

## National Unit Specification: General Information

**UNIT** Problem Solving (Access 3)

**NUMBER** D01E 09

### COURSE

### SUMMARY

This core skills unit seeks to develop skills in solving simple problems in familiar contexts. These include the ability to analyse a situation or issue, devise a plan for addressing this, carry out the plan and evaluate what has been done and achieved.

### OUTCOMES

- 1 Analyse a simple situation or issue.
- 2 Plan, organise and carry out a simple task.
- 3 Review and evaluate a simple problem solving activity.

### RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained Problem Solving (Access 2).

### CREDIT VALUE

1 Credit at Access 3.

### CORE SKILLS

Information on the automatic certification of core skills is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

The attainment of this unit will lead to the automatic award of:

- Problem Solving at Access 3.

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## Administrative Information

**Superclass:** HB

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## National unit specification: statement of standards

### UNIT            Problem Solving (Access 3)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

#### **Note on range for the unit**

At this level, candidates should be dealing with a simple problem solving activity.

A simple problem solving activity is one which is likely to involve:

- a familiar context
- analysis of a small number of obvious factors
- management of a simple task, with a small number of known steps.

#### **OUTCOME 1**

Analyse a simple situation or issue.

##### **Performance Criteria**

- a) Recognise the main factors of the situation or issue.
- b) Outline a course of action to deal with the situation or issue.

##### **Evidence Requirements**

Oral and/or written evidence that the following analysis has been undertaken:

##### **PC(a)**

Evidence that the candidate has:

- identified at least three factors involved in the situation or issue. (These may be variables and/or the relationships between them.)

##### **PC(b)**

Evidence that the candidate has identified a course of action or process to deal with the situation or issue. The process will be a routine, familiar course of action which the candidate recognises from previous experience.

#### **OUTCOME 2**

Plan, organise and carry out a simple task.

##### **Performance Criteria**

- a) Identify sequence of steps in a plan.
- b) Select appropriate resources to carry out the plan.
- c) Carry out the task effectively in terms of using the selected resources and meeting the requirements of the plan.

## **National unit specification: statement of standards (cont)**

**UNIT**            Problem Solving (Access 3)

### **Evidence Requirements**

Evidence that the candidate has planned and organised a simple task as follows:

#### **PC(a)**

Oral and/or written evidence that the candidate has identified the sequence of steps in a plan to carry out a simple task. This will involve at least three steps, usually in a familiar situation. In a less familiar situation, the steps should be given and clear.

#### **PC(b)**

Evidence of actual performance which shows that the candidate has selected appropriate resources either from a given range of familiar resources or from a familiar range of common resources.

Resources may be defined as any source materials, information, equipment, technology or facilities which may be used in carrying out the task.

#### **PC(c)**

Evidence of actual performance which shows that the candidate has decided how the task will be managed and carried it out, using the selected resources.

### **OUTCOME 3**

Review and evaluate a simple problem solving activity.

#### **Performance Criteria**

- a)     Given simple criteria, identify the strengths and weaknesses of the solution to the problem.
- b)     Identify any lessons learned for future activity.

#### **Evidence Requirements**

##### **PC(a) and (b)**

Oral and/or written evidence that the candidate has reviewed and evaluated a simple problem solving activity using simple given criteria which could include:

- appropriateness of the solution with regard to time, personnel and material resources
- accuracy of the solution (where accuracy is appropriate to the activity)
- workability of the solution/outcome and lessons learned.

## National unit specification: support notes

### UNIT Problem Solving (Access 3)

This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

#### GUIDANCE ON CONTENT AND CONTEXT

The content and context for this core skills unit should be appropriate to the personal and vocational needs of the candidate.

Core skills units are stated at five levels of attainment, with activities becoming progressively more demanding in breadth and depth, and in the extent of individual autonomy required. The appendix to this unit shows the relationship between the levels in Problem Solving.

This unit provides opportunities for the automatic certification of Problem Solving at Access 3. Problem Solving is a collective term for the abilities that people bring to bear in tackling a wide range of issues and problems in their daily lives.

The core skill components identified within Problem Solving are Critical Thinking, Planning and Organising and Reviewing and Evaluating. This Problem Solving unit covers the core skill components in three outcomes.

