**MATHEMATICS LESSON PLAN**

**GRADE 8**

**TERM 1: January – March**

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

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| 1. **TOPIC: FUNCTIONS AND RELATIONSHIPS:** Input and output values (Lesson 1) |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to:**   * determine the input values, output values and rules for patterns and relationships using flow diagrams. |

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| 1. **RESOURCES:** | Textbooks, DBE Workbook, Sasol-Inzalo books. |
| 1. **PRIOR KNOWLEDGE:** | * number patterns * operations with: * integers * natural numbers * rational numbers * substitution |
| 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)   Consider the following seven situations: There are two quantities in each situation. For each quantity, state whether it is **constant** (always the same number) or whether it changes. Also state, in each case, whether one quantity has an influence on the other. If it has, try to say how the one quantity will influence the other quantity.   1. Your age and the number of fingers on your hands.   ………………………………………………………………………………………………………………..   1. The number of calls you make and the airtime left on your cellphone.   ………………………………………………………………………………………………………………..   1. The length of your arm and the time you take to finish Mathematics tests quickly.   ………………………………………………………………………………………………………………..   1. The number of identical houses to be built and the number of bricks required.   ………………………………………………………………………………………………………………..   1. The number of learners at a school and the length of the school day.   ………………………………………………………………………………………………………………..   1. The number of learners at a school and the number of classrooms needed.   ………………………………………………………………………………………………………………..   1. The number of match sticks in each arrangement, and the number of triangles in the figures below.     ………………………………………………………………………………………………………………..  Refer to page 95 in Sasol-Inzalo teacher guide for solutions.  **Note:**   * If one variable quantity is influenced by another, we say there is a **relationship** between the two variables. It is sometimes possible to find out what value of the one quantity, in other words what number, is linked to a specific value of the other quantity. * if a quantity changes it is called a **variable**. * a **function** is the relationship between a set of corresponding input and output values of such related variables, i.e. for one input there is only one output. (Learners can now point out which of the example above represents a function and which does not in the above activity.) | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to:) |
| **EXAMPLES**  **Activity 1**    +6  9  3  2  1  0  3  8  Input  Rule  Output               * 1. Complete the following flow diagram with the learners while explaining the terms input value, rule and output value.   2. What is the rule for determining the output values?   **Activity 2**  -6  8  7  6  5  4  Input  Rule  Output      2.1 Complete the flow diagram above.   * 1. What is the rule for determining the output values?   **Activity 3**  What is the relationship between the two flow diagrams in activities 1 and 2 above?  **Note:**  Explain that finding the input value when given the output value is an **inverse** **operation** of finding the output value when given the input value.  **Activity 4**  Complete the flow diagram below.  2 + 10  1  2  3  4  5  Input  Rule  Output | * complete the flow diagram with the teacher (class discussion) * complete the flow diagram and answer the questions based on it. * explain the relationship * complete the flow diagram. |
| **Activity 5**  Discuss the following flow diagram with the learners by solving and ; and allow the learners to determine the values of and .      a  1  2  v  16  20  b  Input  Rule  Output    13  d  e  The rule is which means we have to substitute each input value in the place of. Thus to find the value of , we substitute 1 as follows  3(1) 1 4. is thus 4.  **Note:**   * Variables or unknowns are expressed by using letters of the alphabet. * Variables can also be used in the “rule” box of a flow diagram. | * find the values of the other variables using the example provided by the teacher. |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) | | |
| Find the missing input and output values in the following flow diagrams.  1.  1  -12  Input  Rule  Output  -3  -2  -1                Input  Rule  Output  2.        Input  Rule  Output  3. | | |
| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK** (Suggested time: 5 minutes) | | |
| 1. **Emphasise that** the output value depends on the input value. 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.   The teachers discuss common errors and misconceptions picked up during the classwork and highlight the correct procedures. E. g. learners might have made errors and mistakes in the process of substituting values especially the substitution of negative numbers. | | |
| Sasol-Inzalo book | DBE Workbook | Textbook |
| Pg 97 & 98. No. 1,2,3,4 | Pg 60 No. 1a, b; 2a,b |  |