research? • Explain how they were similar or different, giving specific examples. • How could your results be used for further scientific investigation? |
| Conclusion | <ul style="list-style-type: none"> • A clear summary statement of the main results from your investigation. • How did the independent variable affect the dependent variable? Be specific and give examples from your results. • Did your results support or disprove your hypothesis? Make sure you refer to your hypothesis in your conclusion. |
| Bibliography | <ul style="list-style-type: none"> • Include the sources that you have used to gather your information for the background information and any additional research. |

Things to remember:

- Do not write in first person
- Use scientific language
- Do not copy and paste information. Write it in your own words. All investigations will be checked against Science Buddies website investigations. If you plagiarise you will be given zero.

Marking Rubric:

| Criteria: | Outstanding (A) | High (B) | Sound (C) | Basic (D) | Limited (E) |
|--------------------------------------|--|---|---|---|---|
| Title and Aim | <ul style="list-style-type: none"> Sophisticated title given (uses scientific language), detailed scientific aim given, includes the independent and dependent variable <p style="text-align: center;">3 marks</p> | | Interesting title given and a scientific aim given, includes either the independent or dependent variable <p style="text-align: center;">2 marks</p> | | Simple title given and aim given <p style="text-align: center;">1 mark</p> |
| Background Information | <ul style="list-style-type: none"> Clear explanation of the project. Detailed and sophisticated explanation of the topic area of study. 4 or more relevant pieces of scientific information given. At an extensive level. <p style="text-align: center;">5 marks</p> | Clear explanation of project. Detailed explanation of the topic area of study. 4 relevant pieces of information given. At a thorough level. <p style="text-align: center;">4 marks</p> | Explanation of project given. Explanation of topic area of study. 3 relevant pieces of information given. At a sound level. <p style="text-align: center;">3 marks</p> | Explanation of project. Basic explanation of the topic area. Less than 2 pieces of information given. At basic level. <p style="text-align: center;">2 marks</p> | Explanation of project given. No scientific information present. At elementary level. <p style="text-align: center;">1 mark</p> |
| Hypothesis | <ul style="list-style-type: none"> Predict what you think will happen. State how the changing the independent variable will affect the dependent variable If and Then statement could be (No use of "I" or "we".) <p style="text-align: center;">3 marks</p> | | Any two of the previous points <p style="text-align: center;">2 marks</p> | | Any one of the previous points <p style="text-align: center;">1 mark</p> |
| Variable in the investigation | <ul style="list-style-type: none"> Controlled variables – correct (4 or more) Independent variable – correct Dependent variable – correct Scientific language used At an extensive level. <p style="text-align: center;">5 marks</p> | Any 4 of the previous at thorough level. <p style="text-align: center;">4 marks</p> | Any 3 of the previous at high level. <p style="text-align: center;">3 marks</p> | Any 2 of the previous at basic level. <p style="text-align: center;">2 marks</p> | Any 1 of the previous at elementary level. <p style="text-align: center;">1 mark</p> |
| Equipment list | <ul style="list-style-type: none"> Sophisticated and completed list of all equipment used <p style="text-align: center;">3 marks</p> | | List of most of the equipment used <p style="text-align: center;">2 marks</p> | | Simple list of some of the equipment used <p style="text-align: center;">1 mark</p> |
| Safety | List all safety issues (3 or more) with conducting the investigation Explain how each issue was solved or reduced At an extensive level. <p style="text-align: center;">5 marks</p> | List all safety issues (3 or more) with conducting the investigation Explain how each issue was solved or reduced At a thorough level. <p style="text-align: center;">4 marks</p> | List some safety issues (2) with conducting the investigation Explain how each issue was solved or reduced At a sound level. <p style="text-align: center;">3 marks</p> | List some safety issues (2) with conducting the investigation Attempts to explain how each issue was solved or reduced At a basic level. <p style="text-align: center;">2 marks</p> | List some safety issues (1) with conducting the investigation Attempts to explain how issue was solved or reduced At an elementary level. <p style="text-align: center;">1 mark</p> |

