**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – June**

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

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| 1. **TOPIC: WHOLE NUMBERS: Ordering and comparing whole numbers (Lesson 1)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to represent prime numbers to at least 100, count, order, compare and represent numbers to at least 9-digit numbers, they should be able to round off to the nearest 5, 10, 100, 1000 and recognise the place value of digits to at least 9-digit numbers. They do this by breaking up numbers into, hundred million, ten million, million, hundred thousands, ten thousands, thousands, hundreds, tens and units using**  **Number names (number words)**  **Place value or flash cards**  **Expanded notation** |

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| 1. **RESOURCES:** | DBE Textbook (TG and LB), DBE workbook 1,Place value or flash cards |
| 1. **PRIOR KNOWLEDGE:** | * Count, order, compare, represent and place value of numbers to at least 6 – digit numbers * Represent odd and even numbers to at least 1000 * Round off to the nearest 5, 10, 100 and 1000 * Prime numbers to at least 100 |
| 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)   Revise the concepts using Mental maths type questions to include:  Design a Mental maths on the following  Count, order, compare and represent numbers to at least 6 – digit numbers  Represent odd and even numbers to at least 1000  Round off to the nearest 5, 10, 100, 1000  Prime numbers to at least 100 |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| Activity 1      Activity 2: Use place value or flash cards | * discuss in pairs and give their answers * Work in pairs and discuss the answers. |

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| 1. **CLASSWORK** (Suggested time: 15 minutes   **You may use your place value or flash cards** |
| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** 2. Emphasis that:  * In rounding off numbers it should be emphasised that a number is nearer to one number than to another. * Numbers can be represented in different ways namely, number symbols, place value parts and in expanded notation * The reading of a number symbol by reading the digits should be discouraged: numbers should be read by saying the full number names.  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 DBE Textbooks, workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels. |
| **Recommended Homework**:   |  |  |  | | --- | --- | --- | | DBE Textbook | DBE workbook | Textbook | | Pg 123 No 1 a - k, Pg 124 No 4 a - h, No 5 a – h, No 6 a - c | Pg 80 No 1 a - b, Pg 81 No 2 a – b, No 3 a – b, |  | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – May**

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

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| 1. **TOPIC: WHOLE NUMBERS:** Multiplication **(Lesson 1)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to:**   * multiply at least whole 4- digit by 3-digit numbers * use multiple operations with or without brackets * use calculations techniques include * Multiplying in columns * Building up and breaking down numbers |

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| 1. **RESOURCES:** | DBE textbook (LB and TG), DBE workbook |
| 1. **PRIOR KNOWLEDGE:** | In Grade 5 the learners learnt how to:  • multiply at least whole 3-digit by 2-digit numbers |
| 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. **MENTAL MATHEMATICS** (10 minutes)   Learners should answer the following questions as fast and accurate as they can.  Random multiples of 8 | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: ) |
| This lesson deals with different multiplication calculation techniques.  Ask learners to take out their cut-out 2 (place value cards) and use their place value cards to build three or four 4-digit numbers. Example:  5 353. Ask the learners how they would go about multiplying this number by 6. On the board write:  Explain to the learners that we can also use place value columns to do the same calculation.    This method also involves place value and expanded notation. We call this method the breaking-down-numbers method  = 100 000 + 20 000 + 10 000 + 700 + 150  = 130 850  5 234  X 25      Exposing learners to different methods will help them to choose the method they find easiest and the one that is most appropriate for any given set of numbers. | * work together with the educator. * try the following example in pairs: |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| Learners should complete the following activities.  **DBE** Workbook 1: Worksheet 31, Question 3 a (page 91).    Calculate the following using both the column and the breaking down.  Calculate the product of 7 876 and 393 using any method. |

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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** |
| **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 DBE textbook, DBE workbook and/or any other textbook for learners’ homework. The selected activities should address different cognitive levels.  **Recommended Homework**:   |  | | --- | | **DBE** Workbook 1: Worksheet 31, Question 3 b-d (page 91). | | DBE text book LB page 134 question 4 (b – d) | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – May**

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

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| 1. **TOPIC: WHOLE NUMBERS:** Multiplication **(Lesson 2)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to:**   * multiply at least whole 4-digit by 3-digit numbers * use multiple operations with or without brackets * use calculations techniques include estimation, distributive property, rounding off and compensating | |
| 1. **RESOURCES:** | | DBE textbook (LB and TG), DBE workbook | |
| 1. **PRIOR KNOWLEDGE:** | | In the previous lesson, learners learnt how to:  • multiply at least whole 3-digit by 2-digit numbers | |
| 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. **MENTAL MATHEMATICS** (10 minutes)   Learners should answer the following questions as fast and accurate as they can.  Random multiples of 7 | | | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| In this lesson we are going to learn about using different multiplication calculation techniques.  When we multiply a number by 1 000, the number shifts three spaces to the left.  Example  Do a few examples of rounding off to the nearest 10 and 100. Ask learners when it is useful to round off numbers when multiplying.  Let the learners give few examples.    Example 2: Calculate the following sum using this method:  Start by estimating the answer. Break down the second number by compensating.  • Learners can then work independently, using another method to do the same calculation | * work together with the educator. * try the following example in pairs: |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| Learners should complete the following activity.  DBE Workbook 1: Worksheet 30 Question 1, 2, 3 (page 88).  Calculate the following by rounding off and compensating. |

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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** |
| **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 DBE textbook, DBE workbook and/or any other textbook for learners’ homework. The selected activities should address different cognitive levels.    **Recommended Homework**:   |  | | --- | | DBE Workbook 1: Worksheet 30 Question 4, 5 (pages 88 – 89). | | DBE text book LB page 134 question 4a | |

