School logo

|  |  |  |
| --- | --- | --- |
| **PROJECT** | | |
| **SUBJECT** | **:** | **MATHEMATICS** |
| **GRADE** | **:** | **8** |
| **TASK** | **:** | **Term 3 Project** |
| **MARKS** | **:** | **60** |
| **DURATION** | **:** | **5 Days** |

**NAME OF LEARNER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GRADE 8: \_\_\_**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Question number** | **1** | **2** | **3** | **Total** |
| **Total marks** | **20** | **20** | **20** | **60** |
| **Learner marks** |  |  |  |  |
| **Moderated marks** |  |  |  |  |



**MATHEMATICS**

**GRADE 9**

**TERM 3 2021**

**EXEMPLAR PROJECT**

**TRANSFORMATION GEOMETRY**

**TRANSFORMATION GEOMETRY**

**DATE: TERM 3 2021**

**TIME: 3 HOURS**

**TOTAL: 50**

**NAME OF LEARNER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GRADE 9: \_\_\_**

**STREET DESIGN PROJECT**

|  |  |
| --- | --- |
| **TIME:** | 3 hours |
| **TARGET AUDIENCE:** | Grade 8 learners |
| **REQUIRED PREVIOUS KNOWLEDGE:** | Identify and describe lines.  Identify and find angles.  Draw, Identify and classify 2d shapes. |
| **REQUIRED MATERIALS:** | Rulers, A3 paper, pencils, colour pens or pencils, protractor. |

Learners will demonstrate their knowledge of parallel lines with a transversal.

**STREET DESIGN PROJECT**

For this project, each learner will make his or her own map for a fictional residential area. This residential area will consist of parallel lines, perpendicular lines, transversals, diagrams constructed from 2d shapes, trees and plants.

There are three sections to the project:

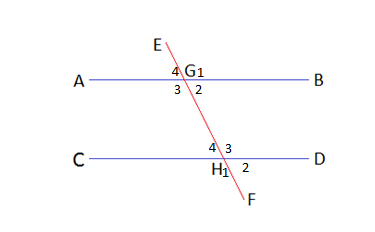
1. Section A is a teacher guided activity on Straight line geometry. This section is marked using a memorandum.
2. Section B is a teacher guided activity on Geometry of 2D shapes. This section is marked using a memorandum.
3. Section C is an individual learner activity and is marked using a rubric.

**Section A**

**This section consists of questions on Straight line geometry.**

**THIS IS A TEACHER GUIDED SECTION**

1. **Three lines are drawn in the diagram below. Study the diagram and then answer the questions that follow.**

****

* 1. **What is the relationship between the lines AB and CD? Provide a reason for your answer.**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(2)**

* 1. **What is the name given to line EF?**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(1)**

* 1. **Name the types of angles formed when a transversal intersects two parallel lines.**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(3)**

* 1. **Use your protractor to measure each of the angles in the given pairs of angles from the above diagram and then indicate the relationship between the two angles in each pair.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Pair number** | **Angle 1** | **Angle 1 measure** | **Angle 2** | **Angle 2 measure** | **What is the relationship between the two angles?** | **What is the name given to angle pair?** |
| **1** |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |

**(14)**

**[TOTAL 20]**

**Section B**

**This section consists of questions on Geometry of 2D shapes.**

**THIS IS A TEACHER GUIDED SECTION**

**STEP ONE**

For each diagram:

1. plot the given co -ordinates on the grid provided
2. join the points to create a known quadrilateral
3. colour in your diagram as per colour indicated
4. answer the questions on the quadrilateral.

EXAMPLE:

|  |  |
| --- | --- |
| **EXAMPLE** | |
| **NAME OF POINT** | **COORDINATES**  **( x, y )** |
| **A** | **(1,4)** |
| **B** | **(5,4)** |
| **C** | **(5,0)** |
| **D** | **(1,0)** |

Chart, histogram

Description automatically generated

Colour in the quadrilateral black.

Identify quadrilateral ABCD.

|  |
| --- |
| ABCD is a square. |

Use the diagram that you drew to provide reasons for your answer.

|  |
| --- |
| 1. All 4 sides are equal |
| 1. Two pairs of Opposite sides are parallel |
| 1. All 4 interior angles are equal to 900 |

DIAGRAM ONE

The co - ordinates for this quadrilateral must be provided by the educator.

|  |  |
| --- | --- |
| **NAME OF POINT** | **COORDINATES**  **( x, y )** |
| **E** | **(3;6)** |
| **F** | **(9;6)** |
| **G** | **(9;2)** |
| **H** | **(3;2)** |

Chart, line chart

Description automatically generated

**H**

**E**

**F**

**G**

**F**

Identify quadrilateral EFGH.

|  |
| --- |
| (1) |

Use the diagram given above to provide reasons for your answer.

|  |
| --- |
|  |
|  |
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|  |
|  |
|  |
| (3) |