| | | | | | |
|-------------------------------|---|---|---|--|--|
| Method | <ul style="list-style-type: none"> • Clear and logical method in third person • Need to be in correct order, detailed and in numbered steps • Include how the dependent variable will be measured, along with any other variables • Include how many times the experiment will be repeated • Scientific terms used and at an extensive level. No use of “I” or “we”. (past tense) <p style="text-align: center;">5 marks</p> | <p>Any 4 of the previous at thorough level.</p> <p>No use of “I” or “we”.</p> <p style="text-align: center;">4 marks</p> | <p>Any 3 of the previous at high level.</p> <p style="text-align: center;">3 marks</p> | <p>Any 2 of the previous at basic level.</p> <p style="text-align: center;">2 marks</p> | <p>Any 1 of the previous at elementary level.</p> <p style="text-align: center;">1 mark</p> |
| Results - Table | <ul style="list-style-type: none"> • Presented in an appropriate table • Has appropriate headings and correct units • No units present on the data in the table (in heading only) • Averages included and correct • Neatly presented and at an extensive level (is enclosed and has been drawn with ruler). <p style="text-align: center;">5 marks</p> | <p>Any 4 of the previous at thorough level.</p> <p style="text-align: center;">4 marks</p> | <p>Any 3 of the previous at high level.</p> <p style="text-align: center;">3 marks</p> | <p>Any 2 of the previous at basic level.</p> <p style="text-align: center;">2 marks</p> | <p>Any 1 of the previous at elementary level.</p> <p style="text-align: center;">1 mark</p> |
| Results - Graph | <ul style="list-style-type: none"> • Presented in an appropriate graph for the data collected • A line of best fit is correctly present • Axis’ are labelled correctly • Units included on the correct axis’ • Data plotted correctly and at an extensive level (use of x to plot data points). <p style="text-align: center;">5 marks</p> | <p>Any 4 of the previous at thorough level.</p> <p style="text-align: center;">4 marks</p> | <p>Any 3 of the previous at high level.</p> <p style="text-align: center;">3 marks</p> | <p>Any 2 of the previous at basic level.</p> <p style="text-align: center;">2 marks</p> | <p>Any 1 of the previous at elementary level.</p> <p style="text-align: center;">1 mark</p> |
| Discussion – Section 1 | <ul style="list-style-type: none"> • A summary of the main findings of the investigation given, including trends. • Results are interpreted and specific examples from the data given • Results link to background research on the topic. • Real world applications discussed for the results? • Scientific terms used and at an extensive level. <p style="text-align: center;">5 marks</p> | <p>Any 4 of the previous at thorough level.</p> <p style="text-align: center;">4 marks</p> | <p>Any 3 of the previous at high level.</p> <p style="text-align: center;">3 marks</p> | <p>Any 2 of the previous at basic level.</p> <p style="text-align: center;">2 marks</p> | <p>Any 1 of the previous at elementary level.</p> <p style="text-align: center;">1 mark</p> |
| Discussion – Section 2 | <ul style="list-style-type: none"> • A judgement about the accuracy of the investigation is given. • Explanation of what makes an investigation (any) accurate? • Specific examples from the investigation to support the assessment of the accuracy of the results given. • Scientific terms used and at an extensive level. • How could you improve the accuracy of the investigation? <p style="text-align: center;">5 marks</p> | <p>Any 4 of the previous at thorough level.</p> <p style="text-align: center;">4 marks</p> | <p>Any 3 of the previous at high level.</p> <p style="text-align: center;">3 marks</p> | <p>Any 2 of the previous at basic level.</p> <p style="text-align: center;">2 marks</p> | <p>Any 1 of the previous at elementary level.</p> <p style="text-align: center;">1 mark</p> |