**MATHEMATICS LESSON PLAN**

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| **DURATION**: | 1. Hour |

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| 1. **TOPIC: WHOLE NUMBERS:** Multiplication **(Lesson 3)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to:**   * multiply 2-digit and 3-digit numbers * find factors of 2-digit and 3-digit whole numbers * find prime factors of numbers to at least hundreds | |
| 1. **RESOURCES:** | | DBE textbook (LB and TG), DBE workbook | |
| 1. **PRIOR KNOWLEDGE:** | | In the previous lesson, learners learnt how to:   * multiples of 2-digits whole numbers to at least 100 | |
| 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. **MENTAL MATHEMATICS** (10 minutes)   Learners should answer the following questions as fast and accurate as they can.  Random multiples of 6 | | | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| This lesson focuses on multiples, factors and prime factors.  Ask the learners to discuss in pairs the words “multiples” (result of multiplying a number by an integer) and “factors” (numbers you can multiply together to get another number).  What is a difference between a multiple and factor? Factors are numbers that we can multiply together to get another number. Example: 1 and 5 are factors of 5 because  (A factor is any number that divides any other number evenly while a multiple is a number that can be multiplied by another number to give products that are in the same set in the multiplication table. For example, factors of 6 are 1, 2, 3 and 6 while multiples of 6 are 6, 12, 18, 24, and 36 and so on.)  Write the meanings of both words on the board and have them match each definition to the right name; multiple or factor.  Ask them to give the multiples and factors of the following.  Multiples of 5: M5 = {5; 10; 15; 20; 25; …}  Factors:  F5 = {1; 5} There are only two factors.  Explain the difference between a prime number and a composite number.  A prime number has only two factors which are 1 and the prime number itself  A composite number has more than two factors e.g.  21 is a composite number which factors are 1,3,7 and 21  Example for this multiplication method using prime factors: | Work together with the educator.  Work together with the educator. |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| Learners should complete the following activity.  DBE Workbook 1: Worksheet 28, Questions 1, 2,3a (pages 84, 85).  Calculate the following  a. 1, 2, 4, 16 and 32 are five of the six factors of 32. Write down the missing factor.  b. List all the factors of 225. |

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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** |
| **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 DBE textbook, DBE workbook and/or any other textbook for learners’ homework. The selected activities should address different cognitive levels  **Recommended Homework**:   |  | | --- | | DBE Workbook 1: Worksheet 30 Question 4, 5 (pages 88 – 89). | | DBE text book LB page 132 question 1 (d-f) | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – May**

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| **TEACHER’S NAME:** |  |
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| **DURATION**: | 1. Hour |

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| 1. **TOPIC: WHOLE NUMBERS:** Multiplication **(Lesson 4)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to:**   * recognize and use the commutative; associative; distributive properties of whole numbers * 0 in terms of its additive property * 1 in terms of its multiplicative property |

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| 1. **RESOURCES:** | DBE textbook (LB and TG), DBE workbook |
| 1. **PRIOR KNOWLEDGE:** | In the previous grade, learners learnt how to:   * multiply using different numbers |
| 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. **MENTAL MATHEMATICS** (10 minutes)   Learners should answer the following questions as fast and accurate as they can.  Random multiples of 1, 10 1nd 100 | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| In this lesson we are going to learn about properties of whole numbers.  Let the learners open DBE Workbook Version 2014 CAPS aligned Worksheet 29 Question 1 (page 86).   * Let them complete these questions as fast as possible and then mark their own work. * Give some learners a chance to explain their calculations and answers.   Example:  The order of multiplication does not matter, therefore    The order in which we group numbers when we multiply, does not matter  We break down the bigger number to make it easy when we multiply  Any number multiplied by zero is always zero.  Any number divided by zero is undefined.  is undefined  Any number multiplied by one will remain the same.  Any number divided by one is that number  8 ÷ 1 = 8  Numbers are broken down into prime factors when multiplying’ | * work together with the educator.   Work together with the educator and give more examples. |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| Learners should complete the following activity  a. 578 = \_\_\_ + 578  b. 47 893 – \_\_\_ = 47 893  c. Circle the letter(s) of the incorrect statement(s).  i. 45 + 39 = 39 + 45  ii. 45 – 39 = 39 – 45 iii. 9 x 7 = 7 x 9  iv. 20 ÷ 5 = 5 ÷ 20 |

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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** |
| **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 DBE textbook, DBE workbook and/or any other textbook for learners’ homework. The selected activities should address different cognitive levels  **Recommended Homework**:   |  | | --- | |  | |  | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – May**

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

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| 1. **TOPIC: WHOLE NUMBERS:** Multiplication **(Lesson 5)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to:**   * solve problems involving whole numbers, including * compare two or more quantities of the same kind (ratio) * compare two quantities of different kinds (rate) |

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| 1. **RESOURCES:** | DBE textbook (LB and TG), DBE workbook |
| 1. **PRIOR KNOWLEDGE:** | In the previous grade, learners learnt how to:   * compare metres and centimetres |
| 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. **MENTAL MATHEMATICS** (10 minutes)   Learners should answer the following questions as fast and accurate as they can.  Random multiples of 6 | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| In this lesson learners are going to learn about problems relating to rate and ratio.  .  Discuss the meaning of rate and ratio and the difference between them.  Ratio compares two quantities of the same kind (e.g.5 blue marbles to every 3 red marbles or 5 : 3), while rate is when one quantity is compared to a different quantity (e.g. 12 eggs cost R 24, so 1egg costs R2)  Encourage them to draw pictures or use objects to help them develop a better understanding. Emphasize that it is important for them to have a good knowledge of their multiplication and division facts when working with rate and ratio. | * work together with the educator and give more examples. |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| Learners should complete the following activity  1. A normal, healthy adult heart beats about 78 beats per minute.  a. How many times will a heart beat in half an hour?  b. How many times will a heart beat in one hour?  2. Here’s a string with black and white beads.    The pattern continues off the page.  The ratio of white beads to black beads is 2 to 1.  a. What is the ratio of black beads to white beads?  b. If there are 12 black beads in a complete string, how many white beads are there?  c. How many beads are there if there are 20 white beads? |

