



REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR ACCOUNTANCY TECHNICIAN

**KNQF LEVEL 6
CYCLE 3**

ISCED CODE: 0411 551A



**TVET CDACC
P.O. BOX 15745-00100
NAIROBI**

CARRY OUT BUSINESS MATHEMATICS AND STATISTICS

UNIT CODE: 0411 551 08A

TVET CDACC UNIT CODE: BUS/OS/AC/CR/03/6/MA

UNIT DESCRIPTION

This unit specifies the competencies required to carrying out business mathematics and statistics. It involves carrying out statistical equations, carrying out statistical matrices, preparing commercial mathematics, performing elementary statistics, carrying out descriptive statistics, applying set theory, applying basic probability theory and determining index numbers.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the range.</i>
1. Carry out statistics equations	1.1 Linear equations are determined as per the objective functions 1.2 Quadratic equations are determined as per the objective functions 1.3 Simultaneous equations are formulated as per the objective functions 1.4 Break-even analysis is computed as per the organization objective. 1.5 Differentiation and integration is carried out as per the objective functions 1.6 Total revenue, total cost and profit equations are formulated as per the organizational objectives.

<p>2. Carry out statistical matrices</p>	<p>2.1 Addition, subtraction, division and multiplication formulae are performed as per the order of operations.</p> <p>2.2 Determinants of 2x2 matrices are calculated as per the order of operations.</p> <p>2.3 Inverses of 2x2 matrices are calculated as per the order of operations</p> <p>2.4 Matrices are applied to business operations as per the organizational objectives.</p>
<p>3. Prepare commercial mathematics</p>	<p>3.1 <i>Buying and selling methods</i> are determined as per the organizational objectives.</p> <p>3.2 <i>Commissions and salaries rates</i> are determined based on the company policies and procedures.</p> <p>3.3 <i>Bills of utilities</i> are calculated as per the organizational objectives</p> <p>3.4 Simple and compound interest are calculated as per organizational policy.</p> <p>3.5 Depreciation and appreciation of assets are carried out as per the accounting standards.</p> <p>3.6 Hire purchase is determined as per the hire purchase agreement.</p> <p>3.7 Foreign exchange is determined as per the forex markets.</p>
<p>4. Perform elementary statistics</p>	<p>4.1 <i>Methods of data collection</i> are selected as per the organization's objectives.</p> <p>4.2 Sampling techniques and presentation of data is established as per the organization's objectives.</p> <p>4.3 <i>Tables and diagrams</i> are prepared as per the data.</p> <p>4.4 <i>Graphs</i> are drafted as per the data.</p> <p>4.5 Frequency distribution tables are drawn as per the data.</p> <p>4.6 Histogram and frequency polygons are drawn as per the data.</p>

	4.7 Cumulative frequency curve (OGIVE) is drawn and applied as per the data.
5. Carry out descriptive statistics	<p>5.1 Measures of central tendency are determined according to Work procedures.</p> <p>5.2 Measures of dispersion are determined on the basis of Work procedures</p> <p>5.3 Measures of skewness and kurtosis are analysed as per the Work procedures.</p>
6. Apply set theory	<p>6.1 Sets types are identified following the set theory.</p> <p>6.2 Sets operations are performed as per the set theory.</p> <p>6.3 Venn diagrams are drawn according to the set theory.</p>
7. Apply basic probability theory	<p>7.1 Probability events are identified as per the work place requirements.</p> <p>7.2 Types of events are determined as per the work place requirements.</p> <p>7.3 Rules of probability are applied based on additive and multiplicative rules.</p> <p>7.4 Bayes' Theorem is applied as per the theorem rules</p> <p>7.5 Probability trees are drawn according to events.</p>
8. Determine index numbers	<p>7.1. Index numbers are constructed as per the formula.</p> <p>7.2. Methods of determining index numbers are applied as per the organizational objective.</p> <p>7.3. Consumer Price Index (CPI) is calculated as per the organizational objective.</p> <p>7.4. Weighted index numbers are determined as per the organizational objective.</p>

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range
1. Buying and selling methods may include but not limited to:	<ul style="list-style-type: none">• Discounts• Margins• mark-ups
2. Commissions and salaries rates may include but not limited to:	<ul style="list-style-type: none">• Piece and hourly rates• Gross and net pay• PAYE
3. Bills of utilities may include but not limited to	<ul style="list-style-type: none">• Water• Electricity
4. Methods of data collection may include but not limited to	<ul style="list-style-type: none">• Primary• Secondary Data
5. Tables and diagrams may include but not limited to	<ul style="list-style-type: none">• Bar charts• Pie charts
6. Graphs may include but not limited to	<ul style="list-style-type: none">• Basic time series graphs• Z-charts,• Lorenz curves and• Semi-log graphs

7. Measures of central tendency may include but not limited to	<ul style="list-style-type: none"> • Mean: arithmetic mean, weighted arithmetic mean, geometric mean and harmonic mean • Mode • Median
8. Weighted index numbers may include but not limited to	<ul style="list-style-type: none"> • Laspeyre's • Paasche's • Fisher's ideal • Marshal

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required skills

The individual needs to demonstrate the following skills:

- Negotiation
- Numeracy
- Analyze errors
- Conduct image analysis
- Interpret and analyze statistics
- Perform mental calculations
- Record with accuracy and precision
- Undertake high level computations

Required knowledge

The individual needs to demonstrate knowledge of:

- Research methods
- Statistics
- Qualitative techniques
- Policies and procedures

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none">1.1 Demonstrated ability to carry out statistics equations as per the objective functions.1.2 Carry out statistical matrices as per the order of operations.1.3 Demonstrated ability to prepare commercial mathematics as per organization's policy.1.4 Demonstrated ability to perform elementary statistics as per organization's objective..1.5 Demonstrated ability to carry out descriptive statistics organization's objective..1.6 Demonstrated ability to apply Set theory as per set operations.1.7 Demonstrated ability to apply Basic probability theory as per probability rules.1.8 Demonstrated ability to determine Index number as per organization's objective.
2. Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none">2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place2.3 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none">3.1 Practical3.2 Projects3.3 Poe evaluation

	3.4 Third party reports 3.1 3.5 Written tests
4. Context of Assessment	4.1 The competency may be assessed in a workplace or a simulated workplace
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended.