**MATHEMATICS INVESTIGATION**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­**

**GRADE: 09\_\_ MARKS: 40**

**SUBMISSION DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**TOPIC: QUADRILATERAL**

For this investigation, work in groups of five. Each member of the group must choose one quadrilateral from the given and investigate its special properties

**PART 1**

INSTRUCTIONS

* 1. Measure the sides and interior angles of the quadrilateral (4)
  2. Identify any pairs of sides that are parallel and indicate them in the diagram with relevant symbols (2)

(Paste the quadrilateral that you have chosen in the table below. Measure its sides and interior angles)

|  |  |  |  |
| --- | --- | --- | --- |
| **Diagram** | **Name of the Quadrilateral** | **Length of Side** | **Size of Angle** |
|  |  | AB= \_\_\_\_\_\_\_cm  BC= \_\_\_\_\_\_\_cm  CD= \_\_\_\_\_\_\_cm  AD= \_\_\_\_\_\_\_cm | ˂ A=\_\_\_\_\_\_\_  < B=\_\_\_\_\_\_\_  < C=\_\_\_\_\_\_\_  < D=\_\_\_\_\_\_\_ |

* 1. Calculate the sun of interior angle of the quadrilateral. (2)

Sum of interior angles = \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_ = **\_\_\_\_\_\_\_\_\_**

* 1. Draw the diagonals, measure the lengths and angles between them of the quadrilateral that you have chosen.

(Show all these measurements in the diagram of the quadrilateral that you have chosen in the table above) (8)

* 1. As a group, discuss your findings and use them to complete the table provided. (10)

\* Each column counts only 2marks more than one mistake will result with **NO MARKS**

\*The first column has already been completed for you.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Quadrilateral | Square | Parallelogram | Rhombus | Rectangle | Trapezium | Kite |
| Opposite sides equal |  |  |  |  |  |  |
| Adjacent sides equal |  |  |  |  |  |  |
| Interior angles all 90° |  |  |  |  |  |  |
| Opposite angles equal |  |  |  |  |  |  |
| Only one pair of opposite angles equal |  |  |  |  |  |  |
| Opposite sides parallel |  |  |  |  |  |  |
| Only one pair of opposite sides parallel |  |  |  |  |  |  |
| Diagonals bisect |  |  |  |  |  |  |
| Diagonals equal |  |  |  |  |  |  |
| Diagonals perpendicular |  |  |  |  |  |  |

**Part 2**

2. Using your findings, answer the following questions

2.1 Name two quadrilaterals which are special kinds of parallelogram.

(i) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ii) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a special kind of rectangle.

2.3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are parallelograms with all sides equal.

2.4 Write down names of two quadrilateral which their diagonals do not bisect each other.

(i) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ii) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.5 Quadrilateral with diagonals that are perpendicular to each other is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.6 Quadrilaterals with equal diagonals are: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.7 Quadrilateral with only one pair of opposite sides equal is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| A B  D C  **EXAMPLE** | A B  D C |
| A B      D C | A B  D C |
|  | F |