BASIC 7 MATHEMATICS

First Term Curriculum & Comprehensive Study Notes

AJOnline Maths Academy • Junior Secondary School (JSS 1)

Term Scheme of Work Overview

Week	Topic	Core Focus & Sub-Topics
1	Whole Numbers	Reading, writing, and place value of large numbers up to billions.
2	LCM and HCF	Lowest Common Multiple and Highest Common Factor methods.
3	Factors, Multiples & Primes	Prime numbers, composite numbers, and prime factorization.
4	Fractions (Introduction)	Proper, improper, mixed fractions, and equivalent fractions.
5	Operations on Fractions I	Addition and subtraction of fractions and mixed numbers.
6	Operations on Fractions II	Multiplication and division of fractions.
7	Mid-Term Break	Mid-term revision and continuous assessment test.
8	Estimation	Rounding off whole numbers and decimals to specified degrees of accuracy.
9	Decimals	Place value of decimals, ordering, and conversions.
10	Ratio	Meaning of ratio, equivalent ratios, and sharing quantities.
11	Proportion	Direct and inverse proportions with word problems.
12	Revision	Comprehensive revision of all first-term topics.
13	Examination	End-of-term examinations and evaluation.

Detailed Expanded Weekly Content

Week 1: Whole Numbers

Whole numbers are numbers without fractions or decimals, starting from zero and counting upwards (***0, 1, 2, 3, 4, ...***). In Basic 7, students extend their knowledge from primary school to read, write, and analyze numbers into billions.

- **Place Value Chart:** Understanding digits from Units, Tens, Hundreds, Thousands, Ten Thousands, Hundred Thousands, Millions, up to Billions.
- **Expanded Notation:** Writing numbers as the sum of each digit multiplied by its place value.

> **Example:** Write ***4,582,309*** in expanded form and in words.
>
> *Expanded form:* ***4,000,000 + 500,000 + 80,000 + 2,000 + 300 + 9***
>
> *Words:* Four million, five hundred and eighty-two thousand, three hundred and nine.

Week 2: Lowest Common Multiple (LCM) and Highest Common Factor (HCF)

Factors are numbers that divide another number exactly without leaving a remainder, while multiples are the results of multiplying a number by integers.

- **LCM:** The smallest positive number that is a multiple of two or more given numbers. Methods include listing multiples or using prime factorization.
- **HCF:** The largest factor that divides two or more numbers evenly.

> **Example:** Find the LCM and HCF of ***12*** and ***18***.
>
> *Prime factorization:* $12 = 2^2 \times 3$ and $18 = 2 \times 3^2$
>
> $LCM = 2^2 \times 3^2 = 4 \times 9 = 36$
>
> $HCF = 2 \times 3 = 6$

Week 3: Factors, Multiples & Prime Numbers

A prime number is a whole number greater than 1 whose only divisors are 1 and itself (***2, 3, 5, 7, 11, 13, 17, 19, ...***). A composite number has more than two factors. Divisibility tests help quickly check if numbers are divisible by 2, 3, 5, 9, and 10.

- Expressing composite numbers as products of prime factors using index form.

Week 4: Fractions (Introduction)

A fraction represents part of a whole. Fractions are categorized into proper fractions (numerator less than denominator), improper fractions (numerator greater than or equal to denominator), and mixed numbers (whole number combined with a proper fraction).

- Converting mixed numbers to improper fractions and vice versa.
- Finding equivalent fractions by multiplying or dividing numerator and denominator by the same non-zero number.

Week 5: Operations on Fractions I (Addition & Subtraction)

To add or subtract fractions, they must have a common denominator. The Lowest Common Denominator (LCD) is found using the LCM of the individual denominators.

> **Example:** Evaluate $3/4 + 2/5$.
>
> *LCD of 4 and 5 is 20.*
>
> $(15 + 8) / 20 = 23 / 20 = 1\ 3/20$

Week 6: Operations on Fractions II (Multiplication & Division)

Multiplying fractions requires multiplying numerators together and denominators together, with cancellation where possible. Division of fractions is executed by multiplying the first fraction by the reciprocal (inverse) of the second fraction.

Week 7: Mid-Term Break & Assessment

A period dedicated to evaluating student performance through continuous assessment tests, reviewing corrections, and reinforcing concepts covered from weeks 1 to 6.

Week 8: Estimation

Estimation involves approximating numbers to a required degree of accuracy to simplify calculations or check reasonableness of answers.

- Rounding off whole numbers to the nearest 10, 100, 1,000, etc.
- Rounding decimal numbers to given decimal places or significant figures. Rule: If the digit to the right is 5 or more, round up; if less than 5, round down.

Week 9: Decimals

Decimals are fractions written in a base-10 place value format using a decimal point. Digits after the point represent tenths ($1/10$), hundredths ($1/100$), thousandths ($1/1000$), etc.

- Converting decimals to fractions in their simplest forms and vice versa.

Week 10: Ratio

A ratio compares two or more quantities of the same unit using division. Ratios must be expressed in their simplest form by dividing all terms by their HCF.

> **Example:** Share ₦6,000 between two students in the ratio $2 : 3$.
>
> *Total parts = 2 + 3 = 5*
>
> *First share = (2 / 5) × 6,000 = ₦2,400*
>
> *Second share = (3 / 5) × 6,000 = ₦3,600*

Week 11: Proportion

Proportion establishes equality between two ratios. In direct proportion, as one quantity increases, the other increases at a constant rate. Problems are solved efficiently using the unitary method (finding the value of a single unit first).

Week 12 & 13: Revision and Examination

Comprehensive revision sessions covering all first-term topics, past question practice, mock exams, and administration of the formal end-of-term examinations.