DIAGRAM TWO

The co - ordinates for this quadrilateral must be provided by the educator.

|  |  |
| --- | --- |
| **NAME OF POINT** | **COORDINATES**  **( x, y )** |
| **I** | **(4;7)** |
| **J** | **(8;7)** |
| **K** | **(9;3)** |
| **L** | **(2;3)** |

Chart, line chart

Description automatically generated

I

K

J

L

Identify quadrilateral IJKL.

|  |
| --- |
| (1) |

Use the diagram given above to provide reasons for your answer.

|  |
| --- |
|  |
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|  |
| (3) |

DIAGRAM THREE

|  |  |
| --- | --- |
| **NAME OF POINT** | **COORDINATES**  **( x, y )** |
| **M** | **(5;6)** |
| **N** | **(9;6)** |
| **O** | **(7;2)** |
| **P** | **(3;2)** |

Chart, line chart

Description automatically generated

**M**

**P**

**N**

**O**

Identify quadrilateral MNOP.

|  |
| --- |
| (1) |

Use the diagram given above to provide reasons for your answer.

|  |
| --- |
|  |
|  |
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|  |
|  |
| (3) |

DIAGRAM FOUR

|  |  |
| --- | --- |
| **NAME OF POINT** | **COORDINATES**  **( x, y )** |
| **Q** | **(5;8)** |
| **R** | **(8;9)** |
| **S** | **(8;6)** |
| **T** | **(3;2)** |

Chart, line chart

Description automatically generated

**Q**

**S**

**T**

**R**

Identify quadrilateral QRST.

|  |
| --- |
| (1) |

Use the diagram given above to provide reasons for your answer.

|  |
| --- |
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|  |
| (3) |

DIAGRAM FIVE

|  |  |
| --- | --- |
| **NAME OF POINT** | **COORDINATES**  **( x, y )** |
| **U** | **(3;5)** |
| **V** | **(8;5)** |
| **W** | **(7;2)** |
| **X** | **(2;2)** |

Chart, line chart

Description automatically generated

**W**

**V**

**U**

**X**

Identify quadrilateral UVWX.

|  |
| --- |
| (1) |

Use the diagram given above to provide reasons for your answer.

|  |
| --- |
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|  |
|  |
| (3) |

**[TOTAL 20]**

**Section C**

**INSTRUCTIONS**

1. **Appearance**

* **The project must be done on A3 paper.**
* **It must be drawn neatly and in colour.**
* **Neatly print your name in the top right corner of the project.**
* **You may add detail as long as it does not interfere with the requirements or the appearance of the map.**
* **Make use of the different 2d shapes that you have learnt about to construct the buildings.**
* **Remember to be creative.**
* **Your project must be unique to you.**

1. **Drawing the Streets**

* **At the top left corner of the poster, indicate the name of your residential area and indicate the number of houses in the residential area.**
* **Draw three (3) streets that are parallel to each other. Each street should be named for reference.**
* **Draw Two (2) transversal streets. (i.e., Two streets that intersect all three of the above parallel streets). These should be named as well. Do *not* make the transversals parallel to each other!!!**
* **Draw Traffic lights or stop signs at four (4) different intersections.**

1. **Adding the Buildings**
2. **Your map must include the following buildings.**
3. **Spaza shop**
4. **School**
5. **Post office**
6. **Police station**
7. **Bank**
8. **Library**

**c. Petrol station**

**d. Your own house**

**e. Place of prayer (Church, Temple, Mosque, etc)**

1. **Ensure that your buildings are drawn according to the type of quadrilaterals and 2D shapes that you have learnt about.**
2. **Appropriate building names must be placed on “signs” on or near the building.**
3. **Location of the Buildings**

**The buildings must be placed in the following locations.**

**1. Your house and the school at alternate angles.**

**2. The post office and the bank at co - interior angles.**

**3. The Church and police station at corresponding angles.**

**4. The library and post office at *vertically* opposite angles.**

**5. The Petrol station and Spaza shop at supplementary angles.**

**6. The Place of prayer and Your house at corresponding angles.**

1. **Including a Park**

**In the lower left corner of your residential map, you will create a park.**

**The park must meet the following criteria:**

* + **The park is a square (side = 10cm)**
  + **Within this square draw a round sandbox with a 4cm diameter.**
  + **Draw a rectangular swimming pool that has a length of 4cm and breadth of 2cm.**
  + **Draw a pond with a radius of 2cm.**
  + **Finally, draw a right scalene triangle for the picnic area.**

1. **Additions**

* **You must add 5 (five) other items to your map.**
* **Some possibilities are, slide and swings for the park, picnic tables in the picnic area of your park, extra roads, people, trees/plants, cars and trucks on the roads, traffic signs, a railroad, a bus station, a river, etc**

**(20)**

**Well done! … you're reached the end!**

**Total : 60**