DATA HANDLING ASSIGNMENT

In term one you will be tasked with the recording of weather data from the school’s weather station. You have to record your data on the recording sheets covering a period of FIVE weeks in total. During this period you will need to collect newspaper reports and articles pertaining to the weather, as well as make your own notes on the weather conditions being experienced in Gauteng.

AIM: To investigate the relationship between temperature, humidity and rainfall at Parktown High School for Girls, and any other weather phenomena during the recording period and their impact on man.

You need to complete the following tasks using the data that you gathered. You need to follow the time schedule on the marking rubric.

Thus your FINAL DUE DATE for this task is: ____________

Your project should be set out in the following way

PRESENTATION:
> You must hand in a neatly written or typed assignment of no more than 5 pages in length. This excludes your cover page, contents page, graphs and articles.
> Your cover page must include
  ▪ The title of your assignment
  ▪ Your name and surname
  ▪ Class
  ▪ Teacher’s name
Your assignment will comprise of four sections, namely:

**SECTION A: DATA COLLECTION**

**SECTION B: DATA HANDLING AND GRAPHING SKILLS**

**SECTION C: ANALYSIS**

**SECTION D: INTERPRERATION OF DATA AND WEATHER RELATED NEWS ARTICLES**

### SECTION A

**Data Collection:**

- You are to work in pairs when collecting data from the weather station. Each pair will be expected to gather one day’s worth of data (once in the morning and once at second break). You are to write up your recordings on the Weather Watchers board outside the hall.
  - If you and your partner do not gather the data for the day you have chosen, you will be penalised and marks will be deducted.
- Compile a record (on the sheets provided) of all weather data from the recordings on the white board, by the Grade 10 learners for 5 weeks. **YOU NEED TO RECORD THE DATA EACH WEEK.**
- Pay attention to the weather in Gauteng. Make a note on the sheet provided of any unusual, severe, or extreme weather events in the Gauteng area specifically; including thunderstorms, but also any major weather phenomena in South Africa and around the world occurring during the 5-week period.
- You need to get one weather report for Johannesburg and one weather related news article per week for the 5 week period from the newspapers. **(You may not use the internet unless otherwise specified by your teacher)**
- In the final project you must present the articles in a chronological order. Make sure to provide the source of the article (eg. The Star) and the date of the newspaper in which it is printed.

### SECTION B

**Data Handling:**

- You are going to construct three types of graphs (as indicated below) using the data you have gathered.
- Please note that a key must be provided for each graph and that each axis must be clearly labelled.
- Each graph must have an appropriate heading.

**NB:** Marks will be awarded for the correct construction and format of the graphs.

I) **BAR GRAPH**

- You must construct a bar graph indicating the average rainfall per week for 5 weeks.
- Use the vertical scale 1cm = 2mm of rainfall with a 1cm space between each bar and a horizontal scale of 1 cm for each week.

Calculate the total rainfall received in the 5 week period. Show all your working out.

II) **LINE GRAPH**

- You must construct 2 line graphs on a single set of axes indicating the minimum and maximum temperature experienced over 25 days.
- Use the vertical scale 1cm = 2°C and a horizontal scale of 0.5 cm for each day.
- On the above graph, draw green circles to show the days on which rain occurred.

III) **CLIMATE GRAPH**

In order to draw this graph you will need to:

> Calculate the average minimum and maximum temperatures for each week in the 5 week period. Show all your working out.
> Calculate the average humidity for each week over the 5 week period. Show all your working out.
To draw the graph you need to complete the following ON THE SAME SET OF AXES:

- On this graph you need to indicate the average rainfall per week (bar graphs) as well as the average minimum temperature and average maximum temperature per week (two line graphs).
- Use the left vertical scales indicated in I) and II). The horizontal scale as in I).
- Draw a line graph to show the average humidity for each week, use a right hand vertical scale of 1 cm = 10%.
- Take note that all data is to appear on one set of axes.
- Include a colour co-ordinated key as you will have 4 graphs and this will become very confusing to differentiate.

**SECTION C**

**Analysis and Interpretation:**

1. Analyse the climate graph and the line graph – describe (briefly) what is shown in each graph i.e. the general changes in the graphs for the 5 week period. Do this in point form. SEE ATTACHED EXAMPLE

**SECTION D**

**Weather-related newspaper articles and Weather reports:**

1. a) State the correlation between temperature, rainfall and humidity by rewriting and completing the following paragraph:

   As the temperature ________ so more water (evaporates/condenses). This causes a(n) ________ in the humidity. This water vapour then (evaporates/condenses) resulting in (more/less) clouds and an ________ in rainfall. Therefore the relationship between the three factors is that (a/an) ________ in temperature and humidity will lead to (a/an) ________ in rainfall.

   UNDERLINE WORDS YOU HAVE FILLED IN OR CHOSEN WHEN YOU REWRITE THE ABOVE PARAGRAPH. (7x2) (14)

2. a) Describe briefly one similarity or difference per week between your recordings and the weather reports you collected from the newspapers. (5)

   b) Account for the similarities and/or differences between your readings and the newspaper reports you collected. Provide 3 reasons for differences and/or similarities noted. (3x2)(6)

3. Choose one of the articles you have presented (make it clear which article you have chosen) and complete the following:
   a) State the weather phenomena experienced. (1x2) (2)

   b) Very briefly summarise the article in your own words (50-60 words). (5x2)(10)

   c) List the impact that this phenomenon had or could have had on:
      - Man
      - the man made environment
      - natural environment. (5x2)(10)

   d) State and explain what could be done in future to avoid or lessen the impact of the phenomena and the damage caused, if any. (4x2)(8)

[55 marks]
## Notes on the Weather

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
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Graph Analysis

Humidity:
- The lowest was measured on day 10 at 14% and the highest on Day 6 at 85%.
- The humidity increased from Day 1 to Day 6. After day 6 the humidity decreased substantially, until day 10.
- The humidity increased again however, after day 12. Between day 10 and 11, and 21 and 22, respectively, the humidity remained constant.
- A continual decrease in humidity was measured between day 14 and day 22.

