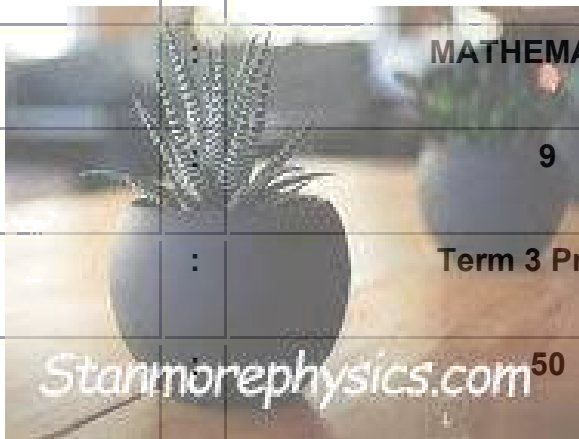


School logo



Stanmorephysics.com<sup>50</sup>

<b>LEARNER'S NAME &amp; SURNAME</b>	:	
<b>SUBJECT</b>	:	<b>MATHEMATICS</b>
<b>GRADE</b>	:	<b>9</b>
<b>TASK</b>	:	<b>Term 3 Project</b>
<b>MARKS</b>	:	<b>50</b>
<b>DURATION</b>	:	<b>1 - 2 Weeks</b>

Stages	1	2	3	4	Total
<b>Topic</b>	Cartesian Plane	Graphs	Patterns	Poster: Graphs or patterns	
<b>Total Mark</b>	6	17	17	10	50
<b>Learner Mark</b>					



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

**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- 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.



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

1.1	Describe the features of a Cartesian Plane in terms of its axes, the direction of the axes and its centre.  _____ _____ _____ _____ _____ _____	(6)
		<b>[6]</b>



**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.



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)



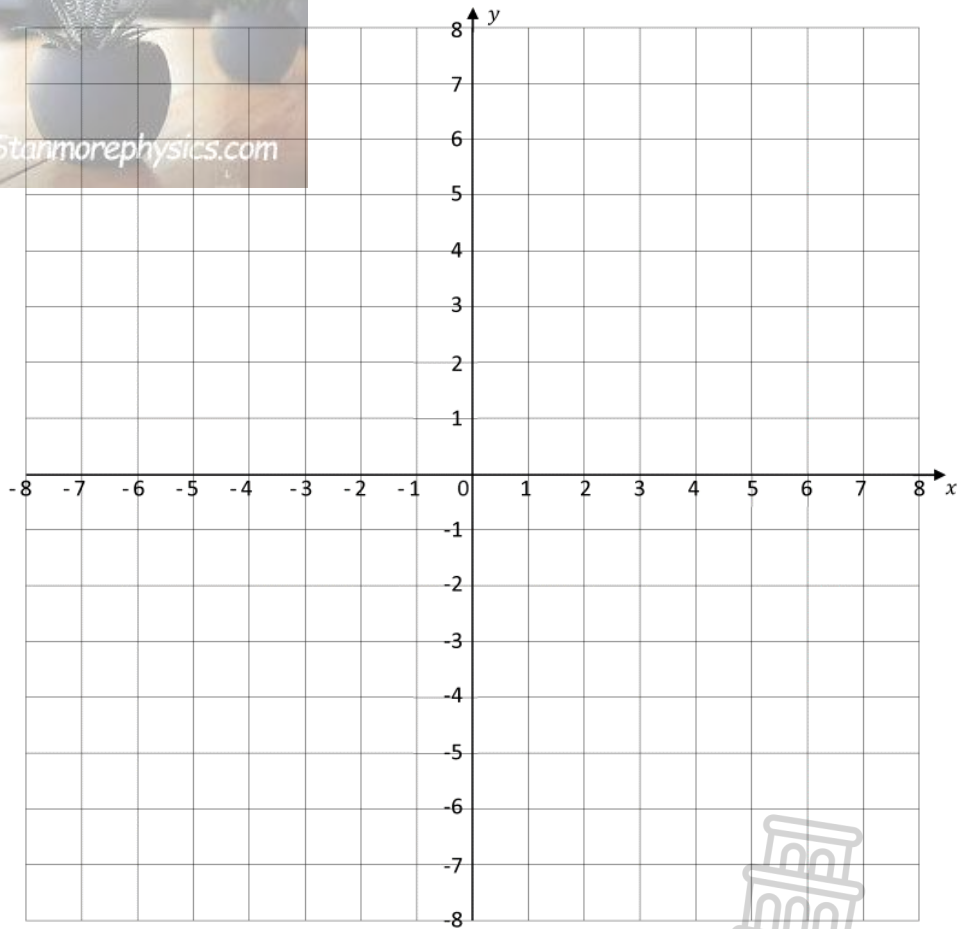
2.3

Given the table below, use the table to answer the questions that follow.