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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** |
| **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 DBE textbook, DBE workbook and/or any other textbook for learners’ homework. The selected activities should address different cognitive levels  **Recommended Homework**:   |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Learners should complete the following activity at home.  You make green paint by mixing blue and yellow paint.  This table shows how to mix blue and yellow paint in different ratios to make different kinds of greens.   |  |  | | --- | --- | | Type of colour | Ratio of blue and yellow | | Very dark green | 5:2 | | Dark green | 2:1 | | Middle green | 1:1 | | Light green | 1:2 | | Very light green | 2:5 |   Which green do you get if you mix:  a. 2 liters of blue with 2 liters of yellow?  b. 10 tins of yellow with 5 tins of blue?  c. Two 5-liter tins of yellow with one 5-liter tin of blue?  d. 6 tins of yellow with 12 tins of blue? | |  | |

**MATHEMATICS LESSON PLAN**

**GRADE 5**

**TERM 2: April– June**

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| **PROVINCE:** |  |
| **DISTRICT:** |  |
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| **TEACHER’S NAME:** |  |
| **DATE:** |  |
| **DURATION**: | 1. Hour |
| 1. **TOPIC: WHOLE NUMBERS:** Division **(Lesson 1)** | | | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to** find prime factors of numbers up to | | | | |
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| 1. **RESOURCES:** | DBE textbook, DBE workbook 1, any other textbook |
| 1. **PRIOR KNOWLEDGE:** | * Finding factors of 2-digit and 3-digit whole number * Basic multiplication facts |
| 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)   **Mental Maths**     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | .   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |   Use the number table to do the following   * Cross out * Cross out all the multiples of , excluding * Cross out all the multiples of , excluding * Cross out all the multiples of , excluding * Cross out all the multiples of , excluding | | | | |  |  |  |  | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| The focus of the lesson is a follow-up on finding factors, but this time the focus is on prime factors of given numbers.  The concepts factors and prime numbers need to be understood by learners in order to understand what is needed in the lesson   * Factors are numbers which divide into the specific given number without leaving a remainder * Prime numbers are those numbers which has only factors, and the number * From the mental activity, the numbers that have not been crossed out are the prime numbers   Activity 1  Find the prime factors of  As an introduction to the lesson, learners will be asked to find any numbers which when multiplied together gives as the product.  x are just factors of , but not prime factors as they are both not prime numbers.  x are also not prime factors since, as much as is a prime number, is not a prime number.  Finding prime factors:  We can use a ladder method or tree diagram   |  |  | | --- | --- | |  |  | |  |  | |  |  | |  |  |   Ladder method:    :  x2 x  Tree diagram   |  | | --- | | 2  12  6  2  3      x, but is not a prime number    x  Hence prime factors of 12 = 2 x 2 x 3 |   Activity 2:  Find the prime factors of in pairs.  Ladder method:   |  |  | | --- | --- | | 56 | 2 | | 28 | 2 | | 14 | 2 | | 7 | 7 | | 1 |  |   In the example,  is divisible byhence  s also divisible byhence  is also divisible byhence  is not divisible byorhence1  xxx   |  | | --- | | Factor tree: |   Hence 2 x 2 x 2 x 7 (as product of prime factors)  **Teaching Guidelines :**   * Learners must be guided as they work through the activities, so that   they don’t take time without knowing what is expected from them.   * learners can refer to the 100 number chart that they did at the   beginning as mental activity any time they want to revisit prime  numbers. | -take turns in answering questions that the teacher will be asking as the lesson proceeds.  -actively participate in finding the factors of given numbers |

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| 1. **CLASSWORK** (Suggested time: 15 minutes |
| |  |  | | --- | --- | | DBE textbook | DBE workbook 1 | |  | Page 85 Worksheet 28(Number 2) | |
| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** 2. **Emphasise that**:  * multiplication and division work hand in hand in both finding of factors and in multiples, * division and multiplication cannot be detached from each other, as they are inverses of each other.  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 DBE textbooks, DBE workbook and/or any other textbook for learners’ homework. The selected activities should address different cognitive levels.  |  |  |  | | --- | --- | --- | | DBE textbook | DBE workbook 1 | Any other textbook | |  |  |  |   **Homework**:  Use either the ladder method or factor tree and write the following number as product of prime  factors: |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April– June**

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

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| 1. **TOPIC: WHOLE NUMBERS:** Division **(Lesson 3)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to** solve problems involving whole numbers, including grouping and equal sharing with remainders. |

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| 1. **RESOURCES:** | DBE textbook, DBE workbook 1, any other textbook | |
| 1. **PRIOR KNOWLEDGE:** | * Multiplication of units by multiples of 10 and 100 * 1 in terms of its multiplicative property * Factors and prime factors * Basic multiplication and division facts | |
| 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)   **Mental Maths**   |  | | --- | | 1. Use multiplication facts to calculate:   1.1. 300 x 250  1.2. 24 x 3 000  1.3. 11 x 600  1.4. 634 x 1  1.5. 143 x 1 000  2. Calculate the following:  2.1. 200 5  2.2. 1000 20  2.3. 270 10  2.4. 50 2ng and sharing problems co | | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| Activity 1:  The following is a guided activity which will first be discussed with the learners before they are given a chance to try it in their respective groups:  Maputla’s chicken farm produced eggs in a certain week. He wants to pack them into dozens (which carry eggs each).   1. How many dozens can be filled? 2. How many eggs will be left? 3. If he packs them into boxes which carry eggs per box, how many boxes will be filled? 4. How many eggs will be left, which may not be enough to fill a box?   Solutions:  The most important consideration to make here is to try to understand what are the key words, and how to convert to mathematical language.  - once the learners have understood the situation, they can use any operation that they choose to use, but the most important is if they can use mathematics to solve the situation.  - learners need also to be hightighted to the fact that though some methods give them the correct answer, they might not necessarily be mathematically correct.  1. Basically what needs to be done is that eggs must be shared into groups of eggs each, and we need to establish how many such groups can we have.  Mathematical sentence ;  ble)   |  |  | | --- | --- | |  |  | |  |  | |  |  | |  |  |   =  Hence dozens will be filled   1. Since divide exactly into(or is a factor), it implies that there will be no eggs left. 2. In this scenario, eggs must be divided into groups of 144 each   Mathematical sentence: =  Using the clue board we have :   |  |  | | --- | --- | | multiply | Subtract | | 144 x 10 = 1 440 | 2 700 – 1 440 = 1260 | | 144 x 5 = 720 | 1260 720 = 540 | | 144 x 3 = 432 | 540 432 = 108(rem) |   remainder  Hence 18 boxes will be filled   1. eggs will be left, since the next box will need eggs, and the remaining eggs are only   **Teaching Guidelines:**  - Learners must be guided as they work through the activities, so that they do not take time without knowing what is expected from them. | -take turns in answering questions that the teacher will be asking as the lesson proceeds.  -actively participate in finding the factors of given numbers |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| |  |  | | --- | --- | | DBE textbook | DBE workbook 1 | |  | Page 118-119 worksheet 44a(number 1 and 2) | |
| 1. CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)   Emphasise that:   1. In working with multiples and factors, learners need to understand that multiplication and division work hand in hand in both finding of factors and in multiples, 2. Division and multiplication cannot be detached from each other, as they are inverses of each other. 3. 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 DBE Textbooks, National workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.   |  |  |  | | --- | --- | --- | | DBE textbook | DBE workbook 1 | Any other textbook | | Page 169 unit 9.1(numbers 4 and 5) |  |  | | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April– June**

