WORKPLACE CORE SKILLS
ASSESSMENT SUPPORT PACK

NUMERACY
SCQF Level 3

Part 1: Information for assessors

Part 2: Exemplar assessment tasks

Part 3: Exemplar recording documentation

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
- measuring
- using graphical format to find out information
- using graphical format to communicate information

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 little or no skill and experience in using numeracy skills within the workplace. The work undertaken in the assessments should be simple and routine, for example, at trainee level. The Unit might be suitable for candidates who are currently working towards an SVQ/NVQ at Level 1 or 2.

Numeracy tasks can be combined with the other Core Skills Units: Communication, ICT, Problem Solving, 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 3 are required to work with simple measuring instruments, graphical information and numbers in familiar situations. They should be able to understand and produce simple tables and charts. They may need some support to carry out the tasks either from you, or from a supervisor or other workplace mentor.

The “What do I need to do” section of the Unit lists knowledge, understanding and competence which 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

Candidates must be able to recognise and use common notation of whole numbers, simple decimals, simple percentages, simple fractions and simple ratios.

Examples need only be as complex as: 6, 153, 1.87, 25%, 80%, $\frac{1}{5}$, $\frac{2}{3}$, 1:4 and 5:1.

They must be able to carry out the four basic arithmetic operations of addition, subtraction, multiplication and division. It is expected that results of calculations will not be more complex than two decimal places eg 5.62. (Alternatively, this can be expressed as an accuracy of three significant figures.) Examples need only be as complex as: 13 + 68; 5.44 – 2.35; 6.5 ×15; 78 ÷ 15.

The basic operations can be combined to deal with more complex situations. The candidates should be guided to think clearly about which operations are required and the order of carrying them out. Situations requiring one or two operations are appropriate.

It may be that you wish to use a simple formula in a calculation. You should explain the formula to the candidates using words and not algebraic notation. For example you can work out the take-home pay by subtracting the income tax and national insurance from the gross pay.

It is not appropriate to deliver the basics of numeracy skills abstractly. You are encouraged to make all the learning as relevant to the workplace as possible.

By relating even the simplest calculation to the candidate's practical experience, the result becomes the solution to a relevant problem. Thus the candidates are drawing a conclusion at the end of the activity.

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.

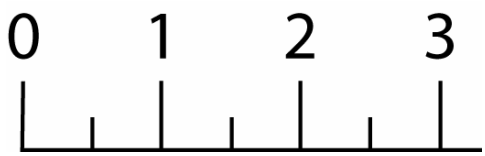
Measuring

In many workplace situations you will have no difficulty in finding quantities to be measured. Candidates will do this naturally in their work. If this is not the case, then you can use common personal and environmental quantities such as height, weight, temperature, and atmospheric pressure.

You must make sure that your candidates are familiar with the units used in their measurements. These units may be commonly used or very specific to the workplace.

If the candidates do not routinely measure in the workplace, they will also need practice in using the instruments you choose to use for the measurements. Likely instruments are rulers, thermometers and weighing scales. Apart from the actual reading, they should use the instrument correctly. Obvious points include: making sure that the zero of the ruler or measuring tape is positioned correctly and not holding the thermometer by the bulb while measuring the temperature of the room.

The Unit is specific on the nature of the scale to be used. The candidates are only expected to measure to the nearest marked number. Thus a scale with un-numbered marks between the numbered marks is appropriate but the readings are to be from the numbered marks. You should select instruments carefully bearing in mind the nature of its scale. A measuring tape with marked centimetres and unmarked half centimetres as shown below would be suitable for measuring the length of a room.



Many thermometers have numbered marks every ten degrees with unnumbered marks for the degrees in between. That type of thermometer would not be appropriate for your candidates to measure the temperature of a workplace. An appropriate thermometer would have each degree marked and numbered

Additionally you will need to show the candidates how to measure to the nearest numbered mark using the convention that if the reading appears exactly half way between two numbers, the higher is used.

It is important to note that this Unit is based on using instruments with analogue scales. Digital readouts are not acceptable.