$x$	-1	0	1	2	3	4
$y$	8	6	4	2	0	-2

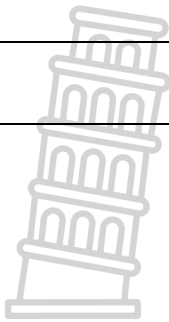
2.3.1

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.



(2)

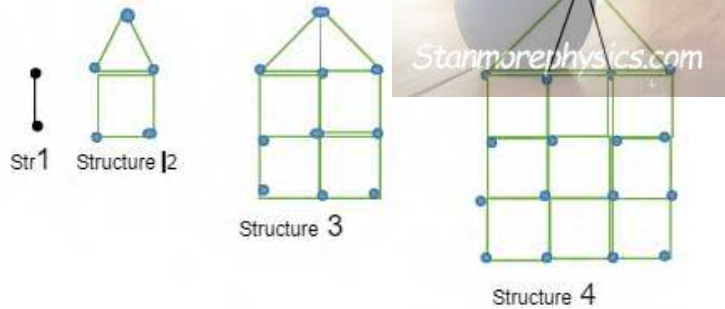
		<p>Identify the <math>x</math>-intercept and the <math>y</math>-intercept from the above table or graph.</p> <p><math>x</math>-intercept: <math>x =</math> _____</p> <p><math>y</math>-intercept: <math>y =</math> _____</p>	(2)
2.3.3		<p>Use any two points on your graph to determine the value of the gradient.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	(4)
2.3.4		<p>Determine the equation of the line passing through the points represented in the table provided in Question 2.3 above.</p> <p>_____</p> <p>_____</p>	(2)
2.3.5		<p>Is the graph represented above linear or non-Linear? Explain your answer.</p> <p>_____</p>	(2)
			<b>[17]</b>





Stage 2: [Downloaded from Stanmorephysics.com](http://Stanmorephysics.com)

You are considering the different patterns and structures of houses and considering the number people and resources that will be needed. The squares represent the number families that can be housed and the dots represents the amount of material that can be used to build each structure

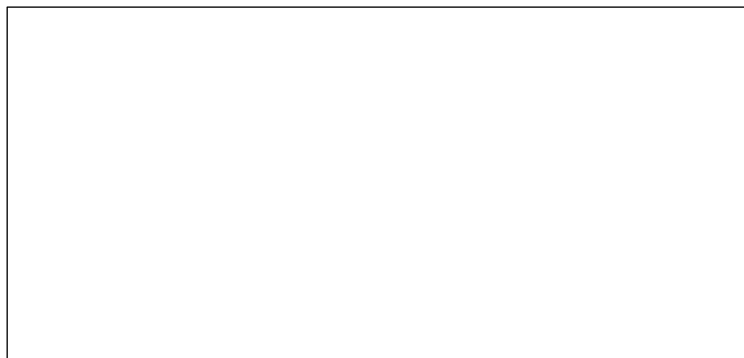


2.1. Count the material to be used in each structure.

- a) Structure 1 - \_\_\_\_\_
- b) Structure 2 - \_\_\_\_\_
- c) Structure 3 - \_\_\_\_\_
- d) Structure 4 - \_\_\_\_\_

[4]

2.2. What will the structure 5 look like. Draw it below.



[2]

Structure 5

2.3. Count the number of dots in Structure 5 : \_\_\_\_\_

[1]

2.4 How much material/dots will you need to house 25 families? \_\_\_\_\_

[1]

2.5. How many dots/material are there in Structure 6? \_\_\_\_\_

[1]

2.6. Describe the pattern from structure 1 to Structure 4.

\_\_\_\_\_

[2]

2.7. Determine the general rule to find the number of dots in the nth Structure.

[2]



2.8. Use the rule to calculate many dots are there in the 50 structure? Show calculations.

[2]


2.9. From the structures above. Which structure will you use and why? Present your answer basing it on your answers above.

[2]

[Total : 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 A3 page 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 (stage 3) patterns.
3. The poster must be creative (Use colour, diagrams and interesting layout).
4. Information from stage 2 or stage 3 (Graphs or patterns) must be displayed in an appealing way on the poster.

**MARKING RUBRIC**

The poster must be on an A3 page or a bigger page.

0	1	2	MARKS
Poster was not compiled.	Poster compiled on a page that is smaller than an A3 page.	Poster compiled on an A3 page or bigger.	