Temperature:
Maximum temperatures:
- These was erratic as the temperature decreased on Day 2 til Day 5, then increased again till Day 9.
- Day 16 and Day 17 experienced fluctuations in the maximum temperature, however remained fairly constant thereafter.

Minimum temperatures:
- These remained fairly constant around 10°C with a spike being experienced on Day 15.
- Day 10 and 11 experienced the lowest temperatures around 9°C.
- The smallest diurnal temperature range was measured on Day 16 and was about 1°C, while the largest range was measured on the first day and was about 20°C.
# Grade 10 Research Project Rubric

<table>
<thead>
<tr>
<th>Name:</th>
<th>Grade 10:</th>
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## Data Collection

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Grade 5</th>
<th>Grade 4</th>
<th>Grade 3</th>
<th>Grade 2</th>
<th>Grade 1</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather recording</td>
<td>Full, accurate record of data.</td>
<td>4/3 Complete record with some inaccuracies.</td>
<td>2/1 Complete record with many inaccuracies.</td>
<td>0 Incomplete record of data.</td>
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<tr>
<td>Articles</td>
<td>Good selection of relevant articles.</td>
<td>4 Five articles, not all relevant.</td>
<td>3 One or two articles missing and or not all relevant.</td>
<td>2/1 Inaccuracies or inadequate articles and/or less than 3 reports.</td>
<td>0 No articles.</td>
<td></td>
<td>5</td>
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<tr>
<td>Weather Reports</td>
<td>Good selection of 5 weather reports.</td>
<td>4/3 One weather report missing or one incorrect.</td>
<td>2/1 Two or Three weather reports missing or incorrect</td>
<td>0 No weather reports present.</td>
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<td></td>
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</table>

## Presentation

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Grade 5</th>
<th>Grade 4</th>
<th>Grade 3</th>
<th>Grade 2</th>
<th>Grade 1</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>Project neatly presented. Graphs clear and well done. Articles neatly set out. Four sections excellently set out.</td>
<td>4/3 Project acceptably presented. Graphs adequately drawn. Articles acceptably set out. Four sections well set out.</td>
<td>2/1 Project not set out neatly. Graphs not drawn neatly. Sections not logically set out.</td>
<td>0 Project very untidy. Graphs badly drawn. Difficult to find the four sections of the project</td>
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<tr>
<td>Instructions</td>
<td>Project has a front cover with all the required details. Project is put together neatly.</td>
<td>2 Project has a front cover with all the required details.</td>
<td>1 Project has a front cover but is not compiled neatly OR front cover does not have all the required details.</td>
<td>0 No front cover present. Project poorly compiled.</td>
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</tr>
<tr>
<td>Article references</td>
<td>All 5 articles presented in a chronological order. Articles clearly dated and sources provided.</td>
<td>2 5 articles present. Articles not clearly dated OR not presented in a chronological order.</td>
<td>1 No dates or sources provided with articles.</td>
<td>0 No articles or insufficient articles.</td>
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<tr>
<td>Graphs</td>
<td>Data all correctly graphed. All graphs have correct headings and keys. Correct units used.</td>
<td>8/7 Most data correctly graphed. Most labels and headings present and correct on graphs. Keys and units provided.</td>
<td>6/5/4 Most data incorrectly graphed. Most labels and headings present and correct on graphs. Keys and units provided.</td>
<td>3/2/1 Not all graphs drawn OR little data graphed correctly. Many graphs not labelled.</td>
<td>0 No graphs drawn.</td>
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## Analysis

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<tr>
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<th>Grade 9</th>
<th>Grade 8</th>
<th>Grade 7</th>
<th>Grade 6</th>
<th>Grade 5</th>
<th>TOTALS</th>
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</thead>
<tbody>
<tr>
<td>Calculations</td>
<td>Correct method used for calculation as on memorandum</td>
<td>8/7 All graphs well analysed. Clear, logical comment made on all trends shown in graphs over the full 5 week period.</td>
<td>6/5/4 Some data correctly analysed. Not all trends discussed OR trends are incorrectly analysed OR analysis not for full 5 week period.</td>
<td>3/2/1 Not all graphs analysed OR trends analysed incorrectly.</td>
<td>0 No graph analysis.</td>
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<tr>
<td>Graph analysis</td>
<td>All graphs excellently analysed, concise, detailed descriptions clearly showing relevant trends.</td>
<td>8/7 All graphs well analysed. Clear, logical comment made on all trends shown in graphs over the full 5 week period.</td>
<td>6/5/4 Some data correctly analysed. Not all trends discussed OR trends are incorrectly analysed OR analysis not for full 5 week period.</td>
<td>3/2/1 Not all graphs analysed OR trends analysed incorrectly.</td>
<td>0 No graph analysis.</td>
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## Interpretation

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<tr>
<th>Item</th>
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<tbody>
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<td>See Mark Allocation on Question Paper</td>
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## Progress Marks

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<th>Item</th>
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<td>See Mark Allocation on Work Schedule</td>
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## Final Total

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