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| **PROVINCE:** |  |
| **DISTRICT:** |  |
| **SCHOOL:** |  |
| **TEACHER’S NAME:** |  |
| **DATE:** |  |
| **DURATION**: | 1. Hour |
| 1. **TOPIC: WHOLE NUMBERS:** Division **(Lesson 4)** | | | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to** use a range of techniques to perform and check written and mental calculations of whole numbers including building up and breaking down numbers. | | | | |

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| 1. **RESOURCES:** | DBE textbook, DBE workbook 1(LB and TG), any other textbook |
| 1. **PRIOR KNOWLEDGE:** | * Factors and multiples of 3-digit numbers |
| 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)   **Mental Maths**     |  | | --- | | Learners will do an activity in their DBE workbook 1 as a mental maths activity  Page 120 worksheet 44b Number 3 | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: | |
| Activity 1:  The following is a guided activity which will first be discussed with the learners before they are given a chance to try it in their respective groups:  Calculate by means of breaking down and building up  Solutions:  First, we estimate our answer before starting with calculations; this helps to put us on track.  Estimation: x  In this method we use the clue board as a guide to direct us to the way we are going to break up the number, as we cannot just use any way to break down the numbers, otherwise we might find that those numbers are not divisible by the divisor:  e.g. should not be written as since we will get stuck from the first step.  Activity 2:  Learners will be given the following to work in pairs, and then it will be discussed as a whole class activity:  Calculate  Activity 3  Calculate  Just like the first activity, there will be whole class discussion before learners are given a chance to work in pairs to complete the activity:  Clue board:    **Teaching Guidelines:**   * + Learners must be guided as they work through the activities, so that they don’t take time without knowing what is expected from them. | -take turns in answering questions that the teacher will be asking as the lesson proceeds.  -actively participate in finding the factors of given numbers | |
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| 1. **CLASSWORK** (Suggested time: 15 minutes) | | |
| First estimate each answer, then calculate and check your solution through multiplication: | | |
|  | | |
| **9. CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)**   1. **Emphasise that:**  * multiplication and division work hand in hand in both finding of factors and in multiples, * to do well in division, learners need to have understood multiplication facts  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 DBE textbook, DBE workbook and/or any other textbook for learners’ homework. The selected activities should address different cognitive levels.   **Homework:**  Calculate: | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April– June**

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| **PROVINCE:** |  | |
| **DISTRICT:** |  | |
| **SCHOOL:** |  | |
| **TEACHER’S NAME:** |  | |
| **DATE:** |  | |
| **DURATION**: | 1. Hour | |
| 1. **TOPIC: WHOLE NUMBERS:** Division **(Lesson 6)** | | | | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to** use a range of techniques to perform and check written and mental calculations of whole number including using a calculator. | | | | | |
| 1. **RESOURCES:** | | | | DBE textbook, DBE workbook 1, any other textbook | | | |
| 1. **PRIOR KNOWLEDGE:** | | | | * Factors and multiples of 3-digit numbers * Basic multiplication facts * Multiplication and division of 3-digit by 2-digit numbers | | | |
| 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)   **Mental Maths**     |  | | --- | | 1.Given an answer, write multiplication and division number sentences:  e.g . given  1.1  1.2.  1.3.  1.4.  1.5.  2. Fill in the missing number:  2.1.  2.2.  2.3.  2.4.  2.5. d sharing problems | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| Learners will be highlighted to the fact that calculator usage cannot be used as a main method, since learners need to develop the other methods and skills, which will be useful at a later stage.  Using the calculator can be used to reinforce what the learners have already done using other methods.  Though the method has not been done in earlier grades, it is a simple method that can easily be understood by learners.  Activity 1:  Because of the simplicity of the method, learners will be given the following to complete in class, and the teacher will assist only where there is a need.  DBE textbook page 175 unit 6.6 (number 1)  Activity 2:  Learners will be given the following to work in pairs, and then it will be discussed as a whole class activity:  Calculate the following using a calculator:   1. 6. 2. 7. 3. 8. 4. 9. 5. 10.   What does E on the calculator mean?  In the activity we have to reinforce the skills that have been done before, which are the following:   * **multiplicative properties of 0** * any number multiplied by 0 is zero * any number divide by 0 is undefined , which implies that we cannot divide by 0, or it is impossible to do so or simply that it is meaningless * 0 multiplied by any number is 0 * 0 divide by any number is 0 * **multiplicative properties of 1** * any number multiplied by 1 is that number * 1 multiplied by any number is that number * Any number divide by itself is 1   **(**since it is faster to use a calculator than manual calculations, learners can do even more than the activities in the lesson plan, in order to sharpen their calculator skills, while also reinforcing the above skills)  Activity 3  Learners will do the following activity on page 176 in DBE textbook.  The teacher will assist only where necessary  Activity 4  In the activity, learners should understand that they can check answers after using other methods using a calculator  e.g. …. In the calculator would mean two things:  - the answer for the activity will be 6 with a remainder  - is not a factor of  **Teaching Guidelines :**  - Learners must be guided as they work through the activities, so that they don’t take time without knowing what is expected from them. | -take turns in answering questions that the teacher will be asking as the lesson proceeds.  -actively participate in finding the factors of given numbers |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| |  |  | | --- | --- | | DBE textbook | DBE workbook 1 | | Page 175 unit 6.5 number 2 |  | |
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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** 2. **Emphasise that**:    * calculator should not be used extensively, since the learners need to establish basic division facts    * calculator should be used only when checking the solution, but can also be used when working with ratio and rate, as it involves fractions which might need to be verified with a calculator.   .   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 DBE textbook, DBE workbook and/or any textbooks for learners’ homework. The selected activities should address different cognitive levels.  |  |  |  | | --- | --- | --- | | DBE textbook | DBE workbook 1 | Any other textbook | |  | Page 125 worksheet 46 number 2(do the whole activity by using a calculator) |  | | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – June**

