FIRST TERM
WEEKLY LESSON NOTES
WEEK 1

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number and Numeration System	
Content Standard: B9.1.1.1 Apply the understanding of place value in solving real life problems involving integers of any size, rounding this to given decimal places and significant figures	**Indicator:** B9.1.1.1.1 Express integers to a given number of significant and decimal places	**Lesson:** 1 of 1	
Performance Indicator: Learners can express integers to a given number of significant and decimal places	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)		
References: Mathematics Curriculum Pg. 165			
New words: Integers, Significant figures, Decimal places, Precision			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Present students with a real-world scenario: "Imagine you're a scientist measuring the length of a newly discovered insect, and you need to be very precise. How would you ensure your measurements are both accurate and precise?" Allow students to discuss. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Introduce the concept of significant figures. Work through a series of examples demonstrating how to express integers to a set number of significant figures. E.g.1. Express integers to a number of significant figures. (i) 857,386,321 -five significant figures -four significant figures -three significant figures. *(i) To Five Significant Figures:* *Look at the first 6 digits of the number: 857,386* *Since the sixth digit (8) is greater than or equal to 5, we round up the fifth digit (3) by 1.* *Result: 857,390,000* *(ii) To Four Significant Figures:* *Look at the first 5 digits of the number: 857,38* *Since the fifth digit (8) is greater than or equal to 5, we round up the fourth digit (7) by 1.* *Result: 857,400,000* *(iii) To Three Significant Figures:*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	Look at the first 4 digits of the number: 857,3 *Since the fourth digit (7) is greater than or equal to 5, we round up the third digit (5) by 1.* *Result: 858,000,000* Allow students to practice with various integers, working in pairs or small groups. Explain the importance of expressing decimal numbers to a specific number of decimal places, especially in scientific or financial contexts. Have students practice expressing various decimal numbers to a set number of decimal places, encouraging peer checks for accuracy. E.g.2. Express decimal numbers to a given number of decimal places. (i) Write 98745.9674 correct to -three decimal places -two decimal places -one decimal place *(i) To Three Decimal Places:* *Look at the number up to the fourth decimal place: 98745.9674* *Since the fourth decimal digit (4) is less than 5, we keep the third decimal digit (7) as it is.* *Result: 98745.967* *(ii) To Two Decimal Places:* *Look at the number up to the third decimal place: 98745.967* *Since the third decimal digit (7) is greater than or equal to 5, we round up the second decimal digit (6) by 1.* *Result: 98745.97* *(iii) To One Decimal Place:* *Look at the number up to the second decimal place: 98745.97* *Since the second decimal digit (7) is greater than or equal to 5, we round up the first decimal digit (9) by 1.* *Result: 98746.0* <u>Assessment</u> 1. Given the number: 12345.6789 (i) Write it correct to: - three decimal places - two decimal places - one decimal place 2. Given the number: 54321.2345 (i) Write it correct to: - three decimal places - two decimal places - one decimal place 3. Given the number: 6789.0123 (i) Write it correct to: - three decimal places - two decimal places - one decimal place	

	4. Given the number: 4321.0987 (i) Write it correct to: - three decimal places - two decimal places - one decimal place	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics
Duration:		**Strand:** Number
Class: B9	**Class Size:**	**Sub Strand:** Number and Numeration System

Content Standard: B9.1.1.1 Apply the understanding of place value in solving real life problems involving integers of any size, rounding this to given decimal places and significant figures	**Indicator:** B9.1.1.1.2. Use knowledge and understanding of place value to solve real life problems	**Lesson:** 1 of 1
Performance Indicator: Learners can understand of place value to solve real life problems	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 165		
New words: Place Value, Standard Form, Real-life Problem, Decimal Point		

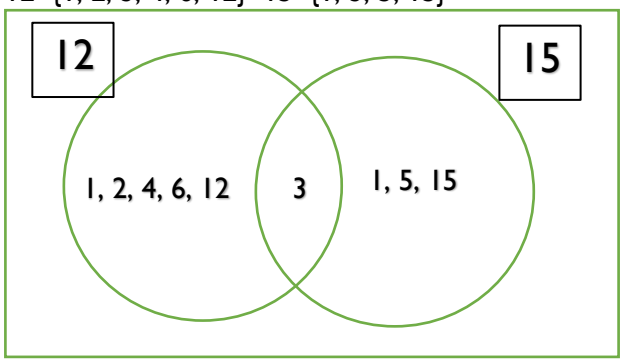
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin with a relatable scenario: "Imagine you're collecting recyclable bottles for a school fundraiser. Each class has a different number of bottles, and you need to total them. How would you do that? Think about the place values when adding the numbers." Allow students to briefly discuss. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Divide students into small groups and distribute pre-made cards, each containing a unique real-life situation (e.g., shopping scenarios with item costs, trip planning with distances). Instruct each group to analyze their given situation and craft a mathematical problem that requires understanding of place value to solve. After formulating their problems, groups will exchange their scenarios with another group to solve. E.g.1. (I) I am a 6-digit number. My first digit is 5 more than the last digit, but 2 less than my second digit. My second digit is the third multiple of 3, while my fourth digit is the second multiple of 3. My third digit is the quotient when the fourth digit is divided by my last digit. However, my fourth and fifth digits are consecutive numbers. What number am I? Solution *Let the 6-digit number be represented as ABCDEF.* *1. "My first digit is 5 more than the last digit, but 2 less than my second digit."* *A = F + 5 and A = B - 2* *2. "My second digit is the third multiple of 3"* *B = 3 * 3 = 9* *3. "My fourth digit is the second multiple of 3."* *D = 3 * 2 = 6*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	4. "My third digit is the quotient when the fourth digit is divided by my last digit." *C = D / F* *C = 6 / F* *5. "My fourth and fifth digits are consecutive numbers."* *E = D + 1* *E = 6 + 1 = 7* *Let's solve for A and F using the information from step 1:* *Given B = 9,* *A = 9 - 2 = 7* *A = F + 5* *So, F = 7 - 5 = 2* *Plugging this into C = 6 / F:* *C = 6 / 2 = 3* *So the number is 793652.* Once solved, answers should be written in standard form. Groups present both the problem and solution to the class for discussion. *Example: So, the number is 793652 = 7.93652 x 10^5* <u>Assessment</u> I am in a library looking for a book, and I remember it's in a 4-digit aisle number. The first digit is thrice the last digit but 2 less than the second digit. The second digit is the third multiple of 2. The third digit is the quotient when the second digit is divided by the first. In which aisle should I search for my book? I have a safe with a 6-digit code. The first digit is twice the third digit but 1 less than the fifth digit. The third digit is half the last digit. The fourth digit is the third multiple of 2. The fifth digit is the first multiple of 5, and the second digit is the fourth digit minus 1. Can you decode the safe for me? I am at a train station with a platform number that's a 5-digit number. The first digit is one more than the third digit and two less than the fourth digit. The third digit is twice the last digit. The fourth digit is the first multiple of 4, and the second digit is half the fourth digit. At which platform am I waiting?	
PHASE 3: **REFLECTION**	Emphasize the real-world applications of place value. Understanding and applying place value helps ensure accuracy, especially in situations involving money, measurements, or data analysis. Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 2

