

## **Acacia International School Mathematics Curriculum Framework Zambian Curriculum Coverage Document**

This document contains details of how the full Zambian Mathematics Curriculum Grades 4 to 7 is covered by the Acacia International School Mathematics Curriculum Framework.

This document contains the full Zambian Grade 4 to 7 curriculum framework, arranged by topic.

There are many similarities in content between the two curricula. However in several cases where the learning objectives are similar, the grade at which the content was delivered differs. In such cases we have tried to follow the timing of the Cambridge curriculum, so as to ensure the development of deep subject knowledge and coherent progression. This is why you might find, for example, that an objective from Grade 7 of the Zambian syllabus is mapped to an objective at Grade 5 in the Acacia Curriculum Framework, or visa versa. Deep subject knowledge is important in order to develop the ability to solve problems, to apply understanding to new situations and to enable learners to progress to the next stage. Our framework has been carefully designed to ensure students are fully prepared for success in the Zambian Grade 7 exams.

After each Zambian learning objective (LO) in this document, there is an Acacia curriculum code in brackets. This is the Acacia curriculum reference, and shows where that LO is covered by the Acacia curriculum. For example:

5.2.2 Apply addition using the number line to solve problems in real life situations. (A5Pt2)

Shows that the Zambian objective 5.2.2 is covered by the Acacia Curriculum objective at Grade 5 with the code A5Pt2.

## **Numbers & calculation**

### **NUMBERS & NOTATION**

4.2.1 Read and write numbers up to 1 000 000 000 (A6Nn2a)

4.2.2 Express a number in expanded notation (A6Nn2a)

5.1.1 Identify Roman numeration system. (A6Nn20a)

5.1.2 Convert numerals from Arabic to Roman numeration and vice Versa. (A6Nn20b)

5.1.3 Order Roman Numerals. (A6Nn20c)

### **ADDITION**

4.3.1 Add whole numbers with sums up to 1 000 000. (A7Nc8)

4.3.2 Apply addition to solve problems in real Life. (A4Pt1)

5.2.1 Add whole numbers using the number Line. (A5Pt2)

5.2.2 Apply addition using the number line to solve problems in real life situations. (A5Pt2)

### **SUBTRACTION**

To accompany Acacia Mathematics Curriculum v.2

- 4.4.1 Subtract whole numbers up to 1 000 000 (A7Nc8)
- 4.4.2 Apply subtraction and addition to solve problems in real life. (A4Pt1)
- 5.3.1 Subtract whole numbers using a number line. (A6Ps6)
- 5.3.2 Apply subtraction and addition using the number line to solve problems in real life Situations (A6Ps6)

#### MULTIPLICATION

- 4.5.1 Multiply numbers by 10, 100 and 1000 using short Multiplication. (A6Nn4)
- 4.5.2 Multiply two and three by two digit numbers using vertical Multiplication. (A6Nc18)
- 4.5.3 Apply the properties of zero (0) and one (1) in multiplication (A4Nc4a)
- 4.5.4 Apply multiplication to solve problems in real life (A5Pt2)

#### DIVISION

- 4.6.1 Divide numbers by 10, 100 and 1000 using short division. (A6Nn4)
- 4.6.2 Divide two and three digit by two digit numbers using long division (with remainders). (A7Nc9b)
- 4.6.3 Apply division to solve problems in real Life (A5Pt2)

#### COMBINED

##### OPERATIONS

- 5.4.1 Perform combined Operations (A7Nc6, 7)
- 5.4.2 Apply the commutative, associative and distributive laws to four basic mathematical Operations. (A7Nc6, 7)

#### NUMBER PATTERNS

- 4.7.1 Identify patterns and complete number Sequences.(A4Ps6, A7Ps2)

#### FRACTIONS

- 4.8.1 Describe equivalent Fractions (A4Nn17)
- 4.8.2 Arrange the common fractions either in ascending or descending order using proportion line (A4Nn19)
- 4.8.3 Identify and represent improper and mixed fractions (A5Nn17)
- 4.8.4 Convert mixed fractions to improper fractions and vice Versa. (A5Nn17, A5Nn17a, A6Nn25)
- 4.8.5 Add and subtract proper, improper and mixed fractions with common denominators.(A5Nn18a)
- 4.8.6 Apply improper fractions to solve problems in real life (A7Pt9)
- 5.7.1 Identify equivalent fractions by multiplying or dividing the same number with numerator and Denominator (A5Nn15a)
- 5.7.2 Express fractions with different denominators to the same denominator (A6Nn26a)
- 5.7.3 Add and subtract proper, improper and mixed fractions with different Denominators. (A6Nn27b)
- 5.7.4 Apply knowledge of fractions to solve problems in real life Situations (A7Pt9)
- 6.4.1 Multiply fractions by whole numbers (A7Nf4a)

