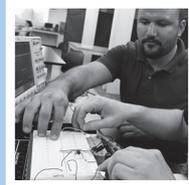


Work place Core Skills Unit

NUMERACY SCQF level 6 Assessment Support Pack



What are Core Skills?

Core Skills are skills and abilities which everyone needs in their work. This is true for every job in every workplace.

The Core Skills are:

- Communication
- Numeracy
- Information and Communication Technology
- Problem Solving
- Working with Others

Employers look for Core Skills when they are appointing new staff. They also expect their existing staff to have these skills.

Core Skills are important because they help you work effectively in your present job and also prepare you for jobs which you will do in future. Developing your Core Skills helps you deal with today's rapidly changing world and improve your career prospects.

Part 1: Information for assessors

What is involved?

The Unit is designed for the workplace and the content should involve tasks and skills that are suited to the requirements of the candidate's working environment. The focus of the Unit is on transferable numeracy skills:

- ◆ using number skills
- ◆ understanding tables, charts, and diagrams
- ◆ producing tables, charts, and diagrams

These skills should be useful to candidates in their current and future jobs, as well as in their social and personal lives.

The Unit is designed for those who have significant skill and experience in using numeracy skills in the workplace. The work undertaken in the assessments may have some complex aspects and will require knowledge or experience of formal workplace numerical practices, eg at managerial level. The Unit might be suitable for candidates who are currently working towards an SVQ/NVQ at level 4.

Numeracy tasks can be combined with the other Core Skills Units: Communication, Information and Communication Technology, Problem Solving, and Working with Others. If you adopt this approach, records must be kept for each Core Skills Unit.

Guidance on the Unit

Candidates at SCQF level 6 are required to use a wide range of numerical or statistical skills and complex graphical forms in unfamiliar situations where preliminary work needs to be done on gathering information and clarifying relationships between different pieces of information. Graphical information tasks may involve complex forms and will go beyond the simple extraction of information. Candidates will work with a high degree of independence and initiative on the tasks but may ask you for clarity on anything within the Unit that they do not understand.

The 'What do I need to do' section of the Unit lists the knowledge, understanding, and competence that the candidates must have and what they need to do to prove this. You may want to discuss these with the candidates. The following notes give detailed pointers on the things candidates need to know and be able to do.

What candidates need to do

Using number

The Unit assumes that the candidates have the basic numeracy skills of:

- ◆ notation for and use of whole numbers, decimals, percentages, fractions, and ratios
- ◆ scientific notation
- ◆ basic arithmetic operations
- ◆ rounding answers to specified numbers of decimal places/significant figures
- ◆ positive and negative numbers

You do not have to assess these directly.

The types of numeracy tasks will depend on the work environment. However, one or more of the following areas is expected to be involved:

- ◆ statistical concepts such as standard deviation
- ◆ relationships in symbolic form
- ◆ rearranging formulae
- ◆ creating a model of the situation

Suitably complex numerical tasks will consist of several stages. Some of the stages may require more than one numerical calculation. Candidates may have to carry out preliminary work in identifying the relevant information and defining relationships within it.

It is good practice to encourage candidates to check their calculations. Although not part of the assessment, it is important that candidates have some confidence in their own calculations.

Using graphical information

At SCQF level 6 candidates must have knowledge of commonly used tables, graphs, charts, and diagrams. They should be able to create these graphical forms and know the appropriate applications for each of them. A detailed knowledge is required of the complex graphical forms used in the candidates' workplace.

When exploring information presented graphically, the candidates are expected to analyse and interpret the information. This is likely to be the case when the candidates have to make multiple readings from one or more graphical forms and then have to carry out further calculations.

The tasks can involve any of the following graphical features:

- ◆ qualitative graphs
- ◆ patterns
- ◆ scatter
- ◆ discontinuities
- ◆ rates of change

In some workplaces it may be particularly relevant that the candidates can deal with graphical forms that have been employed to partly disguise the information. This can occur when axis scales have been manipulated. Similarly, data points may have been chosen to give an over-optimistic picture (eg choosing very specific year-end points to show impressive stock market results).