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number and Numeration System	
Content Standard: B9.1.1.2 Demonstrate an understanding of the relationship between members of the rational number system and solve real life problems involving union and intersection of three sets	**Indicator:** B9.1.1.2.1 Solve problems on relationship between members of the rational number system using knowledge and understanding of the concept of union and intersection of two sets		**Lesson:** 1 of 2
Performance Indicator: Learners can demonstrate the relationship between members of the rational number system using the concepts of union and intersection of sets.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 165			
New words: Rational numbers, Union, Intersection, Venn diagram, Sets			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Present learners with two sets: one containing even numbers up to 10 and the other containing prime numbers up to 10. Ask, "Which numbers belong to both sets?" and "Which numbers belong to just one set?" Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Begin with a discussion on what constitutes a real number, and then break it down further into rational and irrational numbers. Draw a series of nested sets to represent the relationship between N, W, Z, Q, and QI. Label each set and give examples of numbers that fall into each category. *1. Irrational Numbers (QI)* *Numbers that cannot be expressed as a fraction a/b where a and b are integers, and b≠0. Their decimal expansions are non-repeating and non-terminating.* *- Examples:* *- $\sqrt{2}$ (the square root of 2)* *- π (pi, the ratio of the circumference of a circle to its diameter)* *- e (the base of the natural logarithm)* *2. Rational Numbers (Q)*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	Numbers that can be expressed as a fraction a/b where a and b are integers, and b≠0. Their decimal expansions are either terminating or repeating. *- Examples: {7/3, 1.25, 0}* *3. Integers (Z)* *All whole numbers, both positive and negative, including zero.* *- Examples: {-3,-2,-1,0,1,2,3,4}* *4. Whole Numbers (W)* *All non-negative integers. This includes 0 and all positive integers but does not include any negative numbers.* *- Examples: {0,1,100,210,350,800}* *5. Natural or Counting Numbers (N)* *All positive integers. They do not include zero or any negative numbers.* *- Examples: {1,2,3,4,5,6,7,8,9}* Discuss the concept of union (the combination of two sets) and intersection (the common elements of two sets). Begin with a quick review of factors and provide examples. Divide the class into pairs or small groups and give each a pair of numbers (e.g., 12 and 15). 12={1, 2, 3, 4, 6, 12} 15={1, 3, 5, 15}  Their task is to list out the factors of each number and represent them on a Venn diagram, showing the intersection of common factors. Have a few groups share their Venn diagrams with the class. <u>Assessment</u> Write the factors of these numbers and represent them on a Venn diagram. 1. 10 and 20 2. 18 and 24 3. 14 and 28 4. 8 and 16	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.	

	Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number and Numeration System	
Content Standard: B9.1.1.2 Demonstrate an understanding of the relationship between members of the rational number system and solve real life problems involving union and intersection of three sets	**Indicator:** B9.1.1.2.2 Apply the concept of sets to solve problems on relationship between members of rational number system and solve real life problems involving union and intersection of two sets		**Lesson:** 2 of 2
Performance Indicator: Learners can		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 166			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Present two seemingly unrelated groups of items (e.g., types of fruits and colors). Ask learners how they might sort these into different categories or "sets." Introduce the idea that in mathematics, we use sets to categorize and understand relationships between different types of numbers. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Discuss what sets are in a mathematical context. Use Venn diagrams to illustrate the basic ideas of union (everything in both sets) and intersection (only what's common in both sets). Display a Venn diagram with two overlapping circles, one for integers and one for fractions. Ask learners to place various numbers (provided on cards or written on the board) into the correct part of the Venn diagram. Discuss the concept of rational numbers being the "union" of integers and fractions. Have learners break into small groups. Each group gets a real-life scenario where they have to identify two sets and then determine the union and intersection. Example: "At a music concert, 50 people like pop music, 40 like rock music, and 20 like both. Represent these fans in a Venn diagram and determine how many people like only rock, only pop, and both types of music." Groups present their scenarios and Venn diagrams. As a class, discuss the conclusions derived from each Venn diagram. <u>Assessment</u> 1. If Set A contains all even numbers below 10 and Set B contains all odd numbers below 10, what is the intersection of Sets A and B?	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	2. In a survey, 30 learners liked chocolate ice cream, 25 learners liked vanilla, and 10 liked both. How many learners only liked vanilla? 3. What is the union of Set A = {1, 2, 3} and Set B = {3, 4, 5}? 4. There are 80 farmers in a certain village who grow either maize or beans. Fifty of them grow beans while sixty grow maize. If each farmer grows at least one of the two crops, represent the information on a Venn diagram and hence find the number of farmers who grow: a. both crops. b. only one crop.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 3