- 6.4.2 Multiply a fraction by another fraction. (A7Nf4a)
- 6.4.3 Divide fractions by whole numbers (A7Nf4b)
- 6.4.4 Divide whole numbers by Fractions (A7Nf4b)
- 6.4.5 Divide a fraction by another fraction (A7Nf4b)
- 6.4.6 Apply fractions to solve problems in real life (A7Pt9)
- 7.1.1 Solve problems involving addition, subtraction, multiplication and division of fractions (as recap) (A7Pt9)

## DECIMALS

- 5.8.1 Relate common fractions to Decimals. (A5n16)
- 5.8.2 Describe decimal numbers by their names (up to 2 decimal places) (A5Nn4)
- 5.8.3 Add and subtract decimal numbers.(A5Nc19)
- 5.8.4 Multiply decimal numbers by whole Numbers. (A5Nc22)
- 5.8.5 Divide decimal numbers by whole numbers (up to 2 decimal places WITHOUT REMAINDER). (A5Nc23)
- 5.8.6 Apply decimals to solve problems in real life situations. decimal places) (A7Pt8)
- 6.5.1 Describe decimal numbers by their names (up to 3 places (A6Nn3a)
- 6.5.2 Add and subtract decimal numbers up to 3 decimal places (A6Nc12 / A6Nc12a)
- 6.5.3 Multiply decimal numbers by decimal Numbers (A7Nc9a, C8Nc13)
- 6.5.4 Divide decimal numbers by decimal numbers (up to 3 decimal places (INCLUDING REMAINDER) (A7Nc9b, C8Nc13)
- 7.2.1 Solve problems involving addition, subtraction, multiplication and division of decimal (as recap) (A7Nc9a, ANc9b, C8Nc12, C8Nc13)
- 7.2.2 Convert common fractions to decimals and vice versa (A7Nf2a)
- 7.2.3 Order Fractions and Decimals (ANf3a)

## FACTORS & MULTIPLES

- 5.6.1 Identify factors of given numbers - Grade 6, (A6Nn6, A7Ni2)
- 5.6.2 Identify the Highest Common Factor (HCF) - Grade 6 (A6Nn6a, A7Ni2a)
- 5.6.3 Identify multiples of a given number - Grade 6 (A6Nn7, A7Ni2)
- 5.6.4 Identify the Lowest Common Multiple (LCM) by listing - Grade 6 (A6Nn7a, A7Ni2)
- 6.3.1 Describe and list prime and composite numbers. - Grade 6 (A6Nn19a, A7Ni2)
- 6.3.2 Identify prime factors of given Numbers - Grade 6 (A6Nn19b, A7Ni2b)

## SOCIAL & COMMERCIAL ARITHMETIC

- 5.9.1 Prepare simple household bills (budgeting). (A5Nc28a)
- 5.9.2 Apply simple readyreckoners (A5Nc28b)
- 5.9.3 Read and interpret water and electricity Bills. (A5Nc28c)
- 6.8.1 Describe cost price, selling price, profit and loss (A6Nc23a)
- 6.8.2 Calculate cost price, selling price, profit and loss (A6Nc23a)
- 6.8.3 Calculate simple interest, discount, and profit and loss Percentage. (A6Nc23b)
- 6.8.4 Carry out calculations involving Transportation (A6Nc23c)
- 7.5.1 Conversion of Currencies (A7Nc12a)
- 7.5.2 Calculate the cost of goods priced in foreign currency. (A7Nc12b)

## INDEX NOTATION

- 6.1.1 Describe index Notation (A6Nn31)
- 6.1.2 Change a number in index form to expanded notation and vice versa (A6Nn32)
- 6.1.3 Evaluate numbers in index notation with positive bases and indices (A6Nn33)

## APPROXIMATION

- 6.6.1 Round off to the nearest unit. (A5Nn7, A5MI4)
- 6.6.2 Round off to the nearest decimal Places (A7Np3a)
- 6.6.3 Solve simple problems involving rounding off quantities to required number of decimal places (A7Np3a)

## RATIO & PROPORTION

- 6.7.1 Describe ratio and direct proportion (A 7Nf9)
- 6.7.2 Differentiate between ratio and direct proportion (A7Nf9)
- 6.7.3 Express a given ratio in its lowest Term (A6Nn30a)
- 6.7.4 Solve problems involving ratio and direct proportion.(A6Nn30)
- 7.4.1 Solve problems involving direct proportion (as recap) (A7Nf10)
- 7.4.2 Describe indirect proportion.(A7Nf10a)
- 7.4.3 Solve problems involving indirect Proportion (A7Nf10b)
- 7.4.4 Draw graphs to illustrate quantities in direct and indirect Proportion. (A7Nf10c)