How do candidates show they have achieved the Unit?

The Unit requires the candidates to provide evidence for each of the three tasks.

Task 1: Using number

Apply a wide range of numerical and statistical skills to solve complex work-related problems.

Task 2: Use graphical format to find out information

Extract, analyse and interpret information from complex graphical forms.

Task 3: Use graphical format to communicate information

Convey information through tables, graphs, charts, or diagrams.

There is no set number of times candidates should perform each of the individual tasks. They should be performed them as often as is required for the assessor to be confident that their performance is consistently accurate.

Assessment requirements

Using number

Tasks may relate to unfamiliar situations, where the relevant facts and their importance need to be clarified. Generalised contexts include situations where the candidates have to deal with the problem in a more general way, eg by creating a model of a situation.

The candidates can carry out the calculations mentally or in writing, using a calculator or another electronic device, eg a computer. The candidates can give exact or approximate answers as appropriate. Candidates should be encouraged to check their answers, although evidence of this checking is not required. The numerical tasks must involve a number of steps and the order in which these steps must be carried out should not be obvious. It is assumed that the candidates will be able to add, subtract, multiply, and divide, and to work with fractions, percentages, and ratios as appropriate but evidence of all of these is not required. Candidates must carry out a number of sustained, complex calculations with several stages, some of which might involve more than one numerical calculation. Candidates must solve problems involving one numerical or statistical theory, such as formulae or confidence levels.

Use graphical format to find out information

It is assumed that the candidates will be familiar with common types of tables, graphs, charts, and diagrams in everyday use but evidence of each of these is not required. The candidates must interpret information that has been presented in a complex graphical form. Interpreting information must go beyond simply extracting information and should include, where appropriate, interpolation and extrapolation.

Use graphical format to communicate information

When communicating complex information, the candidates must decide on the appropriate graphical form to be used.

Gathering evidence

It may be appropriate for you to gather written evidence produced by the candidates while carrying out the practical tasks. However, written evidence is not essential for this Unit and is inappropriate if it disadvantages the candidates.

You may wish instead to observe the candidates carrying out a task and use oral questioning. This requires you to create and complete a record of questions asked and candidate responses.

From the candidate's point of view, it is useful to have the means of keeping all the work of this Unit together. You can help here by creating and providing a workbook that includes all the evidence-gathering items. An alternative would be to provide worksheets that can be made into a portfolio or e-portfolio.

If you have chosen to integrate the numeracy work with other Units being undertaken by the candidates, it may be possible to assess the numeracy as part of a larger single activity. In this case you must keep separate records for this Unit.

You should try to identify naturally occurring opportunities for assessment where possible. Some of the exemplars in this pack could be used or contextualised for this purpose.

The assessment process is likely to involve one or more of the following:

- ◆ observation
- ◆ recording
- ◆ oral questioning

When assessing by observation, you must keep a detailed checklist. Similarly, if you use oral questioning, you must keep a record of both the questions and the candidate responses. All evidence, whether produced by the candidates or a record made by yourself, must be retained, signed, and dated by you.

Planning

You should work out where opportunities for meeting the Unit standards are likely to arise. Where possible, these should be built into the assessment process.

You should explain and discuss this assessment process with the candidates so that they are clear about what is expected of them.

Part 2: Exemplar assessment tasks

Note for assessors

You can use the exemplar assessments given in this section in several ways:

- ◆ to illustrate to candidates the type of materials that could be used to generate evidence
- ◆ to help identify the type and amount of evidence that candidates should have gathered in their portfolio
- ◆ to help identify the level of complexity in evidence required for the Core Skill at this level
- ◆ to help you to identify/create an assessment task related to the candidate's own work environment
- ◆ as an off-the-shelf assessment, although every effort should be made to source/provide candidates with assessment materials that relate to their specific area of work

The exemplars below are not presented as a set of detailed questions with solutions but as suggested areas. A candidate instruction sheet has been provided for each of the Unit tasks.