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number Operations	
Content Standard: B.9.1.2.1 Apply mental mathematics and properties to determine answers for addition and subtraction of basic facts.	**Indicator:** B9.1.2.1.1 Multiply and divide given numbers by powers of 10 including decimals and benchmark fractions		**Lesson:** 1 of 1
Performance Indicator: Learners can multiply and divide given numbers by powers of 10		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 168			
Key words: Decimal, Benchmark Fractions, Percentage, and Product.			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Ask learners to think of a two-digit number. Ask them to multiply that number by 10 and observe what happens. Discuss as a class Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Remind learners of the importance of knowing multiplication facts and related division facts. Give learners a quick multiplication quiz, asking them to solve multiplication problems mentally or with the help of multiplication tables. Discuss the correct answers and address any questions or difficulties that arise. Explain the concept of multiplying or dividing by powers of 10 by using examples and real-world scenarios. Write this on the Multiply 0.25 by 10 and guide learners provide a step by step solution. ***Step 1: Understand the decimal places***. *0.25 is read as twenty-five hundredths. It means there are two digits after the decimal point.* ***Step 2:*** *Multiplying by 10 effectively shifts each digit in the number to the left by one place. This is equivalent to moving the decimal point one place to the right. The number of the zeros determines the number of shift.*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	Step 3: Let's do the shifting. *Original number: 0.25* *Shift the decimal point to the left by one place: 2.5* *Therefore when you multiply 0.25 by 10, you get 2.5.* Demonstrate how moving the decimal point in a number corresponds to multiplying or dividing by powers of 10. • *(1.00 × 10 = 10.00). Note how the decimal point moved one place to the right.* • *(1.00 × 100 = 100.00). Note how the decimal point moved two places to the right.* • *(1.00 ÷ 10 = 0.10). Note how the decimal point moved one place to the left.* • *(1.00 ÷ 100 = 0.01). Note how the decimal point moved two places to the left.* Provide a simple practice problems on the board. Introduce benchmark fractions such as 1/2, 1/4, 1/10, etc., and their decimal and percentage equivalents. Show benchmark fraction cards with their corresponding decimals or percentages and discuss their significance and uses. Give learners opportunities to practice converting benchmark fractions to decimals or percentages, and vice versa. <u>Assessment</u> a. Multiply 0.25 by 10. b. Convert 3/5 into a decimal. c. Divide 120 by 10. d. Express 40% as a decimal.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics
Duration:		**Strand:** Number
Class: B9	**Class Size:**	**Sub Strand:** Number Operations

Content Standard: B.9.1.2.1 Apply mental mathematics and properties to determine answers for addition and subtraction of basic facts.	**Indicator:** B.9.1.2.1.2 Demonstrate the ability to determine commutative properties of addition and multiplication	**Lesson:** 1 of 1
Performance Indicator: Learners can apply the commutative property of addition by recognizing that for any two numbers a and b, a + b = b + a.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 168		
New words: Commutative, Property, Addition, Multiplication		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Announce two numbers (e.g., 4 and 7). Ask the class to quickly add the numbers in the order given (4 + 7). Write the result on the board. Challenge them to reverse the numbers and add again (7 + 4). Write this result beside the first. Repeat the activity with multiplication. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Display the commutative property of addition on the chart paper or board: a + b = b + a. Explain that the commutative property of addition tells us that when we add two numbers, it doesn't matter which order they're added in; the sum remains the same. Provide a few examples on the board to illustrate the commutative property, such as adding 2 + 3 and 3 + 2, or 7 + 4 and 4 + 7. Emphasize that the sum stays the same regardless of the order. Write simple addition problems on the board, such as 3 + 5, 6 + 2, 9 + 1, and 4 + 7. Learners in groups to solve the problems and determine if the commutative property holds true by swapping the order of the addends. Circulate the classroom to provide assistance and monitor progress. Create few additional problems on the board. Ask learners to solve the problems individually and write a sentence for each problem, explaining how they know the commutative property is true. Encourage them to use mathematical language and clear reasoning in their explanations.	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	<u>Assessment</u> 1. Evaluate the commutative property of addition for the numbers 8 and 6. 2. True or false: The order of the addends affects the sum in addition. 3. Solve 12 + 4. Is the sum the same as 4 + 12? Explain why. 4. Create an addition problem that obeys the commutative property. Solve it and explain your thinking.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 4

Week Ending:	**DAY:**	**Subject:** Mathematics
Duration:		**Strand:** Number
Class: B9	**Class Size:**	**Sub Strand:** Number Operations

Content Standard: B.9.1.2.1 Apply mental mathematics and properties to determine answers for addition and subtraction of basic facts.	**Indicator:** B9.1.2.1.3 Use the associative property of addition and multiplication	**Lesson:** 1 of 3
Performance Indicator: Learners can apply the associative property of addition and multiplication.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 168		
New words: Associative, Addition, Grouping, Equality		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin by presenting a simple addition problem on the board with more than two numbers, e.g., 2 + 3 + 4. Ask learners, "Does it matter which numbers we add together first?" Allow a few learners to solve, demonstrating different groupings. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Display the Associative Property of addition on the chart paper or board: a + (b + c) = (a + b) + c or a + (b + c) = (a + c) + b Present multiple problems, letting learners solve in pairs. For each problem, ask learners to solve by grouping the numbers differently. Discuss as a class. For every problem, the result should remain the same regardless of the grouping. Example: 15 + (6 + 9) = (15 + 6) + 9 = 30 Provide learners with number cards or dice. Ask learners to roll or draw three numbers and write down an addition equation. Learners should then rewrite the equation with a different grouping to demonstrate the associative property. Briefly introduce the associative property of multiplication (a × b) × c = a × (b × c), demonstrating with an example, e.g., (12 × 5) × 4 = 12 × (5 × 4) = 240. Ask learners to pair up and come up with their own multiplication examples, testing different groupings.	Number cards or dice for activities

	Share a few examples with the class, confirming the property holds true for multiplication as well. <u>Assessment</u> 1. 4+ (6+2) =? 2. 7+ (5+3) =? 7+ (5+3) =? 3. 3× (2×4) =? 3× (2×4) =? 4. 5× (3×2) =? 5× (3×2) =? 5. 6+ (7+5) =? 6+ (7+5) =?	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number Operations	
Content Standard: B.9.1.2.1 Apply mental mathematics and properties to determine answers for addition and subtraction of basic facts.	**Indicator:** B9.1.2.1.4 Use the distributive property in solving problems		**Lesson:** 2 of 3
Performance Indicator: Learners can apply the distributive property in arithmetic problems and solve problems using the distributive property and recognize its application in real-world scenarios.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 168			
New words: Distribute, Multiply, Addition, Subtraction.			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Present a simple problem on the board, e.g., 5× (2+3). Ask learners, "How might we solve this without directly calculating the numbers inside the parentheses first?" Wait for some responses. Then, demonstrate the distributive property to solve. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Display the Distributive Property on the chart paper or board. Guide learners to recognize that for any three numbers a, b and c; i. $a \times (b + c) = (a \times b) + (a \times c)$ ii. $a \times (b - c) = (a \times b) - (a \times c)$ Use the board to present a few more examples, letting learners solve them in pairs. Discuss the solutions, ensuring everyone understands the process. Divide learners into small groups and provide each group with cards containing problems that require the distributive property to solve. Ask learners to solve each problem as a team, discussing the steps they're taking. Example: $5 \times (10 + 7) = (5 \times 10) + (5 \times 7) = 85$ $5 \times (10 - 7) = (5 \times 10) - (5 \times 7) = 15$ After a set duration, review the solutions as a class. Encourage groups to explain their approaches. Discuss real-world scenarios where the distributive property might be applied. For instance, if a student buys 3 pencils and 2 erasers	Pre-prepared cards with arithmetic problems for group activities

