

Unit Title: Application of Mathematical Skills
Level: Three
Credit Value: 9
GLH:
NOCN Unit Code: RB1/3/NO/001
QCA Unit Reference
Grading Descriptors: 1, 3, 7

This unit has 6 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
<p>1. Recognise and understand basic arithmetical concepts</p> <p>Please note: Grade indicators should not be assigned to Learning Outcome 1 in its own right. 1.1, 1.2 and 1.3 should be assessed as part of an assignment which also includes the assessment of other criteria later in the unit.</p>	<p>1.1. Perform calculations using fractions, decimal fractions, percentages and numbers written in standard form.</p> <p>1.2. Evaluate the number of significant figures for a given quantity and perform calculations where quantities are added and subtracted, multiplied and divided.</p> <p>1.3. Summarise the base units of the SI system and perform simple dimensional analysis to explain derived units.</p>
<p>2. Understand and apply logarithmic, exponential and trigonometric functions</p>	<p>2.1. Clarify the existence of the base for the logarithm and explain natural logarithms.</p> <p>2.2. Perform calculations using logarithms of products and quotients.</p> <p>2.3. Explain the exponential function and perform calculations illustrating its significance. Perform calculations using the series expansion of the exponential function.</p> <p>2.4. Explain trigonometric functions and perform calculations using sine, cosine and tangent. Analyse particular values of trigonometric functions and clarify the unit of angle.</p> <p>2.5. Solve problems using the sine and cosine rule.</p>

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LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
3. Understand algebraic manipulation and modelling	3.1. Form, manipulate and solve linear equations 3.2. Form, manipulate and solve simultaneous linear equations 3.3. Transpose formulae including brackets, powers and roots 3.4. Factorise algebraic expressions including quadratic expressions 3.5. Solve quadratic equations by factorisation and by using the quadratic formula
4. Understand and use the graphical presentation of data	4.1. Analyse the basic equation for a straight-line graph and explain the significance of dependent and independent variables. 4.2. Perform graphical constructions where the axes are appropriately scaled. 4.3. Analyse graphs based on real data; explain the appearance of scatter and perform simple analysis of error. 4.4. Perform manipulations of selected exponential functions into linear form and find the constant terms in the functions using the determination of gradient and intercept of the straight line.

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LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
5. Apply statistical techniques	5.1. Produce frequency distributions for discrete and continuous data and represent/display using appropriate diagrams including at least one histogram 5.2. Produce and interpret cumulative frequency diagrams 5.3. Calculate mean, median and mode for discrete data and for frequency distributions 5.4. Identify normal and skewed distributions and the relationship between the mean, mode and median for these distributions 5.5. Calculate range, interquartile range and standard deviation 5.6. Interpret and analyse statistical data using the calculations above to compare at least two sets of data
6. Understand the principles of correlation	6.1. Draw scatter diagrams from at least two sets of given data and draw a line of best fit through the mean 6.2. Use the lines of best fit to estimate at least 4 unknown values using extrapolation where appropriate 6.3. Identify examples of positive and negative correlation 6.4. Demonstrate an awareness of the meaning of numerical values assigned to a given correlation coefficient

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ASSESSMENT INFORMATION

Guidance:

This grid gives details of the assessment activities to be used with the unit attached. Please refer to the NOCN Handbook for definitions of each activity and the expectations for assessment practice and evidence for moderation.

The assessment activities for this unit are indicated in the table below:

Key: **P = Prescribed** – this assessment method *must* be used to assess the unit.
O = Optional – this assessment method *could* be used to assess the unit.

Case study		Project	
Written question & answer/test/exam		Role play/simulation	
Essay		Practical demonstration	
Report		Group discussion	
Oral question and answer		Performance/exhibition	
Written description		Production of artefact	
Reflective log / diary		Practice file	

Signposting Key Skills

This unit offers clear opportunities for learners to provide evidence of achievement in Key Skills achievement in the following skill area/s:

Key Skill		Wider Key Skill	
Communication		Working with others	
Information Technology		Problem solving	
Application of Number		Improving Own Learning and Performance	

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Accredited Start date:
Accredited End date:
Unit Sector/Subject area:
Grading descriptors:
Availability for Use:

Purpose and Aim of the Unit	Free Text
Restrictions on the Availability	Free Text or N/A
Additional Assessment Requirements	Free Text or N/A
Details of relationship between the Unit and the NOS	Free Text or N/A
Details of relationship between the Unit and Standards (not NOS)	Free Text or N/A
Endorsement of the Unit by	Free Text or N/A