**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: INTEGERS: Properties of integers (lesson 3)** |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By end of the lesson learners should know and be able to use:**   * the commutative; associative; distributive properties of addition and multiplication for integers * additive and multiplicative inverses operations for integers |

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| 1. **RESOURCES:** | Textbooks, DBE workbook 1, Sasol-Inzalo Book 1 |
| 1. **PRIOR KNOWLEDGE:** | * perform basic calculations with integers. * order of operations * properties of integers done in grade 8 |
| 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) | |
| Revise with learners the work on properties of integers done in grade 8.  Ask learners to write the general properties of integers and give two examples of each of the following properties:   * Commutative property * Associative property * Distributive property | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  **Learners are expected to:)** |
| **ACTIVITY 1**  Group learners into small groups. Give them activities like the ones below work out and discover the commutative, associative and distributive properties. Ask them to compare the answers in each case and present their observations.  The commutative property tells us that order does not matter when we add or multiply integers. The answer remains the same.   |  |  | | --- | --- | |  |  | |  |  | |  |  | |  |  | |  |  |   Ask learners to present their observations and engage in a whole class discussion. Ask probing questions to assist learners to make appropriate conclusions. Example:   * Why do you say | * engage in group discussions to determine the answers of each pair of activities. * record their answers and make conclusions about their observations.   Example:      * use own words to present their findings and justify their conclusions. |
| ACTIVITY 2  The associative (grouping) property tells us that we can group numbers in any way when we add or multiply in any way and still get the sameresults.   |  |  | | --- | --- | |  |  | |  |  | |  | | |  | = | |  |  | | do as they did the commutative property |
| ACTIVITY 3  Distributive property is determine the product of a monomial and a polynomial. It tells us that we can add first and then multiply or multiply first then add. Either way, the multiplication is “distributed” over allthe terms inside the parentheses.   |  |  | | --- | --- | |  |  | |  |  |   **CHECK:** | respond to the probing questions posed by the teacher to investigate the distributive property |
| ACTIVITY 4   1. Addition and subtraction as inverse operations:   When we subtract integers, we use the additive inverse of the  numbers.  Example: additive inverse of 15 is and the additive inverse of  28 is  THEREFORE  and    Identity element for addition**:**  We call zero (0) the identity element for addition. When adding zero   1. to a number or integer, the number remains the same. It is apply in subtraction.   Example: a) b)     1. Multiplication and division as inverse operations:   We call 1 the identity element for multiplication. When multiplying a number by 1, the number remains the same.  Example: a) b)  The multiplicative inverse (reciprocal) also applies to division.  Example:  When we multiply a number or integer by its multiplicative inverse, the answer is always 1. Therefore 1 is called multiplicative identity.  The reciprocal of is . | * Actively engaged      * use a calculator to discover the division property of 0 |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| 1. Complete the following by using the commutative or associative property 2. \_\_\_\_\_ and \_\_\_\_\_ 3. \_\_\_\_ and \_\_\_\_ 4. \_\_\_\_ and \_\_\_\_\_ 5. Use the distributive property to complete the following 6. \_\_\_\_+ \_\_\_\_\_ +\_\_\_\_\_ 7. \_\_\_\_ + \_\_\_\_ \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_\_ |
| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK** (Suggested time: 5 minutes) |
| 1. **Emphasise that:**  * The *commutative property* of whole numbers, represented by and   is applicable for addition and multiplication.   * The *associative property* of whole numbers, represented by ( **and**   , is applicable for addition and multiplication.   * The *distributive property* of whole numbers, represented by and is applicable to addition and subtraction.  1. **Homework**   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.  **Sasol-Inzalo Book 1 p 34 no. (5a) to (f) and 6 (a) to (b)** |