	where each pencil costs ₵a and each eraser costs ₵b, the total cost would be 3a+2b <u>Assessment</u> 1. Solve: 4× (3+6) =? 2. Solve: 7× (5−2) =? 3. If a=2, b=4, and c=3, what is a× (b−c)? 4. Why is the distributive property useful in simplifying arithmetic problems?	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number Operations	
Content Standard: B.9.1.2.1 Apply mental mathematics and properties to determine answers for addition and subtraction of basic facts.	**Indicator:** B9.1.2.1.4 Use the distributive property and associative property of addition and multiplication in solving problems		**Lesson:** 3 of 3
Performance Indicator: Learners can apply the distributive property in arithmetic problems and solve problems using the distributive property and recognize its application in real-world scenarios.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 168			
New words: Distribute, Multiply, Addition, Subtraction.			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Present a simple problem on the board, e.g., 5× (2+3). Ask learners, "How might we solve this without directly calculating the numbers inside the parentheses first?" Wait for some responses. Then, demonstrate the distributive property to solve. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to **u**se the distributive property and associative property of addition and multiplication in solving problems. Let learners do this activity in pairs. Invite pars randomly to share their solutions on the board **1. Problem:** 6×(4+7) **Solution:** Using the distributive property: 6×4+6×7 =24+42 =66 **2. Problem:** 3×(5+9) **Solution:** Using the distributive property: 3×5+3×9 =15+27 =42 **3. Problem:** 4×(8−3)	Pre-prepared cards with arithmetic problems for group activities

Solution:
Using the distributive property:
$4\times8-4\times3$
$=32-12$
$=20$

4. Problem: $7\times(6+2)$

Solution:
Using the distributive property:
$7\times6+7\times2$
$=42+14$
$=56$

5. Problem: $5\times(7-4)$

Solution:
Using the distributive property:
$5\times7-5\times4$
$=35-20$
$=15$

1. Problem: Solve for x where
$x=(3+4)+5$

Solution:
Using the associative property of addition,
$x=3+(4+5)$
$x=3+9$
$x=12$

2. Problem: Solve for y where
$y=2\times(3\times4)$

Solution:
Using the associative property of multiplication,
$y=(2\times3)\times4$
$y=6\times4$
$y=24$

3. Problem:
Evaluate z given
$z=(8+7)+6$

Solution:
Using the associative property of addition,
$z=8+(7+6)$
$z=8+13$
$z=21$

	4. Problem: Determine w where $w=5\times(6\times2)$ **Solution:** Using the associative property of multiplication, $w=(5\times6)\times2$ $w=30\times2$ $w=60$ **5. Problem:** Evaluate p given $p=(10+9)+11$ **Solution:** Using the associative property of addition, $p=10+(9+11)$ $p=10+20$ $p=30$	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 5

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number Operations	
Content Standard: B9.1.2.2 Apply the understanding of addition, subtraction, multiplication and division of decimal numbers to solve problems, and round answers to given decimal places and significant figures	**Indicator:** B9.1.2.2.1 Solve operations involving addition, subtraction, multiplication and division using word problems.		**Lesson:** 1 of 2
Performance Indicator: Learners can apply a combination of basic operations (addition, subtraction, multiplication, division) to solve these word problems.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 169			
New words: Word Problem, Operations, Solution, Interpretation			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Present a relatable scenario such as: "Imagine you went to a store with ₵50. You bought a book for ₵15 and a shirt for ₵20. How much money do you have left?" Then, ask, "What mathematical operations did you use to solve that?" Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to create word problems involving a combination of two or more basic operations. Divide learners into pairs or small groups. Each group creates their own word problems that involve at least two of the basic operations. Encourage creativity, asking learners to frame problems around real-life scenarios they might encounter. Solve the created story problems. Swap the created problems between groups. Each group now attempts to solve the word problems created by their peers. Example: A trader sells oranges from two baskets, A and B. Basket A contained 85 oranges and she sold 48. She sold 59 oranges from basket B and was left with the same number of oranges as in Basket A. How many oranges were originally in Basket B? <u>Solution</u> *From Basket A:* *She originally had 85 oranges.* *She sold 48 oranges.*	Number cards

	Therefore, the number of oranges left in Basket A = 85 - 48 = 37 oranges. *From the problem, we know she sold 59 oranges from Basket B and was then left with the same number of oranges as in Basket A after she sold some.* *Thus, the number of oranges left in Basket B after selling 59 = 37 oranges.* *Let x be the original number of oranges in Basket B.* *Therefore, x - 59 = 37.* *Adding 59 to both sides of the equation, we get:* *x = 37 + 59* *x = 96.* *So, Basket B originally contained 96 oranges.* During this time, move around the room to guide and assist where necessary. After a set time, have each group present the problem they received and their solution, allowing for a discussion and clarification if answers vary. <u>Assessment</u> 1. Lisa had 20 apples. She gave 5 apples to her friend and then bought 10 more. How many apples does Lisa have now? 2. A factory produces 200 toys every day. After a week, they sent 800 toys to a retailer. How many toys are left in the factory? 3. Mike read 50 pages of a book on Monday. On Tuesday, he read twice the number of pages he read on Monday. How many pages has he read in total by the end of Tuesday? 4. Sarah baked 100 cookies for a bake sale. She sold 3/4 of the cookies and gave 10 cookies to her friends. How many cookies does she have left?	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Number Operations	
Content Standard: B9.1.2.2 Apply the understanding of addition, subtraction, multiplication and division of decimal numbers to solve problems, and round answers to given decimal places and significant figures	**Indicator:** B9.1.2.2.2 Solve word problems involving the four basic operations and round the answers to the nearest two decimal figures or to some significant figures		**Lesson:** 2 of 2
Performance Indicator: Learners can apply the four basic operations to solve these word problems and round their answers to the nearest two decimal figures or to the appropriate significant figures.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 169			
New words: Word Problem, Operations, Rounding, Significant Figures			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Display a word problem like: "A pizza slice costs ₵2.37, and a drink costs ₵1.28. How much will 2 slices of pizza and 2 drinks cost together?" Solve the problem and then ask, "If we needed to give a rounded estimate, what would the total cost be when rounded to the nearest dollar?" Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to solve word problems and practice rounding. Provide learners with a set of word problems that require a combination of the four basic operations to solve. After solving each problem, learners should round their answer to the nearest two decimal figures or as the question specifies. Allow learners to collaborate in pairs, discussing their approach and solution to each problem. Engage learners to review and discuss solutions. Choose a few problems from the set and solve them on the board, ensuring learners understand each step. Example: The price of a jacket is three times that of a shirt. The price of a jacket is GH₵560.65. Mr Mensa bought two of the jackets and four shirts for his twin sons. Calculate the total amount Mr Mensa paid for the items, correct your answer to: α) two decimal places β)three significant figures <u>Solution</u> *Given that the price of a jacket is GH₵560.65 and it is three times the price of a shirt, we can determine the price of the shirt:* *Let the price of the shirt be x.*	Number cards