## PERCENTAGES

- 7.3.1 Describe a Percentage (A5N19)
- 7.3.2 Convert decimals to percentages and vice versa. (A7Nf11)
- 7.3.3 Convert common fractions to percentages and vice versa.(A7Nf12)
- 7.3.4 Solve problems involving Percentages. (A7Pt8)
- 7.3.5 Relate fractions, decimals and percentages to real life situations (A6Ps8)

## INTEGERS

- 7.6.1 Understand integers (A7Ni1)
- 7.6.2 Illustrate positive and negative numbers using the number line. (A7Ni1)
- 7.6.3 Order integers (A7Ni1)
- 7.6.4 Add integers (A7Ni1)
- 7.6.5 Subtract integers (A7Ni1)

## NUMBER BASES

- 7.7.1 Illustrate base ten numeration system (A7Ni4)
- 7.7.2 Describe other number bases (A7Ni4)
- 7.7.3 Convert from Base 10 to Bases 2, 5 and 8. (A7Ni5)
- 7.7.4 Convert from Bases 2, 5 and 8 to Base 10. (A7Ni5)
- 7.7.5 Convert from base 2 to base 5 and vice Versa (A7Ni5)
- 7.7.6 Add and subtract in Bases 2, 5 and 8. (A7Ni5)

## NUMBER & SEQUENCES

- 7.8.1 Describe perfect Squares (A7Ni3)

- 7.8.2 Find squares of whole numbers (A7Ni3)
- 7.8.3 Describe cubes (A7Ni3a)
- 7.8.4 Find cubes of whole Numbers. (A7Ni3a)
- 7.8.5 Generate a sequence in a decreasing and increasing order. (A7As1)
- 7.8.6 Generate series A7As1a)

## LINEAR EQUATIONS

- 6.10.1 Describe an open Sentences (A7Ae9)
- 6.10.2 Solve linear equations in one Variable (A7Ae7)

## INEQUATIONS

- 7.9.1 Describe an open Sentence (A7Ae9)
- 7.9.2 Solve simple linear inequations in one Variable. (A7Ae8)

## SETS

- 1.2.1 Sort objects according to size, colour and shape. (A4Nn26)
- 1.2.2 Match sets into one-to-one correspondence. (A4Nn26)
- 1.2.3 Place sets in order according to their cardinal numbers. (A4Nn27)
- 1.2.4 Assign numerals 0 to 10 to elements in a set. (A4Nn27)
- 1.2.5 Use cardinal and ordinal numbers in everyday life.
- 2.1.1 Describe sets in relation to real life situations. (A4Nn27)
- 2.1.2 State membership of a set using symbol, and { }. (A4Nn28)
- 3.1.1 Describe a set by listing its members. (A4Nn28)
- 3.1.2 Recognise and use the symbols "=" equal to, "≠" not equal to. (A4Nn28)
- 4.1.1 Identify equivalent sets. (A5Nn23)
- 4.1.2 Identify subsets and use the subset symbol "⊂". (A5Nn23)
- 4.1.3 Apply sets to solve problems in real life situations (A5Nn23)
- 5.5.1 List all sub sets of a given set. (A5Nn24)
- 5.5.2 Describe sets of numbers. (A5Nn24)
- 5.5.3 Describe subset in a Venn diagram. (A5Nn24)
- 6.2.1 Describe the intersection, union in a Venn diagram. (A6Nn34)
- 6.2.2 Use symbols of intersection "∩", union "∪" (and subset "⊂" as recap). (A6Nn34)
- 6.2.3 Find number of subsets of a given set using the formula  $2^n$ . (A6Nn35)
- 6.2.4 Apply the knowledge of sets in real life situations. (A6Nn35)

# Geometry

## ANGLES

- 4.9.1 Describe an angle.
- 4.9.2 Identify types of Angles (A5Gs6, A5Gs6a)
- 4.9.3 Use a protractor to measure and draw angles up to  $180^\circ$ . (A6Gs5)

## PLANE SHAPE

- 4.10.1 Draw a rectangle and square using protractor and set Square (A7Gs10)
- 4.10.2 Identify isosceles and equilateral Triangles (A5Gs1)

