**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: FUNCTIONS AND RELATIONSHIPS**: Equivalent forms (Lesson 2) |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to** determine, interpret and justify equivalence of different descriptions of the same relationship or rule presented   * verbally * in flow diagrams * in tables * by equations. |

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| 1. **RESOURCES:** | Textbooks, DBE Workbook, Sasol-Inzalo book | |
| 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)   Group learners into small groups.  **Activity 1**  Study the table provided below and then answer questions that follow.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  | |  | | | | | | -5 | -3 | 0 | 3 | 5 | | A |  |  |  |  |  |  | | B |  |  |  |  |  |  | | C |  |  |  |  |  |  | | D |  |  |  |  |  |  | | E |  |  |  |  |  |  |  1. Copy and complete the above table. 2. Were any of the solutions the same? If so, which ones? (write down the letter corresponding to the equation)   **Note**: Introduce equivalent formulae by explaining that equations that have the same answers (solutions) are said to be equivalent. Give learners the following activity to do.  **Activity 2**  Choose the letter corresponding to the most correct option.  Which of the following equations is equivalent to the equation ?  A)  B)  C)  D) | | |
| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 25 minutes) | | |
| **Teaching activities** | | **Learning activities (Learners are expected to):** |
| **Group learners into small groups.**  **Activity 1**   1. Find the output values in the flow diagram below for the rule .       0 \_\_\_\_  y =    1 \_\_\_\_  2 \_\_\_\_  4 \_\_\_\_  10 \_\_\_\_  50 \_\_\_\_  100 \_\_\_\_\_    (b) Use input and output values from the flow diagram above to complete the   table below for the given rule.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  | 0 | 1 | 2 | 4 | 10 | 50 | 100 | |  |  |  |  |  |  |  |  |   **Activity 2**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | -2 | -1 | 0 | 1 | 2 |  | 12 |  | |  | -7 | -5 | -3 | -1 | 1 |  |  | 27 |  1. Describe the rule for the table above. 2. Represent the rule algebraically.   **Solutions**  Verbal description : output value = 2 input value  Algebraic formula : output value =  **Activity 3**  Determine the rule that describes the relationship between the input values in the top row  and the output values on the bottom row in the following tables. Represent the rule verbally or algebraically.  a)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 4 | 5 | |  | 2 | 4 | 6 | 8 | 10 |   b)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 5 | 6 | 7 | 8 | 9 | |  | 13 | 15 | 17 | 19 | 21 |   c)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | -3 | -2 | -1 | 0 | 1 | |  | -8 | -4 | 0 | 4 | 8 | | | * engage in group discussions to determine the output values * complete the table and write all the ordered pairs after completing the table * engage in finding the rule of the following in groups |
| **Activity 4**  Use the given formula to calculate the missing input values and output  values.  =42+3  -5  19  6  327    0  **Note:** Since the rule is a quadratic equation, accept both the two values (+   or -) for the input value. | | * calculate the input and output values |

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| 1. **CLASSWORK** (Suggested time: 10 minutes) |
| **Example**:  Consider the values in the table below   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | -2 | -1 | 0 | 1 |  | 4 |  | 12 |  |  | |  | -4 | -1 | 2 | 5 |  |  |  |  |  | 65 |  1. Represent the rule above : (i) verbally   (ii) algebraically.   1. Use the rule to determine the value of and in the table. |
| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK** (Suggested time: 5 minutes) |
| 1. **Emphasise that:**  * flow diagram shows two kinds of information * what calculations are done to produce the output numbers. * which output number is connected to which input number. * formula / rule can be written in two ways * verbal formula e.g. output value = 2 multiply by input value and subtract 3 * algebraic formula : output value =  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.  **Homework**: Choose suitable activities from Sasol-Inzalo book. |