	Given: 3x = GH₵560.65 *To find x, divide both sides by 3:* *x = GH₵560.65 / 3* *x = GH₵186.88 (rounded to two decimal places)* *So, the price of a shirt is approximately GH₵186.88.* *Total Amount Mr. Mensa Paid:* *He bought two jackets and four shirts.* *Total for jackets = 2 * GH₵560.65 = GH₵1,121.30* *Total for shirts = 4 * GH₵186.88 = GH₵747.52* *Combine the two amounts:* *Total amount = GH₵1,121.30 + GH₵747.52* *Total amount = GH₵1,868.82* *𝒶) Two Decimal Places:* *The total amount is already given to two decimal places as GH₵1,868.82.* *𝒷) Three Significant Figures:* *To round GH₵1,868.82 to three significant figures, we consider the first three non-zero digits from the left and round accordingly.* *So, GH₵1,868.82 becomes GH₵1,870 when rounded to three significant figures.* *Thus:* *𝒶) Mr. Mensa paid GH₵1,868.82.* *𝒷) Mr. Mensa paid approximately GH₵1,870 to three significant figures.* Emphasize the rounding process, showcasing how to round to the nearest two decimal figures or to other significant figures as needed. <u>Assessment</u> 1. John has ₵45.78. He spends ₵12.32 on a book and ₵18.65 on a shirt. How much does he have left, rounded to the nearest dollar? 2. A factory produces 135.45 toys every day. How many toys would it produce in a week (7 days), rounded to two decimal places? 3. Mary's garden has an area of 250.75 square meters. She wants to divide it into 3 equal sections. How big will each section be, rounded to two decimal places? 4. Tom drives 167.85 miles on Monday and 152.48 miles on Tuesday. If he divides the total distance by 2 to find the average, what is the average distance he drives per day, rounded to the nearest mile?	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 6

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** SURDS	
Content Standard: B9.1.2.4 Demonstrate understanding of surds as real numbers, the process of adding and subtracting of surds	**Indicator:** B9.1.2.4.1 Identify simple and compound surds.		**Lesson:** 1 of 2
Performance Indicator: Learners can identify and simplify simple and compound surds.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 169			
New words: Surds, Simple Surd, Compound, Radicand			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Display the following numbers on the board: √3, √18, √2, √50. Ask learners, "What do these numbers have in common, and how might they be different from each other?" Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Briefly discuss what surds are (numbers that can't be simplified to remove a square root). Explain the terminology: the number under the square root sign is called the 'radicand'. Define a simple surd as a square root whose radicand cannot be further simplified. Provide examples, such as √2 or √3, and explain why these are simple surds (because they don't have factors which are perfect squares, apart from 1). Define a compound surd as a square root whose radicand can be simplified further by factoring out perfect squares. Use examples to illustrate. For instance, √18 can be written as √(9x2) or 3√2. Guide learners through the process of simplifying a few compound surds. Example: Simplify the compound surd: √72. <u>Solution</u> *To simplify the compound surd √72, you can simplify it as follows:*	Number cards

	*√72 = √(36 * 2)* *Now, simplify the square root of 36, which is 6:* *√(6 * 2) = 6√2* *So, the simplified form of √72 is 6√2.* Distribute a set of cards to each student or small groups, where each card has a surd written on it. Example: √50, √18, √98, √54, √75, etc. Ask learners to sort these cards into two piles: simple surds and compound surds. After sorting, encourage learners to pick a compound surd and simplify it. Example: Simplify √162 <u>solution</u> √162 = √(9 * 18) We can start by factoring 162 as = √9=3 and √18=(9*2) = 3*3√2 *So, the simplified form of √162 is 9√2* <u>Assessment</u> 1. Simplify the compound surd: √72. 2. Is √5 a simple or compound surd? Explain your answer. 3. Simplify √45. 4. Simplify √80. 5. Simplify √28. 6. Simplify √63. 7. Simplify √112. 8. Simplify √200.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** SURDS	
Content Standard: B9.1.2.4 Demonstrate understanding of surds as real numbers, the process of adding and subtracting of surds	**Indicator:** B9.1.2.4.2 Explain the identities/rules of surds		**Lesson:** 1 of 2
Performance Indicator: Learners can understand the fundamental identities and rules of surds and apply them in mathematical expressions.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 169			
New words: Surds, Simple Surd, Rationalizing, Radicand			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin with a math puzzle. Display the following expressions on the board: √4, √9, √16, and √25. Ask learners, "What do you notice about these numbers, and how can you describe this pattern?" Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Revise with learners on the definition of surds as square roots that cannot be simplified to whole numbers. Explain that the number under the square root sign is called the 'radicand.' <u>Identity: Rule 1</u>- √a * √b = √(a * b): Introduce the product rule, explaining that when you multiply two surds with the same index (e.g., both √a), you can simplify them by multiplying the radicands. Provide examples and guide learners through the process: √3 * √5 = √(3 * 5) = √15. <u>Identity: Rule 2</u>- √a / √b = √(a / b): Introduce the quotient rule, explaining that when you divide two surds with the same index, you can simplify them by dividing the radicands. Provide examples and guide learners: √12 / √3 = √(12 / 3) = √4 = 2. <u>Identity: Rule 3</u> - $\frac{b}{\sqrt{a}} = \frac{b}{\sqrt{a}} * \frac{\sqrt{a}}{\sqrt{a}} = \frac{b\sqrt{a}}{a}$	Number cards

Introduce Rule 3, explaining that it's used when you have a surd in the denominator of a fraction.