- 4.10.3 Draw the equilateral and isosceles triangles using protractor and set Square (A7Gs10a)
- 5.10.1 Identify and draw perpendicular and parallel lines (A5Gs5, A7Gs10)
- 5.10.2 Describe trapezium, rhombus and Parallelogram (A6Gs3)
- 5.10.3 Draw trapezium, rhombus and Parallelogram. (A7Gs10b)
- 5.10.4 Identify the uses of a pair of compasses (A6Gs7)
- 5.10.5 Use a pair of compass to draw a Circle (A6Gs7)
- 5.10.6 Identify centre, diameter and radius of a circle (A6Gs8)
- 6.11.1 Identify regular polygons up to six Sides (A3Gs1)
- 6.11.2 Draw pentagon and Hexagon. (7Gs10)
- 7.10.1 Describe line Symmetry (A7Gs9 and various from lower years)
- 7.10.2 Draw lines of symmetry of plane Shape. (7Gs9, 4Gs3)
- 7.10.3 Establish the Relationship between circumference and Diameter (A6Gs9)

#### SOLID SHAPES

- 5.11.1 Identify face, vertex and edges of cuboids and cubes (A6Gs2, A7Gs8)
- 5.11.2 Draw nets of cuboids and cubes (A5Gs4a)
- 5.11.3 Draw/sketch cuboid and cube (4Gs1, A5Gs4a)
- 7.12.1 Identify a cylinder and triangular prism (A3Gs3 onwards)
- 7.12.2 Draw nets of cylinder and triangular prism (A5Gs4a)
- 7.12.3 Draw/sketch cylinder and triangular prism (4Gs1, A5Gs4a)

#### RELATIONS

- 4.12.1 Illustrate one-to-many relation using Arrow. (A5Nn29)
- 4.12.2 Apply relations in real life situations. (A5Nn29)
- 5.14.1 Illustrate a one-to-many and many-to-one relations (A5Nn30)
- 5.14.2 Apply knowledge of relations and mappings in real life situations. (A5Nn30)

#### MEASURES

- 4.11.1 Determine duration of time elapsed between events (A5Mt1)
- 4.11.2 Relate seconds, minutes, hours and Day. (A5Mt1)
- 4.11.3 Illustrate the meaning of area (4Ma2)
- 4.11.4 Describe standard units to measure area. (cm<sup>2</sup>, mm<sup>2</sup>, m<sup>2</sup>) (A4Ma2)
- 4.11.5 Derive the formulae for finding area of rectangle and Square (A7Ma2)
- 4.11.6 Find the area of a rectangle and Square (A5Ma3)
- 5.12.1 Find the perimeter of triangle, parallelograms, trapezium, rhombus and composite Shapes (A7Gs11)
- 5.12.2 Derive formula for area of triangle, parallelograms, trapezium and rhombus. (C8Ma2) (A7Gs11)
- 5.12.3 Calculate areas of triangle, parallelograms, trapezium, rhombus and composite Shapes (C8Ma2) (A7Gs11)
- 5.12.4 Describe volume (A5Ps1)
- 5.12.5 Use standard units to measure volume (cm<sup>3</sup>, m<sup>3</sup>) (A7Ma1)
- 5.12.6 Relate volume to Capacity (A5Ps1)
- 5.12.7 Derive the formulae for finding volume (A7Ma3)

- 5.12.8 Calculate the volume of cubes and cuboids (A7Ma3)
- 6.12.1 Find the total length of edges of cube and cuboid (A7Ma4a)
- 6.12.2 Find the total surface area of cube and cuboid (A7Ma4a)
- 6.12.3 Describe the meaning of speed
- 6.12.4 Calculate speed using distance and Time (C9Mt1)
- 7.11.1 Calculate circumference, using radius or diameter of the Circle. (A7Gs12. C8Ma1)
- 7.11.2 Calculate the area of a circle (A7Gs12, C8Ma1)

## STATISTICS

- 4.13.1 Read and interpret line graphs (A5Dh2)
- 4.13.2 Collect and present data on a line graph (A5Dh3)
- 5.13.1 Understand stemleaf plot and on a bar graph. (A5Dh2a)
- 5.13.2 Collect and present data on a stem-leaf plot and on a bar Graph (A5Dh2, 2a)
- 6.9.1 Describe averages or measures of central tendency (A6Dh3)
- 6.9.2 Solve problems involving averages (A6Dh3)
- 7.13.1 Interpret data on charts (pie chart, line graph, bar/ line graph, frequency table) (A7Di1)
- 7.13.2 Collect and present data on a pictograph, pie chart, bar chart, line graph and frequency tables. A7Dp3)
- 7.13.3 Calculate Mean, Mode and Median (A7Dp1, 2)
- 7.13.4 Calculate averages as applied to mass, money, time, temperature and Speed. (A7Dp2)