**LEARNING ACTIVITY SHEET IN MATH 9**

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| Name of Learner: | John Russel Jandonero | Score: |  |
| Grade and Section: | Grade 9 TAE | Week & Date: | **Week 2 – April 8, 2021** |

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| **Title of the Topic:** | **Quadrilaterals** | | |
| **Most Essential Learning Competency:** | | **Code:** | **M9GE-IIIa-2**  **M9GE-IIIc-1** |
| * Determines the conditions that make a quadrilateral a parallelogram. * Proves theorems on the different kinds of parallelogram (rectangle, rhombus, square). | | | |
| **I. Concept Notes:** *(Will be in a separate file.)* | | | |
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| **II. Learning Activities:** | | | |
| Learning Activity 1: (15 points)  **1A. Directions:** For each given set of conditions, determine whether the quadrilateral ABCD is a parallelogram. State yes or no. Then explain.    YES, because the Definition of Parallelogram states that opposites sides of a parallelogram are parallel, therefore it is a parallelogram.  NO, DC is not congruent to AD  NO, BC is congruent to AD – Definition of Parallelogram.  YES, Alternate interior angles are congruent.  YES, diagonals bisect each other, therefore BD = BD and AC = AC  **1B. Directions:** Complete the table by putting a check mark (✓) or a cross () on the appropriate spaces.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Parallelogram | Rectangle | Rhombus | Square | | 1. Opposite sides are parallel. | ✔ | ✔ | ✔ | ✔ | | 2. diagonals form congruent triangles. | ✔ | ✔ | ✔ | ✔ | | 3. diagonal are perpendicular. | ❌ | ❌ | ✔ | ✔ | | 4. all angles are right angles. | ❌ | ✔ | ❌ | ✔ | | 5. all sides are congruent | ❌ | ❌ | ✔ | ✔ | | 6. diagonals are perpendicular | ❌ | ❌ | ✔ | ✔ |   **1C. Directions:** Do what is asked.   1. Find the measures of each numbered angle.     34°  56°  56°  °  °   1. Find the value of x that makes the parallelogram the given type.     x = 6.75      ° | | | |
| Learning Activity 2: (25 points)  **2A. Directions:** Construct a two-column proof for each of the following.   1. Given: WHAT and WHEN are parallelograms   Prove:     |  |  |  | | --- | --- | --- | | **STATEMENT** | | **REASON** | | 1 | ▱WHAT & ▱WHEN are parallelograms | Given | | 2 |  | Opposite sides of a parallelogram are congruent | | 3 |  | Opposite sides of a parallelogram are congruent | | 4 |  | Transitive Property of Equality |  1. Given: MNOP and PQRS are parallelograms   Prove:     |  |  |  | | --- | --- | --- | | **STATEMENT** | | **REASON** | | 1 | ▱WHAT & ▱WHEN are parallelograms | Given | | 2 |  | Opposite sides of a parallelogram are congruent | | 3 |  | Opposite sides of a parallelogram are congruent | | 4 |  | Transitive Property of Equality |  1. Prove: Theorem: If both pairs of opposite sides of a quadrilateral are congruent then the quadrilateral is a parallelogram.   Given**:** Proving**:** ABCD is a parallelogram     |  |  |  | | --- | --- | --- | | **STATEMENT** | | **REASON** | | 1 |  | Given | | 2 |  | Reflexive Property | | 3 |  | Side-Side-Side Congruence Postulate | | 4 |  |  |  1. Prove: Theorem: If a parallelogram has diagonals bisecting the angles, it is a rhombus.  |  |  |  | | --- | --- | --- | | **STATEMENT** | | **REASON** | | 1 |  | Given | | 2 |  | An angle bisector is a ray in the interior of the angle forming 2 congruent angles. | | 3 |  | Each diagonal of a parallelogram divides the parallelogram into two congruent triangles. | | 4 |  | **CPCTC** |  1. Given: LMNO.   Prove: LQNP is a parallelogram     |  |  | | --- | --- | | **STATEMENT** | **REASON** | | 1. LMNO | Given | | 2. | Given | | 3. LM=ON;LO=MN | ***1, Property of a parallelogram*** | | 4. | 1, Property of Parallelogram | | 5. | ***ASA*** | | 6. | 5, CPCTC | | 7. LM=LQ+QM;  NO=OP+PN | 7, If points A, B, and C are collinear such that B is between A and C, then  AB+BC=AC | | 8. LQ=LM-QM;  PN=NO-OP | ***SPE*** | | 9. PN=LM-QM | 3,7, Substitution | | 10. LQ=PN | ***TPE*** | | 11. LQNP is a parallelogram | 6, 10, If both pairs of opposite sides of a quadrilateral are congruent then the quadrilateral is a parallelogram. | | | | |
| **III. Reflection:** | | | |
| I learned about quadrilaterals, the theorems also. I am also having a hard time solving the problems but with the help of Google my friend(best friend), he made my life easier and I’ve learned a lot during the discussion. | | | |

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