Walk through the steps: b/(√a) = b/(√a) * (√a)/(√a) = (b√a)/a. Provide examples and let students practice.
Example 1:
Simplify 5 / √3.
Solution:
*5 / √3 = 5 / √3 * √3 / √3 = (5√3) / 3*

Example 2:
Simplify 2 / √6.
Solution:
*2 / √6 = 2 / √6 * √6 / √6 = (2√6) / 6 = √6 / 3*

Identity: Rule 4 - $a\sqrt{c} + b\sqrt{c} = (a + b)\sqrt{c}$:

Introduce Rule 4, explaining that it's used when adding or subtracting surds with the same index and radicand.

Walk through the steps: a√c + b√c = (a + b)√c. Provide examples and let students practice.

Example 1:
Simplify 4√5 + 3√5 using Rule 4.
Solution:
4√5 + 3√5 = (4 + 3)√5 = 7√5

Example 2:
Simplify √7 + 2√7 using Rule 4.
Solution:
√7 + 2√7 = (1 + 2)√7 = 3√7

Identity: Rule 5 - : $\frac{c}{a+b\sqrt{n}} = \frac{c}{a+b\sqrt{n}} * \frac{a-b\sqrt{n}}{a-b\sqrt{n}}$

Introduce Rule 5, explaining that it's used for rationalizing the denominator when the denominator contains a sum.

Walk through the steps: c/(a+b√n) = c/(a+b√n) * (a-b√n)/(a-b√n). Provide examples and let students practice.

Example 1:
Rationalize the denominator in the expression 5 / (3 + √2).
Solution:
*5 / (3 + √2) = 5 / (3 + √2) * (3 - √2) / (3 - √2) = (5 * (3 - √2)) / (3^2 - (√2)^2) = (15 - 5√2) / (9 - 2) = (15 - 5√2) / 7*

	Example 2: *Rationalize the denominator in the expression 2 / (1 + √5).* *Solution:* *2 / (1 + √5) = 2 / (1 + √5) * (1 - √5) / (1 - √5) = (2 * (1 - √5)) / (1^2 - (√5)^2) = (2 - 2√5) / (1 - 5) = (2 - 2√5) / -4 = -(1/2) + (1/2)√5* Identity: Rule 6 - $\frac{c}{a-b\sqrt{n}} = \frac{c}{a-b\sqrt{n}} * \frac{a+b\sqrt{n}}{a+b\sqrt{n}}$: Introduce Rule 6, explaining that it's used for rationalizing the denominator when the denominator contains a difference. Walk through the steps: c/(a-b√n) = c/(a-b√n) * (a+b√n)/(a+b√n). Provide examples and let students practice *Example 1:* *Rationalize the denominator in the expression 3 / (2 - √3)* *Solution:* *3 / (2 - √3) = 3 / (2 - √3) * (2 + √3) / (2 + √3) = (3 * (2 + √3)) / (2^2 - (√3)^2) = (6 + 3√3) / (4 - 3) = (6 + 3√3) / 1 = 6 + 3√3* *Example 2:* *Rationalize the denominator in the expression 4 / (1 - √2).* *Solution:* *4 / (1 - √2) = 4 / (1 - √2) * (1 + √2) / (1 + √2) = (4 * (1 + √2)) / (1^2 - (√2)^2) = (4 + 4√2) / (1 - 2) = (4 + 4√2) / -1 = -4 - 4√2* Provide learners with a set of surd expressions to simplify using the rules discussed. Encourage group work and peer learning. Allow learners to check their work collaboratively. Assessment 1. Apply the product rule to simplify √2 * √8. 2. Use the quotient rule to simplify √15 / √5. 3. Rationalize the denominator in the expression 1 / √2. 4. Simplify the expression 4√7 / √2 using the surd rules. 5. What is the result of applying Rule 4 to 5√3 + 2√3? 6. Use Rule 5 to rationalize the denominator in the expression 7 / (1 + √5). 7. Apply Rule 6 to rationalize the denominator in 3 / (2 - √6).	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 7

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** SURDS	
Content Standard: B9.1.2.4 Demonstrate understanding of surds as real numbers, the process of adding and subtracting of surds	**Indicator:** B9.1.2.4.3 Simplify given surds		**Lesson:** 1 of 2
Performance Indicator: Learners can simplify surds and provide practice opportunities for simplifying various surd expressions.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)		
References: Mathematics Curriculum Pg. 170			
New words: Surds, Simple Surd, Compound, Radicand			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin with a visual starter. Display the following surds on the board: $\sqrt{12}$, $\sqrt{27}$, $\sqrt{18}$, $\sqrt{20}$. Ask learners to identify any patterns or similarities they notice in these surds. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Begin by simplifying surds with perfect square factors. Explain that if a radicand contains a perfect square factor, it can be simplified. Provide examples and demonstrate the process: $\sqrt{12} = \sqrt{(4 * 3)} = 2\sqrt{3}$ $\sqrt{27} = \sqrt{(9 * 3)} = 3\sqrt{3}$ Move on to more complex surds that require factoring and simplification. Provide examples of surds like $\sqrt{18}$ and $\sqrt{20}$ and guide learners through the simplification process: $\sqrt{18} = \sqrt{(9 * 2)} = 3\sqrt{2}$ $\sqrt{20} = \sqrt{(4 * 5)} = 2\sqrt{5}$ Distribute a set of surd expressions to learners, including both simple and complex surds. Encourage learners to work individually or in pairs to simplify these surds. Provide opportunities for peer teaching and collaborative problem-solving.	Number cards