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| **PROVINCE:** |  | |
| **DISTRICT:** |  | |
| **SCHOOL:** |  | |
| **TEACHER’S NAME:** |  | |
| **DATE:** |  | |
| **DURATION**: | 1. Hour | |
| 1. **TOPIC: WHOLE NUMBERS:** Division **(Lesson 7)** | | | | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to s**olve problems involving whole numbers and decimal fractions including financial contexts | | | | | |
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| 1. **RESOURCES:** | | | | DBE textbook, DBE workbook 1, any other textbook | | | |
| 1. **PRIOR KNOWLEDGE:** | | | | * Basic multiplication and division facts * Division of at least whole 3-digit by 2-digit numbers | | | |
| 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)   **Mental Maths**  Learners to do the following as mental activity from DBE workbook 1  Page 111 worksheet 40b     1. Colour in the numbers you can divide by 3  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  |  1. Colour in the numbers you can divide by 4  |  |  |  |  | | --- | --- | --- | --- | | 224 | 399 | 907 | 641 | | 321 | 532 | 423 | 518 | | 531 | 577 | 640 | 261 | | 918 | 225 | 999 | 916 |  1. Colour in the numbers you can divide by 5  |  |  |  |  | | --- | --- | --- | --- | | 892 | 252 | 673 | 396 | | 225 | 330 | 990 | 875 | | 473 | 788 | 221 | 369 | | 344 | 345 | 549 | 426 | |

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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| **Example 1**  The following example will be done as a group activity in class with the learners:  Mpiti has with which he wants to buy blankets. How many blankets at each can he buy with the amount?  In this activity, the most important thing is to find the key words   * Total amount = * Price per blanket = * Question- How many blankets   The other important thing in this activity is to translate the question into mathematical sentence, which can be done once the key words are identified.  Number sentence: = \_\_\_\_  We now apply any division method to find the answer  Using the clue board we have:               |  |  | | --- | --- | | Multiply | Subtract | |  |  | |  |  | | Hence remainder  blankets can be bought, and the change will be | |   Answers will be checked by multiplication as follows:        ( remainder)  Activity 1  Learners will work out the following in their groups before doing classwork.   * How many toys at each can be bought with ?   **Example 2**  A farmer wants to plant apple trees. He wants to plant the same number of trees in each of rows. How many apple trees must he plant in each row?  Key words: total number of trees =  Number of rows =  Question: how many per row?  Translation to mathematics: \_\_\_\_\_\_\_\_  Calculation using clue board:  (double)  (double 20)  (halve of 10)           |  |  | | --- | --- | | Multiply | Subtract | |  |  | |  |  | | Hence :  =  He planted trees in each row | |   **Teaching Guidelines :**   * In teaching contextual type questions, teachers must ascertain that the questions are selected carefully such that the context makes sense to the learners. * It is also important for learners to be able to interpret the context to mathematics in order to use their multiplication and division facts to find answers. | - work in groups to complete the activities given by the teacher  -participate by answering questions as posed by the teacher, either by answering in their books or by responding orally. |
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| 1. **CLASSWORK** (Suggested time: 15 minutes)   DBE textbook Page 174 unit 6.5 Number 1(a) and (b) |
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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** 2. **Emphasise that**:  * context must not be far fetched  1. division can always be checked by using multiplication 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 DBE Textbooks, National workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  |  |  | | --- | --- | | DBE textbook | DBE workbook 1 | | Page 174, unit 6.5 number 6 |  | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – June**

