

## GAUTENG DEPARTMENT OF EDUCATION

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| **LEARNER’S NAME & SURNAME** | **:** |  |
| **SUBJECT** | **:** | **MATHEMATICS** |
| **GRADE** | **:** | **9** |
| **TASK** | **:** | **Term 3 Project** |
| **MARKS** | **:** | **50** |
| **DURATION** | **:** | **1 - 2 Weeks** |

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| **Stages** | **1** | **2** | **3** | **4** | **Total** |
| **Topic** | Cartesian Plane | Graphs | Transformation Geometry | Poster: Graphs or Transformation Geometry |  |
| **Total Mark** | 6 | 12 | 12 | 10 | 50 |
| **Learner Mark** |  |  |  |  |  |

**4**

**Project Introduction**



In the past decade Grade 9 Mathematics has been characterised by underperformance. There are various reasons as to why learners are not doing well in their Grade 9 Mathematics results of which one of those reasons is Mathematics classrooms which do not Inspire learning.



You are therefore challenged to take part in this project in an attempt to change your classroom environment into one that will be conducive to the teaching and learning of Mathematics.



Well at this stage you might be asking yourself How? By analysing one of the Term 3 topics in the form of a Poster that will be Pasted on the wall of your classroom! Do not worry you will be guided every step of the Way.

**Project Title:**

**Analysing a 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 - 3 on the spaces provided. Follow the instructions on stage 4 carefully on how to answer that stage.  4. All working must be shown.  5. The attached rubric will be used to mark stage 4 only.  6. The project is out of 50 marks.  7. The project duration is 1 week.  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.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (6) |
| **[6]** | | |

**Stage 2: Graphs**

**INFORMATION:** In this stage you find typical questions that a grade 9 learner needs to master when **Graphs** are taught. 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. In your own words, how would you 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 -intercept and the -intercept from the above table or graph.  -intercept:  -intercept: | (2) |
|  | 2.3.3 | Use any two points on your graph to determine the value of the gradient.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (4) |
|  | 2.3.4 | Determine the equation of the line passing through the points given in **3.1** above.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2) |
|  | 2.3.5 | Is the graph represented above linear or non-Linear? Explain your answer.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2) |
| **[17]** | | | |

**Stage 3: Transformation Geometry**

**INFORMATION:** In this part you find typical questions that a grade 9 learner needs to master when **Transformations** are taught.



**INFORMATION:** Grade 9 learners be able to perform transformations of given points or figures on a Cartesian plane as well as to identify performed transformations of figures 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 | | | |
| 3.1 | The Topic Transformation Geometry is also one of the topics you have learned about in Term 3 Grade 9 Mathematics. In your own words, how would you explain to your classmate what Transformations are?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | (1) |
| 3.2 | There are 4 types of Transformations that are performed in grade 9 namely, Reflection, Rotation, Translation and Enlargements or Reductions but this year the focus was only on Reflections and Translations. The following words are common English words that can be used to describe Transformations:  **Resize; Slide; Turn; Flip.** | |  |
|  | 3.2.1 | Which word given above describes a Translation?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (1) |
|  | 3.2.2 | Which word given above describes a Reflection?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (1) |

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| Recognise, Describe and Perform Transformations. | | | |
| 3.3 | Chart, line chart  Description automatically generated | |  |
|  | 3.3.1 | Figure above is reflected across the **y-axis**. Draw the reflected figure on the same set of axes as the original and label the corresponding vertices as . | (4) |
|  | 3.3.2 | Figure above is reflected across the **x-axis**. Draw the reflected figure on the same set of axes as the original and label the corresponding vertices as . | (4) |

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| 3.4 | Refer to the diagram below which shows two houses, Nomsa’s house and Liam’s house. Nomsa goes to visit Liam and she leaves from Point A outside her house to Point C outside Liam’s house.  Diagram  Description automatically generated | |  |
|  | 3.4.1 | Determine the coordinates (ordered pair) of point A.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (1) |
|  | 3.4.2 | Describe the vertical and horizontal movements made from point A to point C in terms of direction and number of units for each coordinate.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (4) |
|  | 3.4.3 | Identify the type of transformation performed in 4.4 above.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (1) |
| **[17]** | | | |

**Stage 4: Poster**

**INFORMATION:** At this stage you are going to represent all the information you learned when you were completing stages 2 to 3 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 A2 page (4 normal pages put together) or a bigger page.
2. The Goal of the poster is to educate and inform your peers about **one** of the topics in this project namely Graphs (stage 2) or Transformation Geometry (stage 3).
3. The poster must be creative (Use colour, diagrams and interesting layout).
4. Information from stage 2 or stage 3 (Graphs or Transformation Geometry) must be displayed in an appealing way on the poster.

**MARKING RUBRIC**

The poster must be on an A2 page (4 normal pages put together) or a bigger page.

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| **0** | **1** | **2** | **MARKS** |
| **Poster was not compiled.** | **Poster created on a compiled smaller than an A3, A4 or smaller.** | **Poster compiled on an A2 page or bigger.** |  |

The Goal of the poster is to educate and inform your peers about the Topic you chose.

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| **1** | **2** | **4** | **MARKS** |
| **Poster does not have a clear educational goal.** | **Poster educates learners but some information does make sense.** | **Educational poster designed with a focused Goal, information is clearly communicated and sensible.** |  |

Creativity

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| **1** | **2** | **4** | **MARKS** |
| **little attempt in making the poster creative with diagrams, appealing layout, and colour.** | **Average attempt was made in making the poster creative with diagrams, appealing layout, and colour.** | **Poster was creatively designed with great diagrams, appealing layout, and colour.** |  |

**[10]**