	<u>Assessment</u> 1. Simplify $\sqrt{48}$. 2. What is the simplified form of $\sqrt{75}$? 3. If $\sqrt{45} = a\sqrt{5}$, find the value of 'a.' 4. Simplify the surd $\sqrt{98}$.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** SURDS	
Content Standard: B9.1.2.4 Demonstrate understanding of surds as real numbers, the process of adding and subtracting of surds	**Indicator:** B9.1.2.4.4 Approximate the square roots of non-perfect squares with calculators/tables		**Lesson:** 1 of 2
Performance Indicator: Learners can approximate the square roots of non-perfect square numbers using calculators or reference tables.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 171			
New words: Surds, Simple Surd, Approximate, Radicand			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin with a math challenge. Write the following non-perfect square numbers on the board: 10, 15, 20, 25, 30. Ask learners to estimate the square roots of these numbers without using calculators. Discuss their estimates and methods. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Begin by reviewing what square roots are and how they are related to squaring a number. Explain that not all numbers have whole number square roots, and we need to approximate the square roots of non-perfect squares. Introduce the use of calculators for approximating square roots. Explain the square root function ($\sqrt{x}$) on calculators and how to use it. Provide examples of non-perfect squares, and demonstrate how to use calculators to find their approximate square roots: $\sqrt{10} \approx 3.16$ $\sqrt{15} \approx 3.87$ $\sqrt{20} \approx 4.47$ Explain the concept of reference tables, which are pre-calculated values of square roots for common numbers. Provide learners with a reference table for square roots of non-perfect squares. Have learners use the table to find the approximate square roots of numbers.	Number cards

	Provide learners with a list of non-perfect square numbers and ask them to approximate the square roots using calculators and reference tables. Encourage peer discussion and sharing of methods for accurate approximation. <u>Assessment</u> 1. Approximate the square root of 17 using a calculator. 2. Use the reference table to find the approximate square root of 28. 3. Estimate the square root of 40 without a calculator and then check your estimate using a calculator.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 8

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Fractions, Decimals and Percentages	
Content Standard: B9.1.3.1 Apply the understanding of operations on fractions to solve problems involving fractions of given quantities and round the results to given decimal and significant places		**Indicator:** B9.1.3.1.1 Review fractions and solve problems involving basic operations on fractions	**Lesson:** 1 of 2
Performance Indicator: Learners can solve problems involving basic operations on fractions.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 170			
New words: Fractions, Equivalent fractions, Simplest form, Mixed number			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin with a "Fraction Challenge" activity. Present learners with a word problem involving fractions and ask them to solve it individually. Afterward, have them share their solutions and thought processes. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Conduct a brief review of the concept of fractions, ensuring learners understand the terminology and basic principles. Use fraction manipulatives to demonstrate fractional parts and their representation. Provide learners with a visual representation of a rectangle divided into squares. Ask them to shade a specific fraction of the squares, both with and without visual aids. Introduce the concept of equivalent fractions. Have learners practice writing fractions as equivalent fractions with different numerators and denominators. Example: *Let's take the fraction 1/2 and create an equivalent fraction by multiplying both the numerator and denominator by the same number.* *Multiply by 2: (1/2) * (2/2) = 2/4* *Multiply by 3: (1/2) * (3/3) = 3/6* *Multiply by 4: (1/2) * (4/4) = 4/8*	Fraction manipulatives

	Discuss expressing fractions in their simplest form. Provide examples and ask learners to simplify fractions by finding the greatest common factor. Example 1: *Simplify 4/8.* *Find the GCF of 4 and 8, which is 4.* *Divide both the numerator and denominator by 4: (4/4) / (8/4) = 1/2.* *So, 4/8 simplified to its simplest form is 1/2.* Example 2: Simplify 15/20. *Find the prime factorization of both 15 and 20:* *15 = 3 * 5* *20 = 2 * 2 * 5* *Identify the common prime factor, which is 5.* *Divide both the numerator and denominator by 5: (15/5) / (20/5) = 3/4.* *So, 15/20 simplified to its simplest form is 3/4.* Explain the concepts of mixed numbers and improper fractions. Show how to convert between the two forms and practice with examples. Example 1: 5/3 *In the fraction 5/3, the numerator (5) is greater than the denominator (3).* *This means you have 5 equal parts of a whole divided into 3 equal parts each.* *It can be represented as a mixed number: 1 2/3, where 1 is the whole part, and 2/3 represents the remaining portion.* Example 2: $2\frac{1}{4}$ *In the mixed number $2\frac{1}{4}$, "2" is the whole number, and "1/4" is the proper fraction.* *This means you have 2 whole parts and an additional 1/4 part of a whole.* Example 3: Convert $\frac{7}{2}$ to a Mixed Number *7 divided by 2 equals 3 with a remainder of 1. So, 7/2 is equal to 3 1/2.* Example 4: Convert $4\frac{3}{5}$ to an Improper Fraction *First, multiply the whole number (4) by the denominator (5): 4 * 5 = 20.* *Then, add the numerator (3) to the result: 20 + 3 = 23.* *So, 4 3/5 is equal to the improper fraction 23/5.* Distribute a worksheet with fraction problems that involve addition, subtraction, multiplication, or division of fractions.	

	Encourage learners to solve the problems individually and discuss their approaches. <u>Assessment</u> 1. Convert the fraction 7/4 into a mixed number. 2. Solve the following problem: If you have 3/5 of a pizza, and your friend has 1/4 of the same pizza, how much pizza do you have together?	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics	
Duration:		**Strand:** Number	
Class: B9	**Class Size:**	**Sub Strand:** Fractions, Decimals and Percentages	
Content Standard: B9.1.3.1 Apply the understanding of operations on fractions to solve problems involving fractions of given quantities and round the results to given decimal and significant places		**Indicator:** B9.1.3.1.1 Review fractions and solve problems involving basic operations on fractions	**Lesson:** 1 of 2
Performance Indicator: Learners can review the basic operations on fractions and solve problems involving addition, subtraction, multiplication, and division of fractions.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 170			
New words: Fractions, Addition, Subtraction, Multiplication, Division			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin with a "Fraction Riddle" activity. Present learners with a riddle that involves fractions. Encourage them to work in pairs or small groups to solve the riddle. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Conduct a brief review of the basic operations on fractions, including addition, subtraction, multiplication, and division. Use fraction manipulatives to demonstrate the operations with visual aids. Provide examples of addition and subtraction of fractions. Ask learners to work out answers to problems involving these operations. Example 1: Add 1/3 + 1/4 Step 1: *Find a common denominator, which in this case is 12 because both 3 and 4 can be evenly divided by 12.* *1/3 = 4/12 (multiply both numerator and denominator by 4)* *1/4 = 3/12 (multiply both numerator and denominator by 3)* Step 2: *Now that the fractions have a common denominator, add the numerators:* *4/12 + 3/12 = 7/12* *So, 1/3 + 1/4 = 7/12.* Example 2: Subtract 5/6 - 1/3	Fraction manipulatives