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| **PROVINCE:** |  |
| **DISTRICT:** |  |
| **SCHOOL:** |  |
| **TEACHER’S NAME:** |  |
| **DATE:** |  |
| **DURATION**: | 1. Hour |
| 1. **TOPIC: WHOLE NUMBERS:** Division **(Lesson 8)** | | | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson learners should know and be able to** solve contextual problemsinvolving whole numbers, including:   * comparing 2 or more quantities of the same kind (ratio) * comparing two quantities of different kinds (rate) | | | | |
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| 1. **RESOURCES:** | DBE textbook (LB and TG), DBE workbook 1, any other textbook |
| 1. **PRIOR KNOWLEDGE:** | * Basic multiplication and division facts * Division of at least whole 4-digit by 3-digit numbers |
| 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)   **Mental Maths**   1. Use a calculator to check if the following are correct. First do the multiplication, and then do division:    1. and    2. and    3. and    4. and 2. Complete the following division sums by making use of a calculator, and then write multiplication sums that corresponds with your division sums:   e.g. and \_\_\_  2.1. = \_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  2.2. \_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  2.3. \_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  2.4. \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_  2.5. \_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| 1. **LESSON PRESENTATION/DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to: |
| **Example 1**  Chicken price:   1. How much will it cost to buy 2. How much will it cost to buy ? 3. How much will it cost to buy ? 4. How much chicken can one buy with ?   Solution:  Here we are given the price of 1 kg of chicken, hence the comparison is between price of an article and the mass   * The first thing to take into consideration is the following: * Convert all grams to kg so that we work with the same unit of measurement * It is important for learners to remember the following , 100g = 0,1 kg (to convert g to kg they have to divide by 1000) * Since the price is Rands per kilogram, it implies that the amount must also be converted to Rands, and written with R to show that they are rands. * Learners will be allowed to use calculators to complete the activities.  |  |  | | --- | --- | | price | mass | | R25 | 1 kg | | ? | 2 kg | | ? | 750 g = 0,75 kg | | ? | 6,5 kg |  1. 2 kg = 2 x 1 kg, hence to get the amount, we also multiply R25 by 2 to get R 50   2kg of chicken will cost R50   1. 0,75 kg = 0,75 x 1 kg , hence to get the amount, we also multiply R25 by 0,75 to get R37,50   750g of chicken will cost R37,50   1. 6,5 kg = 6,5 x 1 kg, hence to get the amount, we also multiply R25 by 6,5 to get R162,50   6,2 kg of chicken will cost R162,50  - The most important consideration to make here is to try to understand what are the key words, and how to convert to mathematical language.  - once the learners have understood the situation, they can use any operation that they choose to use, but the most important is if they can use mathematics to solve the situation.  - learners need also to be hightighted to the fact that though some methods give them the correct answer, they might not necessarily be mathematically correct.    Activity 1  Learners will be given the following activity to do in groups:  Petrol cost : R12/   1. What will be the cost of of petrol? 2. What will be the cost of 3. What will be the cost of ? 4. How many litres will one buy with ?   **Example 2**  Mbali gives 80 oranges to 20 children for sharing.If they share equally, how many children will share one orange?  Method to solve:   * here a comparison is made between same quantities, which is an example of ratio * because of the practicality of the question, learners will be given a chance to talk about the problem, and then come up with solutions (including the explanation of how they get answer.)   Activity1  Learners to do the following in pairs  DBE workbook 1 page 114 worksheet 42 number 3 | - work in groups to complete the activities given by the teacher |
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| 1. **CLASSWORK** (Suggested time: 15 minutes)   Given: meat price =   1. How much will it cost to buy the following: 2. How many kg will one buy for ? |
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| 1. **CONSOLIDATION/CONCLUSION & HOMEWORK (Suggested time: 5 minutes)** 2. **Emphasise that:**  * rate is the comparison between two quantities which are not the same, but depend on each other. * ratio is the comparison between two quantities which are the same. * Contextual questions will need learners understand the context.  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 DBE Textbooks, National workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  **Homework**   1. A certain car travelled of petrol. 2. DBE workbook 1 page 114 number 1 |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – June**

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

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| 1. **TOPIC: GEOMETRIC PATTERNS**: Investigate and extend patterns **(Lesson 1)** |

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| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to:**   * Investigate and extend geometric patterns looking for relationships or rules of patterns: * Represented in physical or diagram form * Sequences involving a constant difference or ratio * of learners’ own creation * represented in tables |

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| 1. **RESOURCES:** | Matchsticks boxes, DBE workbook 1 and DBE textbook |
| 1. **PRIOR KNOWLEDGE:** | * Numeric patterns * Geometric patterns * Flow diagrams |
| 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)   Introduce the lesson by asking learners in their pairs to respond to the following questions:   1. Below are examples of geometric patterns in everyday use.  |  |  | | --- | --- | | Design 1 | | |  |  | | Size 1 | Size 2 | | Design 2 | | |  |  | | Size 1 | Size 2 |  1. Size 2 was made using size 1. How do you think size 2 was made? 2. Extend each pattern to size 3. 3. Give examples of other geometric patterns you know from nature and everyday use. 4. How could you classify the above patterns? Could you classify them into growing (increasing/decreasing) or repeating patterns?   **Note:** Geometric patterns are patterns represented in a diagram form- formed of either 2-D shapes or 3-D objects. Learners should be able to recognise that in each of the designs above there is a repetition of the same shape from one stage to another which is constant and either a common difference or a constant ratio. |

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| 1. **LESSON PRESENTATION/ DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to:) |
| NB: Provide each pair of learners with the actual box of matchsticks so that they can physically manipulate the situation.  **Activity 1**  Use matchsticks to form the geometric patterns as shown below. And answer questions that follow:   1. How many matchsticks are there in each stage? 2. Predict the number of matchsticks for stage 4. 3. Construct stage 4 with matchsticks and count the number of matchsticks used. 4. Explain in your own words how many matchsticks will be used for stage 5 and give a reason for your answer. 5. Classify the geometric pattern formed as either growing or repeating pattern. 6. What is the difference of the number of matchsticks from each stage?   Stage 1  Stage 2  Stage 3  **NB**: The rule for the geometric patterns such as the one above is contained in the structure.  The “structure in this case refers to the physical arrangement of geometric shapes at every stage of the pattern.  Moving from learner’s verbal descriptions:  Verbal description: multiply the stage number by 2 and add 1  In flow diagram:  For instance, learners modelling with the actual matchsticks should reveal the following picture in a physical situation:  **Stage 1**  **Stage 2**  **Stage 3**  **Calculation plan**  Stage 1: two matchsticks plus one matchstick 2 x 1 + 1  Stage 2: two sets of two matchsticks plus one matchstick 2 x 2 + 1  Stage 3: three sets of two matchsticks plus one matchstick 2 x 3 + 1  Stage 4:  Stage 5:  **RULE**: **two multiplied by the stage number plus one**  **Activity 2**  Explain to learners how to find the common difference. Use the example below to show that sometimes there is no common difference.    The difference between 1 and 4 is 3  The difference between 9 and 4 is 5  This means that there is no common difference.  Answer the questions in small groups based on the geometric patterns below:  Pattern 1      Pattern 2  X 1  X 2  X 3  X 4     1. Extend pattern 1 to T6 and pattern 2 to X5. 2. How did you extend each pattern, explain in your own words? 3. What is the difference of the number of beads between stages? 4. What is the difference of the number of beads between stages?   **NB**:    17 – 13 = 4  13 – 9 = 4  9 – 5 = 4  When a pattern has a difference, which is the same between the stages, the difference is called the common difference, hence we talk of patterns with a common difference. | * work in small groups to investigate the geometric pattern * create patterns using matchsticks * extend the pattern to stage 5 * predict the number of matchsticks for the next pattern      * describe patterns in their own words |
| 1. **CLASSWORK (Suggested time: 15 minutes)** | |
| Study the pattern below and answer questions that follow  Create your own geometric pattern. Draw your pattern in the book and use it to answer the following questions.   1. Describe the pattern in words   Use a table to represent the pattern    The growing pattern above with light blue, dark blue and white tiles is used for a large supermarket floor.  Complete the table below to find the number of light blue and dark blue tiles up to size 30 as shown in the table. | |
| |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Size | 1 | 2 | 3 | 4 | 5 | 6 | 10 | 30 | | Number of light blue tiles | 1 | 2 |  |  |  |  |  |  | | Number of dark blue tiles | 12 |  |  |  |  |  |  |  | | |
| 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 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 DBE textbook (LB), workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  **Recommended Homework**:  Thabelo is building a house from match sticks. If he uses 400 matches in the first section, 550 in the second and 700 in the third section, how many matches will he need to complete the fourth section, if the pattern continues? | |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – June**

