REPUBLIC OF KENYA

COMPETENCY BASED CURRICULUM

FOR

CARPENTRY AND JOINERY

LEVEL 5

PROGRAMME CODE:0722 554B

TVET CDACC

P.O BOX 15745-00100
NAIROBI

BASIC MATHEMATICS

UNIT CODE: CON/CU/CAJ/CC/01/5/B

Relationship to Occupational Standards

This unit addresses the unit of competency: Apply Basic mathematics

Duration of Unit: 80 hours

Unit Description

This unit describes the competencies required by a technician in order to apply basic mathematics. It involves applying algebra, performing geometrical calculations, carrying out mensuration, applying statistics, applying graphs and charts, applying number series and indices and logarithms. It also entails applying Ratios, applying matrices, applying probability, performing commercial calculations, applying trigonometry and applying vectors.

Summary of Learning Outcomes

1. Apply Algebra
2. Perform geometrical calculations
3. Carry out Mensuration
4. Apply Statistics
5. Apply graphs and charts
6. Apply number series
7. Apply Indices and Logarithms
8. Apply Ratios
9. Apply matrices
10. Apply probability
11. Perform commercial calculations
12. Apply Trigonometry
13. Apply vectors

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods

1. Apply Algebra	• Simple quadratic equations • Methods of solving quadratic equations • Algebraic expressions • Transpose formulae • Uses of calculator • Solution of equations reduced to quadratic form • Solutions of simultaneous linear equations in three unknowns	• Written tests • Oral questioning • Assignments • Supervised exercises
2. Carry out mensuration	• Perimeters, areas and volumes ✓ Perimeters ✓ Surface areas • Volume of solid and hollow figures • Areas of quadrilaterals, triangles and circles • Areas of regular and irregular figures • Parallelogram • Trapezium • Circle • Annulus • Spheres • Cones • Cylinders • pyramids • Sector • segment • Curved surface of a cylinder • Surface area of a pyramid and cones • Trapezoidal rule • Mid-ordinate rule	• Assignments • Oral questioning • Supervised exercises • Written tests

	• Simpson's rule • Volumes of prisms, cones and pyramids	
3. Apply statistics	• Difference between groups and ungrouped data • Data collection • Data organization • Data representation • Tabulation of data • Interpretation of data from given charts	• Written tests • Oral questioning • Assignments • Supervised exercises

4. Apply graphs and charts	• Types of linear graphs
	  • Distance- time
	  • Temperature- time
	  • Area of cross section- volume
	  • Velocity- distance
	• Interpretation from linear graphs
	• Parabolic curves
	• Solving simultaneous and quadratic equations by graphical method
	• Data presentation
		• Written tests
		• Oral questioning
		• Assignments
		• Supervised exercises

5. Apply number series	• Difference between sequence and series • Solving problems involving series • Compound and simple interest	• Written tests • Oral questioning • Assignments • Supervised exercises

6. Apply indices and logarithms	• Conversion of numbers from one base to another • Application of laws of indices in solving exponential equations • Application of law of logarithm in solving logarithmic equations	• Written tests • Oral questioning • Assignments • Supervised exercises
7. Apply ratios	• Difference between rational and irrational numbers • Expression of ratios as percentages • Solving problems involving direct and inverse proportions	• Written tests • Oral questioning • Assignments • Supervised exercises
8. Apply matrices	• Operation on matrices • Determinant of a 2*2 matrix • Inverse of a 2*2 matrix • Application of matrices in solving simultaneous equations	• Written tests • Oral questioning • Assignments • Supervised exercises
9. Apply probability	• Dependent and independent events • Application of laws of probability • Addition law • Multiplication law	• Written tests • Oral questioning • Assignments • Supervised exercises
10. Perform commercial calculations	• Exchange rates • Prices and profit • Calculation of average sales • Calculation of incomes • Calculation of taxes	• Written tests • Oral questioning • Assignments • Supervised exercises
11. Apply Trigonometry	• Conversion of degrees to radians and vice versa	• Written tests • Oral questioning

	• Trigonometric ratios and their reciprocals • Prove simple trigonometric identities • Trigonometric equations • Trigonometric ratios of angles greater than 90 degrees • Solving triangles by use sine and cosine rules • Sine and cosine waves	• Assignments • Supervised exercises
12. Apply vectors	• Manipulation of vectors • Resolution of vectors	• Written tests • Oral questioning • Assignments • Supervised exercises

Suggested Methods of Instruction

- Group discussions
- Demonstration by trainer
- Exercises by trainee

Recommended Resources

- Scientific Calculators
- Rulers, pencils, erasers
- Charts with presentations of data
- Graph books
- Dice
- Reference materials