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

1	2	3	4	MARKS
Poster does not have a clear educational goal, information is incorrect.	Poster educates learners but some information does <b>not</b> make sense, there are many mistakes and errors.	Educational poster designed with a focused Goal, but the information is not clearly communicated and there are a few errors and mistakes.	Educational poster designed with a focused Goal, information is clearly communicated and correct.	

Creativity

1	2	3	4	MARKS
Little attempt in making the poster creative, layout is untidy, diagrams are incorrect and or no colour is used.	Average attempt was made in making the poster presentable with some correct diagrams, and colour.	Poster was designed with correct diagrams, presentable layout, and colour.	Poster was creatively designed with correct diagrams, appealing layout, and colour.	

[10]



# GAUTENG PROVINCE

EDUCATION  
REPUBLIC OF SOUTH AFRICA

## GAUTENG DEPARTMENT OF EDUCATION


### Memorandum

<b>SUBJECT</b>	:	<b>MATHEMATICS</b>
<b>GRADE</b>	:	<b>9</b>
<b>TASK</b>	:	<b>Term 3 Project</b>
<b>MARKS</b>	:	<b>50</b>
<b>DURATION</b>	:	<b>1 - 2 Week</b>

### 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.

Stage 1: Cartesian Plane

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

1.1	<p>Describe the features of a Cartesian Plane in terms of its axes, the direction of the axes and its centre.</p> <p><b><u>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.</u></b></p>	<p>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</p> <p>(6)</p>
	<p>[6]</p>	



## 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.

Topic Terminology		
2.1	<p>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?</p> <p><b>A diagram showing the relationship between different quantities. ✓A</b></p> <p>Or</p> <p><b>A diagram that shows how different types of information are related. ✓A</b></p>	<p>1 mark for a definition that can be interpreted as diagram representing a relationship between quantities.</p> <p>(1)</p>
2.2	<p>Different types of Data (Information) is represented using Graphs, this information can be 'Discrete' or 'Continuous'.</p>	
2.2.1	<p>Define the term 'Discrete Data'</p> <p><b><u>Numerical or quantitative data that can be counted ✓A and only takes the form of specific values. ✓A</u></b></p>	<p>1 mark for numerical or data that can be counted.</p> <p>1 mark for specific values.</p> <p>(2)</p>
2.2.2	<p>Define the term 'Continuous Data'</p> <p><b><u>Data that can be measured ✓A and takes the form of any value. ✓A</u></b></p>	<p>1 mark for data that is measured.</p> <p>1 mark for data takes up any value.</p> <p>(2)</p>

Drawing and Interpreting Graphs.