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

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| 1. **TOPIC: GEOMETRIC PATTERNS:** Investigate and extend patterns **(Lesson 2)** | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to** describe and justify the general rules for observed relationships | |
| 1. **RESOURCES:** | | Matchsticks, DBE workbook 1 and DBE textbook | |
| 1. **PRIOR KNOWLEDGE:** | | * Numeric patterns * Geometric patterns * Flow diagrams | |
| 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)   Introduce the lesson by asking learners in their pairs to respond to the following questions:  **Activity 1**   1. Select a pattern where it is getting smaller or bigger and those in which the shape or part is added to each stage.        3. Describe the pattern using the statements below.   • Patterns with the same difference between the terms.  • Patterns do not have the same difference between terms. |

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| 1. **LESSON PRESENTATION/ DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to:) |
| NB: Provide each pair of learners with the actual box of beads so that they can physically manipulate the situation.  **Activity 1**   * 1. Construct the geometric pattern below using beads.   2. Extend the [pattern to T6.   3. Explain in your words how you have constructed T6 and why?  1. (a) What is your calculation plan?   (b) Observe the number of beads that changes and the one that is not changing in all stages.     * 1. Complete the table below and find the rule for finding the next:(Vertical method)  |  |  |  |  | | --- | --- | --- | --- | | **Term** | **Calculation plan**  **(Vertical** | **General rule/Number sentence** | **Common**  **difference** | | 1 | **3** green beads + 1 yellow bead | **T1 = 3 +1** | **3** | | 2 | **3** green beads + 1 yellow bead | **T2 = 3 +1** | **3** | | 3 | **3** green beads + 1 yellow bead | **T3 = 3 +1** | **3** | | 4 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_ |  | | 5 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_ |  | | 6 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_ |  | | 30 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_ |  | |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_ |  |   What do you notice when you compare the common difference and the number that multiplies the term number**?**  The common difference and the number that multiplies the term number(co-efficient) are the same. This simply means that if you know the common difference you can start multiplying the stage number.    **T1= 1 3 + 1**  **Note:** Guide learners with questions to generalise the rule for any stage number which will be on what is changing and what is not changing.:  **T = 3 + 1**  The **rule** for the geometric patterns such as the one above is contained in the structure.  The “structure” in this case refers to the physical arrangement of geometric shapes in every stage of the pattern.  **Activity 2**  **I**n small groups study the pattern and answer the questions below:    Stage 1  Stage 3  Stage 4  Stage 2   * 1. Describe the pattern above in your own words.   2. Complete the table below and find the rule for finding the number of squares for any stage.  |  |  |  |  | | --- | --- | --- | --- | | **Stage** | **Calculation plan** | **Number sentence** | **Common difference** | | 1 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_ |  | | 2 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_ |  | | 3 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_ |  | | 4 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_ |  | | 5 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_ |  | | 6 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_ |  | | 40 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_ |  | |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_ |  | | * work in small groups to investigate the geometric pattern. * Model the physical situations |
| **Activity 2**  Create your own geometric pattern. You may use matchsticks or toothpicks to physically manipulate the situations. Draw your pattern in the book and use it to answer the following questions.   1. Describe the pattern in words 2. Use a table to represent the pattern 3. Write down a number sentence to describe the rule 4. Write the general rule in algebraic language | Use a table to record the number of matches used to increase triangles and write down the general rule. |

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| 1. **CLASSWORK** (Suggested time: 15 minutes)   Study the pattern below and answer questions that follow    Stage 1  Stage 2  Stage 3  Stage 4   1. Explain the pattern in your own words 2. Draw the fifth stage 3. Write down a number sentence to describe the rule 4. What is the common difference of the above geometric pattern? 5. Write down the general rule 6. Use the general rule to find the number of matchsticks you will use to build a pattern with 50 squares? |

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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 pattern. * Learners should be able to recognise that there is a constant that will be added in all stages which is 1 yellow bead in both patterns. * Secondly that there is a relationship between the stage and the output values.  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 DBE textbooks, workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  **Recommended Homework**:  DBE workbook 1, page 102-103 number 1(a)-(b) and 2(a)-(b) |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – June**

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| **PROVINCE:** |  |
| **DISTRICT:** |  |
| **SCHOOL:** |  |
| **TEACHER’S NAME:** |  |
| **DATE:** |  |
| **DURATION**: | 1. Hour |
| 1. **TOPIC: NUMERIC AND GEOMETRIC PATTERNS**: Input and output values **(Lesson 3)** | | | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to** determine input values, output values and rules for patterns and relationships using:   * flow diagrams * tables | | | |

