## **JOHANNEBURG WEST PLC**

## **PROJECT**

## **TERM 3**

## **AUGUST 2023**

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| **LEARNER SURNAME & NAME** | **:** |  |
| **SUBJECT** | **:** | **MATHEMATICS** |
| **GRADE** | **:** | **9\_\_\_** |
| **TASK** | **:** | **Term 3 Project** |
| **MARKS** | **:** | **50** |
| **DURATION** | **:** | **5 days** |

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| **Stages** | **1** | **2** | **3** | **Total** |
| **Topic** | **Cartesian Plane** | **Graphs** | **Poster: Graphs** |  |
| **Total Mark** | 5 | 17 | 28 | 50 |
| **Learner Mark** |  |  |  |  |
| **Moderated**  **Mark** |  |  |  |  |

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| Examiner / Assessor | P. Sadiki (PLC Administrator) |
| Project Requirements / Support / Moderator | Mawila / Oosthuizen (Facilitators / SES) |
| Additional Inputs / Editing / Discussion | JW (D12) Senior Phase Educators |

**4**

**Project Title: Straight-line Graphs**

**Term 3 Grade 9 Topic in the form of a Poster**

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| **Instructions to the learner**  1. Read all the instructions carefully.  2. All stages are compulsory.  3. This is a fill in paper, Answer stages 1 - 2 on the spaces provided. Follow the instructions on stage 3 carefully on how to answer that stage.  4. All working must be shown.  5. The attached rubric will be used to mark stage 3 only.  6. The project is out of 50 marks.  7. The project duration is 1- 2 weeks.  8. The teacher will lead you through the stages by explaining what is required of you in each stage.  9. Approved scientific calculators (non-programmable and non-graphical) may be used. |

**Stage 1: Cartesian Plane**

**INFORMATION:** A Cartesian Plane is used for sketching Graphs as well as to perform transformations.

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| 1.1 | Describe the features of a Cartesian Plane in terms of its axes, the direction of the axes and its centre.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (5) |
| **[5]** | | |

**Stage 2: Graphs**

**INFORMATION:** In this stage you find typical questions that a grade 9 learner needs to master **Graphs**. Answer the questions correctly.



**INFORMATION:** There are two sub-Topics that a grade 9 learner needs to master when graphs are taught. A grade 9 learner needs to know how to interpret graphs as well as how to draw graphs.



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| Topic Terminology | | | |
| 2.1 | The Topic Graphs is one of the topics you have learned about in Term 3 Grade 9 Mathematics. Explain to your classmate what Graphs are.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | (1) |
| 2.2 | Different types of Data (Information) is represented using Graphs, this information can be ‘Discrete’ or ‘Continuous’. | |  |
|  | 2.2.1 | Define the term ‘Discrete Data’  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2) |
|  | 2.2.2 | Define the term ‘Continuous Data’  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2) |

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| Drawing and Interpreting Graphs. | | | |
| 2.3 | Given the table below, use the table to answer the questions that follow.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | | |  |
|  | 2.3.1 | Plot the information from the above table on the Cartesian Plane below and join the points with a ruler to form a straight-line graph.  Coordinate Plane Grid | (2) |

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|  | 2.3.2 | Identify the co-ordinates of the -intercept and the -intercept from the above table or graph.  -intercept:  -intercept: | (2) |
|  | 2.3.3 | Use any two points on your graph to calculate the value of the gradient.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (3) |
|  | 2.3.4 | Determine the equation of the line passing through the points represented in the table provided in Question 2.3 above.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2) |
|  | 2.3.5 | Is the graph represented above linear or non-Linear? Explain your answer.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2) |
| **[17]** | | | |

**Stage 3: Poster**

**INFORMATION:** At this stage you are going to represent all the information you learned when you were completing stages 2 in the form of a Poster that will be Pasted in your classroom.