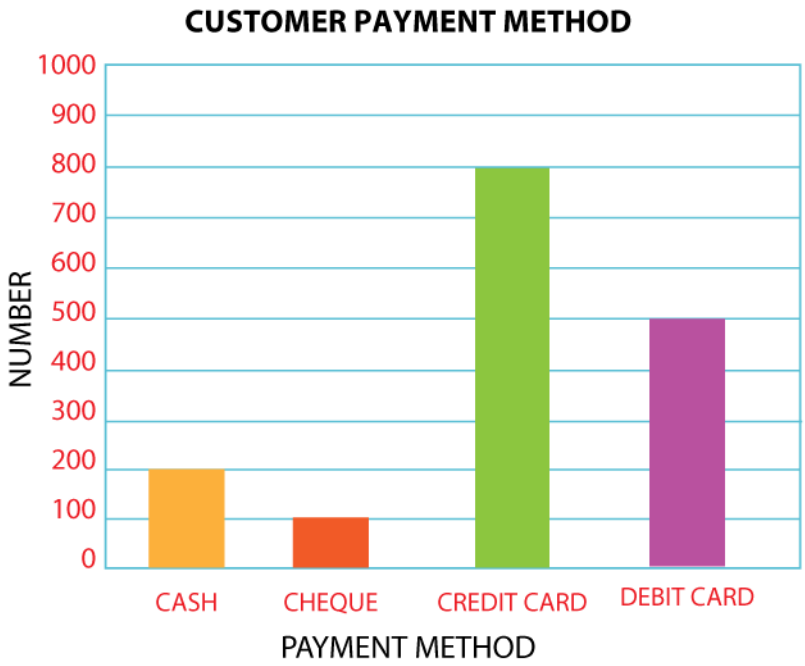
Extracting and communicating graphical information

Although the candidates, themselves, are not required to make a choice of graphical form (table, graph, chart and diagram), you should explain the appropriate applications for each type. Candidates are not required to create a graphical form from scratch. You will have to provide the partly prepared graphical forms for the candidates to complete during assessment.

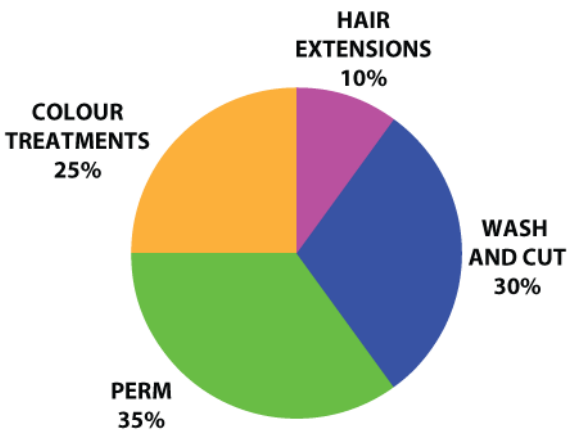
Tables are a general purpose method of displaying numerical information graphically. There is a clear relationship between the columns. For SCQF Level 3, tables are restricted to two columns.

By definition, line graphs are used to show continuously varying information. However, at this level, they may be used to display discrete but ordered information. This type of graph is often used to show trends and thus the X axis is usually a time axis. It is important to place markers on the graph line showing the data points. Also the candidates must understand that it is only valid to extract information at these data points and not in between. The example below illustrates the way in which a company's turnover varied in the years 2001 to 2006.

Bar charts are used to give a snap shot comparison of values. These are usually values of different but related quantities. The example below shows the numbers of a company's customers paying by the alternative payment methods.



Pie charts are very useful at showing the proportions making up a whole. A good indication that a pie chart can be used is if the information to be presented is in the form of percentages adding up to 100%. The example below shows the proportions of a hairdresser's customers opting for the various hairdressing choices.



Diagrams are best used to show information which consists of spatial relationships. An example likely to be used in some workplaces would be an office layout plan or the diagram in fire escape instructions. The candidates need to know simple two-dimensional shapes such as squares, rectangles and circles. Another applicable diagram form is a simple map giving the distances and directions between geographic locations. The candidates will also have to know about how two-dimensional shapes represent three dimensions on maps.

How do candidates show they have achieved the Unit?

The Unit requires the candidates to provide evidence for each of the four tasks:

Task 1: Using number

Using numbers, carrying out calculations involving one or two steps, and drawing conclusions from their answers.

Task 2: Measuring

Taking measurements using instruments with scales.

