**MATHEMATICS LESSON PLAN**

**GRADE 9**

**TERM 1: JANUARY – MARCH**

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

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| 1. **TOPIC: NUMERIC AND GEOMETRIC PATTERNS: Geometric patterns (Lesson 3)** |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learnersshouldknow and be able to:**   * investigate and extend numeric and geometric patterns looking for relationships between numbers, including patterns: * represented in physical or diagram form * not limited to sequences involving a constant difference or ratio. * represented in tables |

* Describe and justify the general rules for observed relationships between numbers in own words or in algebraic language

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| 1. **RESOURCES:** | Textbooks, DBE Workbook and Sasol-Inzalo book 1. | |
| 1. **PRIOR KNOWLEDGE:** | * Basic operations with whole numbers. * Geometric patterns done in Grade 8. * Integers. | |
| 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. | | |
| 1. **INTRODUCTION**(Suggested time: 10 Minutes) | | |
| **Find the hidden pattern**  One way of observing patterns in real life is for learners to shake hands with each other in the class and present their results in a table  Ask learners how many handshakes are needed for two learners?  How many handshakes are needed for three learners?  **Note to the teacher :**  Consider doing the activity with 25 learners in a class. The first learner A can shake hands with 24 other learners; hence 24 handshakes. The second learner B can shake hands with only 23 others. He or she has already shaken hands with learner A so that leaves 23 other learners with whom she can shake hands; hence 23 handshakes. Using the same argument learner C can shake hands with 22 other learners (A and B have already been greeted and the student does not shake hands with himself). The total number of handshakes will be 24+ 23+ 22+21+........+ 3 + 2 + 1 = 300 | | |
| 1. **LESSON PRESENTATION/DEVELOPMENT**(Suggested time: 20 minutes) | | |
| **Teaching activities** | | **Learning activities**  (Learners are expected to: ) |

Discuss with learners the geometric representation of patterns while they do it practically.

2 learners

3 learners

4 learners

5 learners

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| **Activity 1.**  To ensure that learners keep track of their handshakes, it is necessary to record data on the table.   |  |  |  | | --- | --- | --- | | Number of learners | Accumulative representation of handshakes | Total Number of handshakes | | 2 | 1 | 1 | | 3 | 2+1 | 3 | | 4 | 3+2+1 | 6 | | 5 | 4+3+2+1 | 10 | | 6 | 5+4+3+2+1 | 15 | | . | . |  | | . | . |  | | . | . |  | |  |  |  |   After completing the table, ask learners to observe if there is any pattern.  Possible explanation of the relationship between number of handshakes and the number of learners.  **Note:**  **On the Right Hand Side of the explanation above, the numbers in bold represent the number of learners whereas the other number represent the stage number.**  **Discussion questions**   * What is the relationship between the number of learners and the stage number? * Do you notice any pattern? * If the number of learners is , write down the general rule for the total number of handshakes per stage.   NB: Facilitate discussion and assist learners to derive a general rule. | | Learners model the handshake as they complete the table in pairs.  Use data from the table to develop a general rule | |
| 1. **CLASSWORK**(Suggested time: 15 minutes) | | | |
| Carefully choose the exercises which show different cognitive levels from Sasol-Inzalo books, DBE workbooks, ANA question papers and any textbook used in your school. The following are some of the questions that can enhance understanding of geometric patterns.   |  |  | | --- | --- | |  | | |  |  | |  |  | | | | |
| * 1. A pattern is made with square stone slabs, dark and light. The patterns look like this:  |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  |  |  |  |  | | --- | --- | --- | |  |  |  | |  |  |  | |  |  |  |   Figure 1  Figure 2  Figure 3     1. How many stone slabs do you need for figure 5? How many are dark and how many are light? 2. Determine the rule for dark stone slabs 3. Determine the rule for light stone slabs 4. Draw a table to represent the pattern for dark and white slabs 5. Describe it in your own words and algebraically. 6. Use your rules to calculate the number of stone slabs for figure 15? How many are dark and how many are light? 7. How many stone slabs do you need for figure 100? How many are dark and how many are light? | | | |
| Sasol-Inzalo book 1 | DBE Workbook | | Textbook |
| Page 87 to 92. | Page 70 No. 1 | |  |
| 1. **CONSOLIDATION/CONCLUSION& HOMEWORK**(Suggested time: 5 minutes) | | | |
| 1. Ask learners to reflect on the day’s lesson. They share what they have learnt, giving feedback on how they learnt and where they had difficulties. 2. **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 workbooks, workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  **Homework:**DBE workbook 1 – Page 71: No. 2 | | | |