#### Structure of National Units in Problem Solving Core Skills

Core skill component	Skill	Outcome
Critical Thinking	being able to analyse situations and suggest courses of action	1
Planning and Organising	being able to plan and organise work and carry it through to completion	2
Reviewing and Evaluating	being able to reflect on what has been done and to draw conclusions for the future	3

The unit provides opportunities for candidates to develop skills in solving simple problems in familiar situations.

The content and context for the unit may be any familiar situation or issue that will interest candidates and allow them to demonstrate achievement as specified in the three outcomes. The range of contexts in which Problem Solving can be developed is very wide and may involve for example, investigating; inventing; improving performance or learning; devising a study or other programme; or taking part in organising a placement, visit or other event. Such contexts can be found in virtually all curricular and vocational areas.

## National unit specification: support notes (cont)

UNIT            Problem Solving (Access 3)

### GUIDANCE ON TEACHING AND LEARNING APPROACHES

The learning and teaching approaches should encourage candidates to identify evidence of their attainment in problem solving skills and to look for opportunities to transfer their skills to other situations in their overall curriculum and life. There should be a balance between teacher/lecturer exposition and candidates' experiential learning. Where appropriate, arrangements should be made to ensure that there are no artificial barriers to learning. The nature of the candidate's learning needs should be taken into account when planning learning experiences.

The three core skill components of Critical Thinking, Planning and Organising, and Reviewing and Evaluating can be seen as stages in the process of tackling issues and problems. Open-ended, investigative approaches to learning will support the development and application of these skills.

**The core skill component of Critical Thinking at Access 3** is about candidates being able to analyse a simple situation or issue.

At this level, the extent to which the context is familiar to candidates is flexible. The context is either familiar with a small number of obvious, clearly-related factors, or the situation is less familiar but with variables and/or relationships which are already identified and which the candidate understands.

Candidates are required to identify a routine, familiar course of action to deal with the situation or issue. Candidates should recognise this course of action from their previous experiences.

#### **Example:**

#### **Familiar situation: improving performance in a physical activity**

(This time the aim is to improve swimming performance)

#### *Identified and understood factors:*

- effectiveness of swimming style
- personal fitness for swimming
- opportunities to practise swimming

#### *Routine, familiar course of action:*

1. identify present ability at skill
2. identify opportunities to practise skill
3. identify realistic target for improving skill
4. practise skill and check on progress towards target

## National unit specification: support notes (cont)

UNIT            Problem Solving (Access 3)

**The core skill component of Planning and Organising at Access 3** is about candidates having the ability to plan, organise and complete a simple task. The candidates are expected to identify the sequence of steps in the plan (there should be at least three steps), select resources to carry out the plan, and to carry out the task.

At this level, candidates are given some flexibility in their choice of resources. Resources should be selected from either a familiar range of common resources, or from a given range of familiar resources. Resources might include sources of information, set procedures, people, equipment or physical resources. Candidates are expected to decide how the task will be managed - this could include allocation of tasks in a group context. Then they are expected to carry out and complete the task.

Opportunities for developing Planning and Organising can occur in all curricular and vocational fields. In all cases, the development of Planning and Organising benefits from the use of open-ended approaches to learning. The teaching and learning approaches should encourage candidates to identify the evidence of their attainment and to look for opportunities to transfer their skills to other situations in their overall curriculum and life.

### **Example:**

#### **Simple task: improve performance in a physical activity**

(This time the aim is to improve swimming performance)

#### *Plan in simple steps:*

1. identify present ability at swimming
2. identify times to practise swimming
3. identify realistic target for improving swimming
4. practise swimming and check progress towards target

#### *Select resources:*

- obtain information on access to swimming pool
- identify procedures for practising swimming
- arrange timetable of swimming practice

#### *Carry out plan*

## National unit specification: support notes (cont)

UNIT            Problem Solving (Access 3)

**The core skill component of Reviewing and Evaluating at Access 3** is about candidates having the ability to review and evaluate a simple problem solving activity.

A simple problem solving activity is one set in a familiar context involving a small number of obvious factors and simple task management. During this evaluation, candidates are expected to use simple criteria to identify the strengths and/or weaknesses of the solution to the problem. Criteria might be appropriateness, accuracy or workability of the solution or outcome to the problem.

