

## GAUTENG DEPARTMENT OF EDUCATION

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| **Memorandum** | | |
| **SUBJECT** | **:** | **MATHEMATICS** |
| **GRADE** | **:** | **9** |
| **TASK** | **:** | **Term 3 Project** |
| **MARKS** | **:** | **50** |
| **DURATION** | **:** | **1 - 2 Week** |

Educator Information.

To maximise the success of this Project, learners need to be guided on the processes to follow as well as referred to using the DBE workbooks, Sasol Inzalo books and the Textbook. Learners need to have these resources handy and complete Stages 1 to 3. The educator needs to retrieve the Project after learners have completed the initial stages mark the work and give learners feedback. There after learners will complete Stage 4 using correct information from the given Feedback.

**4**

**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.  **The cartesian plane is a set of two number lines. One drawn vertically (stretches up and down)🗸A and named the y-axis🗸A. The other is drawn horizontally (stretches from the left to the right)🗸A and named the x-axis🗸A. These two lines intersect one another at zero🗸A and are perpendicular at the point of intersection which is called the origin🗸A.** | 1 mark for x-axis  1 mark for direction of x-axis  1 mark for y-axis  1 mark for direction of y-axis  1 mark for origin  1 mark for origin being zero  (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?  **A diagram showing the relationship between different quantities. 🗸A**  **Or**  **A diagram that shows how different types of information are related. 🗸A** | | 1 mark for a definition that can be interpreted as diagram representing a relationship between quantities.  (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’  **Numerical or quantitative data that can be counted🗸A and only takes the form of specific values. 🗸A** | 1 mark for numerical or data that can be counted.  1 mark for specific values.  (2) |
|  | 2.2.2 | Define the term ‘Continuous Data’  **Data that can be measured🗸A and takes the form of any value.🗸A** | 1 mark for data that is measured.  1 mark for data takes up any value.  (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.  Chart, line chart  Description automatically generated  **🗸M 1 mark for plotting all the points correctly**  **🗸CA 1 mark for joining all the points to form a straight-line** | (2) |

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|  | 2.3.2 | Identify the -intercept and the -intercept from the above table or graph.  -intercept: **🗸A**  -intercept: **🗸A** | 1 mark for x-intercept  1 mark for y intercept  (2) |
|  | 2.3.3 | Use any two points on your graph to determine the value of the gradient. | 1 mark for method in the numerator  1 mark for method in denominator  1 mark for simplifying  1 mark for answer  (4) |
|  | 2.3.4 | Determine the equation of the line passing through the points given in **2.3** above. | 1 mark for gradient multiplied *x*  1 mark for adding 6  (2) |
|  | 2.3.5 | Is the graph represented above linear or non-Linear? Explain your answer.  **Linear🗸A because it is a graph of a straight line**.**🗸A** | 1 mark for Linear  1 mark for reason  (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?  **Moving or Changing a shape, point or any figure on a cartesian plane by flipping, turning, sliding, or resizing**..**🗸A** | | 1 mark for saying moving or changing a on a cartesian plane.  (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?  **Slide**.**🗸A** | (1) |
|  | 3.2.2 | Which word given above describes a Reflection?  **Flip** .**🗸A** | (1) |

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| Recognise, Describe and Perform Transformations. | | | |
| 3.3 | Chart, radar 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 .  **1 mark for each vertex reflected correctly across the y-axis** | (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 .  **1 mark for each vertex reflected correctly across the x-axis** | (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 mark for the x and y coordinate represented in coordinate form.  (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.  From the x-coordinate of point A, move 3 units to the right and from the y-coordinate of point A move 4 units downwards.  Or  Or | | 1 mark for to the right or (+)  1 mark for downwards or (-)  1 mark for 3 units  1 mark for 4 units  Award 2 marks if learner wrote coordinates of C only.  (4) | |
|  | 3.4.3 | Identify the type of transformation performed in 4.4 above.  Translation | 1 mark for the answer.  (1) | | |
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**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 compiled on a page that is smaller than an A2 page.** | **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 not 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]**