**MATHEMATICS LESSON PLAN**

**GRADE 7**

**TERM 3: July – September**

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| **PROVINCE:** |  |
| **DISTRICT:** |  |
| **SCHOOL:** |  |
| **TEACHER’S NAME:** |  |
| **DATE:** |  |
| **DURATION**: | 1 Hour |

1. **TOPIC: NUMERIC AND GEOMETRIC PATTERNS**: Geometric patterns**(Lesson 6)**

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should be able to :**   * Investigate and extend geometric patterns looking for relationships between numbers, including patterns: * not limited to sequences involving a constant difference or ratio. * of learners’ own creation * represented in tables * describe and justify the general rules for observed relationships in own words |

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| 1. **RESOURCES:** | Matchsticks, DBE workbook 2, Sasol-Inzalo book 2, Textbooks |
| 1. **PRIOR KNOWLEDGE:** | * Number sentence * Algebraic language |
| 1. **REVIEW AND CORRECTION OF HOMEWORK** (suggested time: 10 minutes)   Homework provides an opportunity for teachers to track learners’ progress in the mastery of mathematics concepts and to identify the problematic areas which require immediate attention. Therefore it is recommended that you place more focus on addressing errors from learner responses that may later become misconceptions. | |

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| 1. **INTRODUCTION**(Suggested time: 10 Minutes)   Ask learner to write the general rule in algebraic form for each of the following geometric patterns.  **Figure 1**  **Figure 2**  **Figure 3**  **Figure 4**  **Stage1**  **Stage 2**  **Stage 3**  **Stage 4**  **Note:** Learners should be able to recognise that the two patterns are geometric patterns with constant difference and constant ratio respectively. Moving forth explain to learners that the upcoming lesson do not involve neither constant difference nor constant ratio. |

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| 1. **LESSON PRESENTATION/DEVELOPMENT**(Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to) |
| **Activity 1**  Present the following activities to learners  Figure 1  Figure 3 3  Figure 2   1. Describe the pattern in your own words 2. Complete the table below to show the relationship between the figure number and the number of squares 3. What will be the figure number whose value is 81?  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Figure Number |  |  |  |  |  |  | | Number of squares |  |  |  |  |  |  | | Equivalent expression |  |  |  |  |  |  | | Equivalent expressions |  |  |  |  |  |  |   NB: Allow learners to investigate the structure of the pattern so that they can be able to find the general rule.  **Analysis of structure**  **Figure 1**  **Diagram**  **Numeric**  **Exponential**  Figure 4  **Figure 2**  **Figure 3** | Work in small groups to complete the task |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Pattern number |  |  |  |  |  |  | | Number of squares | 1 | 4 | 9 | 16 | 100 |  | | Equivalence |  |  |  |  |  |  | | Equivalence |  |  |  |  |  |  |  1. **In own words :** Multiply the stage number by itself to get the output value or square the stage number to get the output number 2. **Completed table .** See table above     **Activity 2**  Investigate the general rule for the pattern below and answer questions that follow .  **Figure 1**  **Figure 3**  **Figure 4**  **Figure 2**   1. Describe the pattern in own words 2. Complete the table below to show the relationship between the figure number and the number of squares  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Figure No |  |  |  |  |  | | Number of squares |  |  |  |  |  | | Equivalent expressions |  |  |  |  |  | | Equivalent expressions |  |  |  |  |  |  1. Express the relationship in a flow diagram 2. Write down the general rule for the pattern in the form = 3. Use your rule to find number of squares in the 5th figure. 4. What is the value of the position of the term whose value is 37?   NB: Encourage learners to analyse the structure of the pattern as they investigate the rule.  **Analysis of pattern structure through investigation**  **Figure 2**  **Figure 3**  Figure  Figure 4  +1  **Figure 1**  **Diagram**  **Numeric**  **Exponential**      **Completed table**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Stage number |  |  |  |  |  |  | | Number of squares | 2 | 5 | 10 | 17 |  |  | | Equivalence |  |  |  |  |  |  | | Equivalence |  |  |  |  |  |  |   Note: Analysis of structure and the table above should assist learners to respond to all the questions for this activity. | Work in small groups of 2 to 3 members to complete the task  Discuss their observations in a whole class discussion |

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| 1. **CLASSWORK**(Suggested time: 15 minutes)   Study the pattern below and answer questions that follow  **Figure 1**  **Figure 2**  **Figure 3**  **Figure 4**   1. Explain the pattern in your own words 2. Draw figure 5 3. Write down the general rule for the pattern in algebraic form 4. Use your rule to find out the number of circles you will use to build the 7th figure. |

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| 1. **CONSOLIDATION/CONCLUSION& HOMEWORK (Suggested time: 5 minutes)** |
| 1. Emphasise that:  * it is useful to observe the structure (construction) of the successive geometric shapes * the rule for the pattern is contained in the structure i.e the physical arrangement of the geometric shapes at every stage of the pattern.  1. The primary purpose of Homework is to give each learner an opportunity to demonstrate mastery of mathematics skills taught in class. Therefore Homework should be purposeful and the principle of ‘Less is more’ is recommended, i.e. give learners few high quality activities that address variety of skills than many activities that do not enhance learners’ conceptual understanding.   Carefully select appropriate activities from the Sasol-Inzalo books, workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  **Recommended Homework**:   1. Mirriam collects stickers for her sticker album. If she collects 4 stickers on day 1, 8 on day 2, 16 on day 3 and 32 on day 4, how many will she collect on day 5 if the pattern continues? 2. Helen spends 2 hours playing computer games on the first day of the school holidays. On the second day she plays for 5 hoursand on the third day she plays for 8 hours. For how many hours will she play on the fourth day if she kept on playing in this pattern? 3. Create a geometric pattern to illustrate pattern in number 1 above. |