	Step 1: Find a common denominator, which is 6 because both fractions already have denominators of 6. Step 2: *Subtract the numerators:* *5/6 - 1/3 = (5 - 2)/6 = 3/6* Step 3: *Simplify the result by dividing both the numerator and denominator by their greatest common factor (GCF), which is 3 in this case:* *3/6 ÷ 3/3 = 1/2* *So, 5/6 - 1/3 = 1/2.* Explain the concepts of multiplication and division of fractions. Provide examples and encourage learners to work out answers to problems involving these operations. Example 1: Multiply 2/3 by 3/5 *Numerator: 2 * 3 = 6* *Denominator: 3 * 5 = 15* *So, 2/3 * 3/5 = 6/15.* Example 2: Divide 2/3 by 4/5 *Dividing by 4/5 is the same as multiplying by 5/4 (the reciprocal of 4/5).* *Now, we can multiply the fractions:* *Numerator: 2/3 * 5/4 = (2 * 5) / (3 * 4) = 10/12* Distribute a worksheet with fraction problems that involve addition, subtraction, multiplication, and division. Encourage learners to solve the problems individually or in pairs, discussing their approaches. <u>Assessment</u> 1. Add the fractions 3/4 and 1/5. 2. Subtract the fractions 2/3 and 1/6. 3. Multiply the fractions 1/2 and 2/3. 4. Divide the fractions 5/6 and 1/4.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

FIRST TERM
WEEKLY LESSON NOTES
WEEK 9

Week Ending:	**DAY:**	**Subject:** Mathematics
Duration:		**Strand:** Number
Class: B9	**Class Size:**	**Sub Strand:** Fractions, Decimals and Percentages

Content Standard: B9.1.3.1 Apply the understanding of operations on fractions to solve problems involving fractions of given quantities and round the results to given decimal and significant places	**Indicator:** B9.1.3.1.2 Add and/or subtract, multiply and/or divide given fractions, using the principle of order of operations including the use of the BODMAS or PEMDAS rule, and apply the understanding of these to solve problems.	**Lesson:** 1 of 2

Performance Indicator: Learners can add, subtract, multiply, and divide given fractions using the principles of the order of operations (BODMAS or PEMDAS).	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 170

New words: Fractions, Numerator, Denominator, Operations

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a quick review of the order of operations (BODMAS or PEMDAS). Write a simple expression on the board, such as 3 + 5 x 2, and ask learners to solve it. Discuss their solutions and introduce the concept of performing operations in a specific order. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Divide the class into small groups. Provide each group with fraction cards and ask them to create and solve different fraction expressions using addition, subtraction, multiplication, and division. Emphasize the importance of following the order of operations. Walk around the class, offering guidance and clarification as needed. Introduce expressions involving both whole numbers and fractions. Write a few examples on the board and solve them together as a class. Discuss the steps involved and the application of the order of operations. Example: Solve $\frac{3}{5} + 2$ <u>Solution</u>	Fraction cards

	Convert the whole number 2 to a fraction with the same denominator as $\frac{3}{5}$. In this case, the denominator is 5. $\frac{2}{1} * \frac{5}{5} = \frac{10}{5}$ *Now that both fractions have the same denominator, you can add their numerators.* $\frac{3}{5} + \frac{10}{5} = \frac{13}{5}$ *So,* $\frac{3}{5} + 2 = \frac{13}{5}$ Write questions with expressions that involve fractions and whole numbers on the board and let learners solve in pairs. Guide learners through the process of solving these expressions step by step. Encourage peer collaboration and discussions. Emphasize the importance of simplifying fractions before performing other operations. <u>Assessment</u> 1. $\frac{3}{5} + 2$ 2. $\frac{4}{3} * \frac{3}{7}$ 3. $2 - \frac{1}{4} / \frac{1}{2}$ 4. $\frac{5}{6} * (3 + \frac{1}{2})$	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending:	**DAY:**	**Subject:** Mathematics
Duration:		**Strand:** Number
Class: B9	**Class Size:**	**Sub Strand:** Fractions, Decimals and Percentages

Content Standard: B9.1.3.1 Apply the understanding of operations on fractions to solve problems involving fractions of given quantities and round the results to given decimal and significant places	**Indicator:** B9.1.3.1.2 multiply and/or divide given fractions, using the principle of order of operations including the use of the BODMAS or PEMDAS rule, and apply the understanding of these to solve problems.	**Lesson:** 2 of 2

Performance Indicator: Learners can use the order of operations (BODMAS or PEDMAS) to simplify expressions involving fractions with more than two operations.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 170

New words: Fractions, Equivalent fractions, Simplest form, Mixed number

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a quick review of the order of operations (BODMAS or PEDMAS). Write a simple expression on the board, such as $\frac{3}{5}$ +2×4, and ask learners to solve it. Discuss their solutions and introduce the concept of performing operations in a specific order. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Divide the class into small groups. Provide each group with fraction cards and index cards containing expressions with multiple operations. Ask each group to work together to simplify the expressions, focusing on following the order of operations. Encourage discussions and collaboration within the groups. Invite each group to present their solutions to the class. Discuss different approaches and highlight the importance of order when simplifying expressions with fractions and multiple operations. Write questions on the board with expressions involving fractions and multiple operations. Work through a few examples as a class, guiding learners through each step of the process. Example: Solve $\frac{2}{3} + \frac{1}{4} * 2 - \frac{1}{6}$ <u>Solution</u>	Index cards with expressions involving fractions and multiple operations

	• Multiplication $\frac{1}{4} * 2 = \frac{1*2}{4} = \frac{2}{4}$ • Addition and Subtraction (from left to right): $\frac{2}{3} + \frac{2}{4} - \frac{1}{6}$ • Find a common denominator (12 in this case): $\frac{8}{12} + \frac{6}{12} - \frac{2}{12}$ • Combine the fractions: $\frac{8}{12} + \frac{6}{12} - \frac{2}{12} = \frac{12}{12} = 1$ So, $\frac{2}{3} + \frac{1}{4} * 2 - \frac{1}{6} = 1$ Encourage learners to ask questions and discuss their reasoning. <u>Assessment</u> 1. $\frac{2}{3} + \frac{1}{4} * 2 - \frac{1}{6}$ 2. $\frac{3}{5} * \frac{2}{3} + \frac{1}{2}$ 3. $\frac{4}{7} - \frac{1}{2} / \frac{1}{4}$ 4. $\frac{1}{2} + \frac{3}{4} * \frac{2}{3} - \frac{1}{5}$	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	