Task 1: Using number — candidates are required to carry out a number of sustained complex calculations (approximately two to four). The exemplar illustrates five suggested areas.

Task 2: Use graphical format to find out information — candidates are required to carry out one activity utilising complex graphical information.

Task 3: Use graphical format to communicate information — candidates are required to create at least one graphical form.

Task 1: Using number

Part A – Example areas

1 For candidates working in commerce.

- a) The candidate is to make a comparison of book values of a fixed asset after six years using two different depreciation rates and the depreciation formula

$$V = P (1 - R)^n$$

where

V = future value

P = present value

R = rate of depreciation

n = number of years

- b) An alternative would be a single activity involving finding the number of years to reach a particular fraction of the present value, hence rearranging the formula for n .

2 For candidates working in finance.

A survey is to be made of five savings providers' three-year fixed-rate bonds. The candidate is to use the compound interest formula to create a comparison table of the total return from each provider for investments of £1000, £5000, and £20,000.

$$V = P (1 + i)^n$$

where

V = future value

P = present value

i = interest rate

n = number of years

3 For candidates working in production.

A measure of the variation of the weight of a final product has to be found. A comparison is to be made between two production lines. The candidate must:

- ◆ decide on a suitable schedule defining the number of samples required and the points in time that they will be collected
- ◆ obtain the weights of the samples
- ◆ use statistical methods to calculate mean, standard deviation, and error confidence limits
- ◆ compare the results from the two lines

4 For candidates working in sales.

The candidate has to investigate the relationship between advertising spend and product sales. For four product lines, the data over the past ten years has to be obtained and analysed. Statistical methods should be used to find correlations between spend and sales. Finally the results for all four products should be combined.

5 For candidates working in science and engineering, there will be a wealth of suitable numerical- and statistical-based problems that can be used for assessment.

Part B – Candidate task sheet

You are required to carry out three complex numerical activities.

You will need to decide on problems you have in the workplace that may be suitable. Your assessor will discuss this with you and guide you in their specification to include all the requirements for the Unit.

For each of the four activities, you will need to carry out the following steps:

- 1 Discuss with your assessor the details of the activity.
- 2 Create a clear description of the activity.
- 3 Analyse the situation to identify relevant numerical data and relationships.
- 4 Decide which operations to carry out and in what order.
- 5 Carry out the numerical processes.
- 6 Prepare the results.

Attach all documentation for the four activities to this task sheet.

Task 2: Use graphical format to find out information

Part A – Example areas

1 The candidate is to carry out an analysis of a set of graphical forms that have been designed to give an over-optimistic impression of the performance of a financial product. The candidate will be required to produce a written description of the true position.

It might be possible to extend this activity to cover Task 3: Use graphical format to communicate information if the candidate is required to create a set of alternative, more truthful, graphical forms.

2 Three scatter diagrams of education attainment against income at the ages of 30, 40, and 50 years are provided. The candidate is required to investigate the correlations between educational attainment and income at different stages in life.

The numerical calculation part of this activity could also be used to cover one of the activities in Task 1: Using number.

Part B – Candidate task sheet

You are required to carry out an activity in communicating information using graphical forms.

You will need to decide on a problem you have in the workplace that may be suitable. Your assessor will discuss this with you and guide you in the specification to include all the requirements for the Unit.

You will need to carry out the following steps:

- 1** Discuss with your assessor the details of the activity.
- 2** Create a clear description of the activity.
- 3** Identify the significant features of the graphical form(s).
- 4** Analyse and interpret the information present.
- 5** Describe the results.

Attach all documentation for the task to this task sheet.

Task 3: Use graphical format to communicate information

Part A – Example areas

- 1 The candidate is to create a flow chart to describe an office procedure for newcomers. This would need to be of a complexity requiring several processing points and some conditional looping.
- 2 The candidate is required to create a graphical form from information which involves two independent variables. An example would be failure rate of recorded DVDs on the basis of the age of the DVD and the amount of data stored on it.