### **Example:**

**Simple problem solving activity: improve performance in a physical activity**  
(This time the aim is to improve performance in swimming)

*Simple criteria for evaluating solution:*

- appropriateness:  
Was the target realistic, did swimming actually improve?
- workability:  
Was it an easy plan to carry out, were there sufficient opportunities to practise swimming?

*Strengths and weaknesses of the plan to improve swimming performance:*

- appropriateness:  
target realistic  
swimming improved
- workability:  
hard work to carry out plan  
opportunities to swim but they took up too much time.

### **GUIDANCE ON APPROACHES TO ASSESSMENT**

Where appropriate, arrangements should be made to ensure that there are no artificial barriers to assessment. The nature of candidates' special needs should be taken into account when selecting assessment instruments, and possibilities for alternative arrangements considered.

If this unit is being used in conjunction with other units or courses, evidence of attainment should be gathered, wherever possible, from naturally occurring activities within these units or courses.

A staff observation checklist should be used where the candidate generates evidence of problem solving activities outwith the centre. The checklist may usefully provide supporting evidence for any of the activities related to Outcomes 1 – 3 and should be used accordingly.

## National unit specification: support notes (cont)

### UNIT            Problem Solving (Access 3)

Where the Problem Solving unit is being combined with another unit to create an enhanced learning and teaching programme, care must be taken to ensure that all aspects of each unit are covered and adequate time must be allowed for the coverage of both units. Such a programme would create opportunities to consolidate the skills gained in this unit.

Evidence should be indexed to the relevant outcome, performance criteria and evidence requirements of the Problem Solving unit and should be collated and retained for assessment and moderation purposes.

### Suggested assessment instruments

#### Outcome 1

All PCs. Responses to short answer questions, possibly in the form of an oral interview, would be suitable.

#### Outcome 2

PC (a) Responses to short answer questions, possibly in the form of an oral interview, would be suitable

PC (b), PC(c) Video recording, or entries in a personal log, would be suitable for recording performance evidence.

#### Outcome 3

All PCs. Responses to short answer questions, possibly in the form of an oral interview, would be suitable.

<b>Information on suggested assessment instruments</b>	
short answer question	candidate response should consist of a few words
oral interview	a structured conversation, generally on a one-to-one basis, eliciting information directly from the candidate. Results may be recorded in a questionnaire format.
log	candidate demonstrates outcome of learning in a particular context, entries in a log record evidence, noting aspects such as targets, dates when targets achieved, actions, contracts.

## **National unit specification: support notes (cont)**

### **UNIT**            Problem Solving (Access 3)

Certification of Critical Thinking, Planning and Organising, and Reviewing and Evaluating recognises that candidates have demonstrated an appropriate level of skill in a particular context and there is an implication that, in contexts that contain knowledge and understanding accessible to the candidate, transfer is reasonably likely. However, it must also be recognised that familiarity with a context influences the candidate's ability to develop and transfer the skill.

This core skill unit is aided by National Assessment Bank materials which provide assessment materials exemplifying the evidence required for achievement of the core skill.

In cases where the candidate has had to complete a core skills unit to meet the requirements of a Scottish Group Award, that unit will be counted as a unit credit within the Scottish Group Award as well as being counted towards meeting the core skills profile required.

### **SPECIAL NEEDS**

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements* (SQA, 1998).

**Core skills units**  
**Problem Solving: progression chart**

**Appendix**

	<b>Access 2</b>	<b>Access 3</b>	<b>Intermediate 1</b>	<b>Intermediate 2</b>	<b>Higher</b>
<b>Nature of problem</b>	Simple recurring problem solving activity	Simple problem solving activity	Straightforward problem solving activity	Non-routine problem solving activity	Complex problem solving activity
<b>Critical Thinking</b>	Analyse an identified familiar situation or issue	Analyse a simple situation or issue	Analyse a straightforward situation or issue	Analyse a non-routine situation or issue	Analyse a complex situation or issue
<b>Planning and Organising</b>	Plan, organise and carry out a familiar simple task	Plan, organise and carry out a simple task	Plan, organise and carry out a straightforward task	Plan, organise and carry out a non-routine task	Plan, organise and carry out a complex task
<b>Reviewing and Evaluating</b>	Review and evaluate a simple recurring problem solving activity	Review and evaluate a simple problem solving activity	Review and evaluate a straightforward problem solving activity	Review and evaluate a non-routine problem solving activity	Review and evaluate a complex problem solving activity