**Instructions on Designing a Poster**

1. The poster must be on an A3 page or a bigger page.
2. The Goal of the poster is to educate and inform your peers about Graphs (Stage 2) topic in this project.
3. Define key terms related to straight line graphs, such as the slope, intercept, equation, and gradient.
4. Plot the graph from stage 2 on a Cartesian plane.
5. On the same set of axes plot a second graph of your choice using your own coordinates.
6. Label axes with appropriate scales and units.
7. Label the following on the graphs: the equation of the graphs, the intercepts, and the slope of the graph. Use different colors to show the different graphs and the aspects on your graphs to distinguish between graphs.
8. Include a brief explanation for each graph, highlighting the significance of its slope and intercepts.
9. The poster must be creative (Use colour and interesting layout).
10. Information from stage 2 (Graphs) must be displayed in an appealing way on the poster.

**MARKING RUBRIC**

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| **Criteria** | **Good (4)** | **Satisfactory (3)** | **Basic (2)** | **Poor (1)** |
| **Content Knowledge** | | | | |
| Clear explanation of concepts of straight-line graphs | Clear, accurate definitions and explanations of key terms and concepts. | Definitions and explanations are mostly accurate and clear. | Definitions and explanations are present but may lack clarity or accuracy. | Key terms and concepts are missing or inaccurately defined. |
| **Application of Concepts** | | | | |
| Accurate construction and plotting of the graphs. | Points accurately plotted on the cartesian plane and joined using a straight line. Graphs are drawn on the same set of axes. | Points accurately plotted on the cartesian plane and joined using a straight line. Only a single graph is drawn/graphs drawn on separate axes. | Some points accurately plotted on the cartesian plane and joined using a straight line. Only a single graph is drawn/graphs drawn on separate axes. | Points inaccurately plotted on the cartesian plane and are not joined using a straight line. Only a single graph is drawn. |
| Accurate representation of the graphs and information on the graphs | Accurately illustrates properties of straight-line graphs with relevant and correct labels. Clear explanations of the properties of each graph drawn provided. | Illustrates properties of straight-line graphs with a few correct labels. Explanations of the properties of the graphs drawn provided. | Labels are partially provided/incorrectly provided, thus do not correctly illustrate properties of straight-line graphs.  Describes some properties of the graphs drawn. | No mention of properties and graphs are not labelled. |
| **Creativity and Presentation** | | | | |
| Originality of design and Layout | Poster is compiled on an A3 page or bigger. Intricately designed poster with an appealing layout demonstrating a deep understanding of concepts. | Poster compiled on an A3 page or bigger. Well-designed poster, with a presentable layout showing an understanding of concepts. | Poster compiled on an A3 page or bigger. Poster is present with some understanding of concepts. Layout could do with some work. | Poster compiled on a page that is smaller than an A3 page. Poster is basic, layout is untidy and lacks clear understanding of concepts. |
| Effective use of visuals and colours | Poster was creatively designed with correct graphs, and colour was used to distinguish between the graphs and aspects of the graphs and highlight important concepts. | Poster was designed with correct graphs, and colour was used to distinguish between the graphs and aspects of the graphs. | Average attempt was made in making the poster with some correct graphs, and limited colour used to distinguish between the graphs and aspects of the graphs. | Little attempt in making the poster creative, graphs are incorrect and or no colour is used to distinguish between the graphs and aspects of the graphs. |
| **Overall Quality** |  |  |  |  |
| Grammar, spelling, and organization | Poster is neatly and logically organised, using appropriate headings, subheadings and labels. There are no spelling and grammatical errors. | Poster is neat and reasonably organised, using appropriate headings, subheadings and labels. There are no spelling and grammatical errors. | Poster is neatly organised, limited headings, subheadings and labels used. There are some spelling and grammatical errors. | Poster is not neatly or logically organised, there is no use of headings, subheadings and labels. There are spelling and grammatical errors. |
| Overall clarity and coherence | Educational poster designed with a focused Goal and the information is clearly communicated. | Educational poster designed with a focused Goal, but the information is not clearly communicated. | Poster educates learners but some information does not make sense. | Poster does not have a clear educational goal, information is incorrect. |
| **Total Marks** | **28** | **21** | **14** | **7** |
| **Learner Marks** |  |  |  |  |

**[28]**

**Total Marks = 50**