Part B – Candidate task sheet

You are required to carry out an activity in communicating information using graphical forms.

You will need to decide on a problem you have in the workplace that may be suitable. Your assessor will discuss this with you and guide you in the specification to include all the requirements for the Unit.

You will need to carry out the following steps:

- 1 Discuss with your assessor the details of the activity.
- 2 Create a clear description of the activity.
- 3 Carry out any preparatory numerical work.
- 4 Create the graphical form(s).

Attach all documentation for the task to this task sheet.

Part 3: Exemplar recording documentation

This section gives some examples of forms that could be used by candidates and/or assessors to gather evidence and record assessment decisions.

You are encouraged to adapt these materials to suit you and your candidates' preferred approach, ie boxes can be made bigger, format can be changed to a non-table format, font size etc.

Assessment plan

You should work out where naturally occurring opportunities for meeting the standards are likely to arise and, where possible, build them into the assessment process.

You should explain and discuss the assessment process with candidates so they are clear about what is expected of them.

Assessment checklists

Candidates could use the assessment checklists as a means of cross-referencing evidence in their portfolio to the Unit.

Assessors could use the assessment checklists to record assessment decisions and any relevant comments.

Summary checklist

The summary checklist enables you to record the results from the assessment checklists on a single form.

Assessment plan

Numeracy (SCQF level 6)

Candidate: _____

Task to be assessed: _____

Proposed date of assessment: _____

Proposed method of assessment	Tick	Notes
Assignment or project		
Observed performance		
Witness testimony		
Written questions		
Oral questioning		
Product evaluation, eg written document		
Previous evidence		
Other evidence		

Details agreed and signed by:

Assessor _____

Candidate _____

Line manager (if required) _____

Date _____

Assessment checklist

Numeracy (SCQF level 6)

Task 1: Using number

Candidate name: _____

Date: _____

Task 1: Apply a wide range of numerical and statistical skills to solve complex work-related problems.

	Evidence	Assessor initials and date	Comments
Analysed problems and situations and identified relevant numerical data and relationships			
Decided which steps and operations to carry out and in what order			
Used numerical or statistical concepts, eg use of formulae to represent relationships in symbolic form, manipulation of numbers represented by symbols, application of statistical concepts such as standard deviation			
Carried out a number of sustained complex calculations			
Rounded answers to an appropriate degree of accuracy, eg two decimal places or three significant figures			

Assessment checklist

Numeracy (SCQF level 6)

Task 2: Use graphical format to find out information.

Candidate name: _____

Date: _____

Task 2: Use graphical format to find out information.			
	Evidence	Assessor initials and date	Comments
<p>Extracted, analysed and interpreted information from complex graphical forms such as:</p> <ul style="list-style-type: none"> ◆ qualitative graphs ◆ graphs where part of the axis has been omitted ◆ histograms ◆ graphs showing concepts/relationships such as cumulative frequency or complex variables ◆ graphs requiring interpolation and extrapolation 			

Assessment checklist

Numeracy (SCQF level 6)

Task 3: Use graphical format to communicate information

Candidate name: _____

Date: _____

Task 3: Use graphical format to communicate information.			
	Evidence	Assessor initials and date	Comments
Selected and created a suitable format to communicate information using ONE of the options listed below: <ul style="list-style-type: none">◆ Table◆ Line graph◆ Bar chart◆ Pie chart◆ Histogram◆ Diagram◆ Qualitative form such as a graph with no scale on the axes			

Summary checklist

Numeracy (SCQF level 6)

Candidate name: _____

Candidate number: _____

Centre: _____

Task	Date achieved
1 Using number	
2 Measuring	
3 Use graphical format to find out information	
Assessor's signature: _____	Date: _____

ADMINISTRATION INFORMATION

Credit Value

6 SCQF credit points at SCQF level 6



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