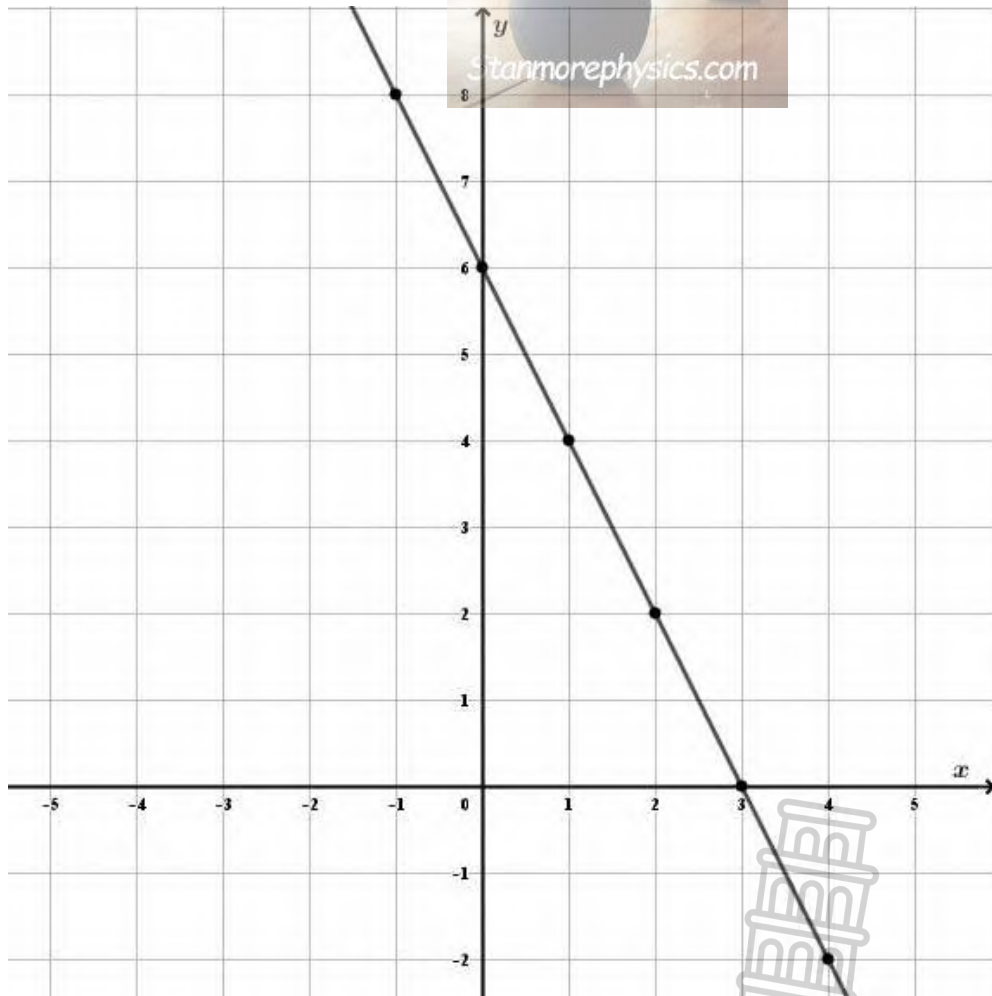
2.3

Given the table below, use the table to answer the questions that follow.

$x$	-1	0	1	2	3	4
$y$	8	6	4	2	0	-2

2.3.1

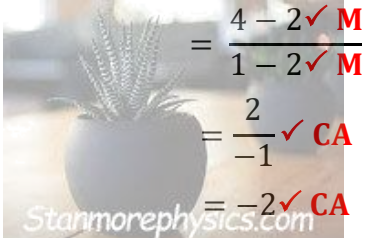
Plot the information from the above table on the Cartesian Plane below and join the points with a ruler to form a straight-line graph.



✓M 1 mark for plotting all the points correctly

✓CA 1 mark for joining all the points to form a straight-line

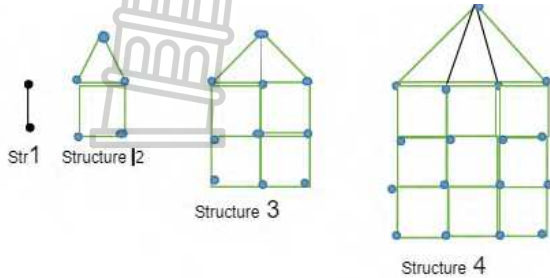
(2)

2.3.2	Identify the $x$ -intercept and the $y$ -intercept from the above table or graph.  $x$ -intercept: $x = 3$ ✓A  $y$ -intercept: $y = 6$ ✓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.  $\text{gradient} = \frac{\text{vertical change}}{\text{horizontal change}}$ 	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 3.1 above.  $y = -2x + 6$ ✓✓CA	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.  <u>Linear</u> ✓A because it is a graph of a straight line. ✓A	1 mark for Linear 1 mark for reason  (2)
[17]		

Stage 3: Patterns

**QUESTION 2**

You are considering the different patterns and structures of houses and considering the number people and resources that will be needed. The squares represent the number families that can be housed and the dots represents the amount of material that can be used to build each structure

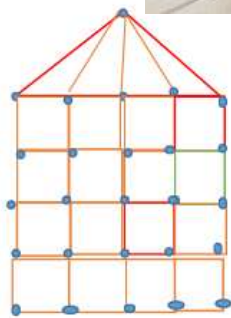


2.1. Count the material to be used in each structure

- a) Structure 1 – 2 dots ✓
- b) Structure 2 – 5 dots ✓
- c) Structure 3 – 10 dots ✓
- d) Structure 4 – 17 Dots ✓

[4]

2.2. What will the structure 5 look like. Draw below



Structure 5

✓✓ [2]

2.3. Count the number of dots in Structure 5 \_\_\_\_\_

26 dots.

[1]

2.4 How much material/dots will you need to house 25 families?

37 dots

[1]

2.5. How many dots/material are there in Structure 6?

50 dots. [1]

2.6. Describe the pattern from structure 1 to Structure 4.

Square the position of the structure and add 1 dot

[2]

2.7. Determine the general rule to find the number of dots in the nth Structure.

$$T_n = n^2 + 1$$

[2]

2.8. Use the rule to calculate many dots are there in the 50<sup>th</sup> Structure? Show calculations.

$$\begin{aligned} T_{50} &= 50^2 + 1 \\ &= 2501 \end{aligned}$$

[2]


2.9. From the structures above. Which structure will you use and why? Present your answer basing it on your answers above.

I will use the structure that houses a lot of families on a small space like structure 4 and 5 [2]

[17]



### Stage 4: Poster

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[10]