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| 1. **RESOURCES:** | Matchsticks, DBE workbook 1 and DBE textbook (LB and TG) |
| 1. **PRIOR KNOWLEDGE:** | * Numeric patterns * Geometric patterns * Flow diagrams |
| 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)   Introduce the lesson by asking learners in their pairs to respond to the following questions:  Classify the following into a flow diagram or a table and then complete the flow diagram.            **NB**: Both the flow diagram and the table have an input, a rule and output and are used to represent the relationship of a pattern. |

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| 1. **LESSON PRESENTATION/ DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to:) |
| Let learners work in small groups:  **Activity 1**   1. In this pattern, Size 1 is made of 4 green tiles and 5 smaller purple tiles. The pattern is then continued as shown: 2. Complete the table below and describe your methods.      1. Use a flow diagram to represent the relationship between the size(input) and the number of purple tiles(output) as shown below:   **NB**: Starting from the geometric visual approach, learners can do it in the following way:    Size 3  Size 2  Size 1    **Green 1=** **1×4**  **Purple1 = 1×4 +1**  **Green 2= 2×4**  **Purple 2 = 2×4 +1**  **Green 3= 3×4**  **Purple3 = 3×4 +1**  The same approach would help learners in completing the table:      **Note:** Emphasise to learners that when describing the pattern, they should use the **geometric visual approach** which will help them to understand the rule. They will be able to see if the pattern has a common difference, a common ratio or nothing.  **Activity 2**  Give to learners a similar activity to increase their conceptual understanding**.**  2.1. In this pattern, Size 1 is made of 8 green tiles and 9 smaller purple tiles. The pattern is then continued as shown:    Size 3  Size 2  Size 1  2.2. Complete the table below and describe your methods.  2.3 Use a flow diagram to represent the relationship between the size(input) and the number of purple tiles(output) as shown below:    2.4. Explain in your own words the calculation plan you have used get the output values from the input values | * work in small groups to investigate the geometric pattern. |
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| 1. **CLASSWORK**(Suggested time: 15 minutes)   Study the pattern below and answer questions that follow:    Pattern 1  Pattern 2     1. Explain the pattern in your own words 2. Write down the general rule from the structure 3. Draw and complete the flow diagram and the table for both patterns. 4. Compare the rules and outputs for patterns 1 and 2. |

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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 pattern. * Both the flow diagram and the table are used to describe a pattern and have an input, rule and output.  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 DBE textbook(LB), workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  **Recommended Homework**:  DBE workbook 1 page 102 number 1. |

**MATHEMATICS LESSON PLAN**

**GRADE 6**

**TERM 2: April – June**

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| **PROVINCE:** |  | |
| **DISTRICT:** |  | |
| **SCHOOL:** |  | |
| **TEACHER’S NAME:** |  | |
| **DATE:** |  | |
| **DURATION**: | 1. Hour | |
| 1. **TOPIC: GEOMETRIC PATTERNS**: Equivalent forms (**Lesson 4)** | | | | |
| 1. **CONCEPTS & SKILLS TO BE ACHIEVED:**   **By the end of the lesson, learners should know and be able to** determine equivalence of different descriptions of the same relationship or rule presented:   * verbally. * in a flow diagram * in a table * by a number sentence | | | | |
| 1. **RESOURCES:** | | | | matchsticks, DBE workbook 1, DBE textbook, any other textbook | | |
| 1. **PRIOR KNOWLEDGE:** | | | | * number sentences * flow diagrams * addition, subtraction and multiplication of whole numbers * numeric and geometric patterns | | |
| 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)   Present the following activity to learners to revise the work done on flow diagrams, tables and number sentences.     1. Write the number sentence shown in the flow diagram above. 2. Write the rule in words. 3. Complete the flow diagram above. |

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| 1. **LESSON PRESENTATION/ DEVELOPMENT** (Suggested time: 20 minutes) | |
| **Teaching activities** | **Learning activities**  (Learners are expected to:) |
| Let learners work in small manageable groups:  **Activity 1**  Equivalent descriptions are useful in illustrating different representations of a pattern.   1. Describe how each of the patterns (A, B and C) below grows: 2. verbally 3. by a number sentence 4. using a flow diagram and 5. a table 6. What did you observe? Is the rule used the same for all representations?   **Pattern A**  **Stag**    **Stage 4**    **Stage 1 Stage 2 Stage 3**     |  |  |  | | --- | --- | --- | | **Verbally** | **Number sentence** | **Flow diagram** | |  |  | **Explanation of rule used:** | | **Table**    **Explanation of rule used:** | | |   **Pattern B**       |  |  |  | | --- | --- | --- | | **Verbally** | **Number sentence** | **Flow diagram** | |  |  | **Explanation of rule used:** | | **Table**    **Explanation of rule used:**  **Pattern C**  **Hexagon 1**  **Hexagon 2**  **Hexagon 3** | | |      |  |  |  | | --- | --- | --- | | **Verbally** | **Number sentence** | **Flow diagram** | |  |  |  | | **Table** | | | |  | | | |  | | |     **NB:** The geometric patterns above may be represented in different forms i.e. tables, verbal descriptions, number sentences and flow diagrams. The rule and the output for the pattern in all the forms remains the same as shown on the left. | Work in small groups of 2 to 3 members to investigate the geometric pattern. |

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| 1. **CLASSWORK** (Suggested time: 15 minutes) |
| Study the pattern below and answer questions that follow:      Stage 3  Stage 2  Stage 1   1. Explain the pattern in your own words 2. Write down a number sentence to describe the rule 3. Describe the pattern using the flow diagram. |
| 1. **CONSOLIDATION / CONCLUSION& HOMEWORK (Suggested time: 5 minutes)** |
| 1. Emphasise that:  * The geometric patterns above may be represented in different forms i.e. tables, verbal descriptions, number sentences and flow diagrams. * The rule for the pattern in all the forms remains the same. * 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 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 DBE textbook(LB), workbooks and/or textbooks for learners’ homework. The selected activities should address different cognitive levels.  **Recommended Homework**:  DBE workbook 1, page 100 number 1(a) and (b). |