Task 3: Use graphical format to find out information

Extracting information from tables, graphs, charts or diagrams.

Task 4: Use graphical format to communicate information

Conveying information through tables, graphs, charts or diagrams.

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

Assessment requirements

Using number

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 involving calculations should be familiar to the candidates and will only involve one or two obvious steps.

Measuring

The candidates must use instruments with scales on which the main divisions are numbered and the subdivisions are marked but not numbered. The candidates are only expected to measure to the nearest marked number. Measuring instruments must have analogue scales: electronic instruments with digital readouts are not applicable for this Unit.

Use graphical format to find out information

You should select graphical formats which are likely to be familiar to the candidates from which they can extract information. The candidates can be asked to extract information from diagrams involving 2-dimensional representations of 3-dimensional shapes.

Use graphical format to communicate information

You should specify which graphical form is to be used to communicate selected information and design the tables, graphs, charts or diagrams for the candidates to complete. Communication of information by the candidates in simple diagrams should only involve 2-dimensional shapes.

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 which includes all the evidence-gathering items. An alternative would be to provide worksheets which 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 candidate responses. All evidence, whether produced by the candidate 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 which 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 which relate to their specific area of work

Task 1: Using number — can be split into two parts. Part A covers notation and basic calculations and part B covers multiple step calculations and drawing conclusions. You may wish to carry out both parts on the same assessment occasion if it is to the advantage of the candidates. In part A, the first five questions cover numerical notation, the remaining questions cover the basic operations and use of percentages and fractions. The questions of part B cover two step calculations, with questions 3 and 4 requiring a conclusion to be drawn.

Task 2: Measuring — gives the candidates the opportunity to use one of two different measuring instruments.

Task 3 — Use graphical format to find out information and **Task 4 — Use graphical format to communicate information** — have contrasting graphical forms. However you may wish to use a single form which can be used for both tasks. The candidates would complete a graphical form and then read a value from it. (The value should be from a part of the graphical form which is supplied and not depend on successful candidate completion).

Task 1: Using number

A – Numerical notation and basic calculations

1 Employees of a company work two hundred and thirty four days each year. Write two hundred and thirty four as a number in the box below.

2 Twenty five percent of a company's employees have been off sick this year. Write twenty five percent in figures in the box below.

3 A chemical has to be made up in the ratio of one to six with water. Write one to six in figures in the box below.

4 A company's workforce is made up of two fifths males. Write two fifths in figures in the box below.

5 The weight in kilograms of a parcel is three point seven four.

Write three point seven four in figures in the box below.

6 Write down the total weight in the box below of two parcels if one is 1.5 kilograms and the other is 2.35 kilograms.

7 A measuring cylinder filled with liquid weighs 536 grams. If the cylinder weighs 220 grams, write down the weight of the liquid in the box below.

8 A book in its presentation packaging weighs 1.5 kilograms. If there is an order for 12 of these books, what will the total weight be? Write down your answer in the box below.

9 An employee works for 14 weeks and receives a total of £2800. What was the weekly wage? Write down your answer in the box below.

10 In a sale, a shopper who would have spent £100 will get £20 off. What was the percentage saving? Write down your answer in the box below.

11 An employee has made up 60 information packs. One quarter of them have to be posted out. How many have to be posted? Write down your answer in the box below.

B – Carrying out calculations and drawing conclusions

1 A van driver has to drive 24 kilometres to deliver a consignment. After a few minutes, one quarter of the distance has been covered. How far has still to be travelled?

2 An employee works a standard working week of 35 hours. Overtime is paid at £10 per hour. In one week she works for 39 hours. How much is she paid for her overtime?

3 The volume of a box is calculated by length multiplied by width multiplied by height. Box A has a length of 3cm, width of 5cm and height of 2.5 cm. Box B has a length of 4cm, width of 2 cm and a height of 3 cm. Which box has the greater volume?

4 An office has the option of two different telephone tariffs. Phone tariff A has a fixed monthly cost of £20 and allows unlimited calls. Phone tariff B has a fixed cost of £5 and a call charge of 4p per minute. Which tariff is cheaper if 400 minutes of calls are made in one month?

Task 2: Measuring

1 Use the thermometer provided to:

a) Measure the temperature in your office to the nearest degree.

b) Measure the temperature outside your office to the nearest degree.

OR

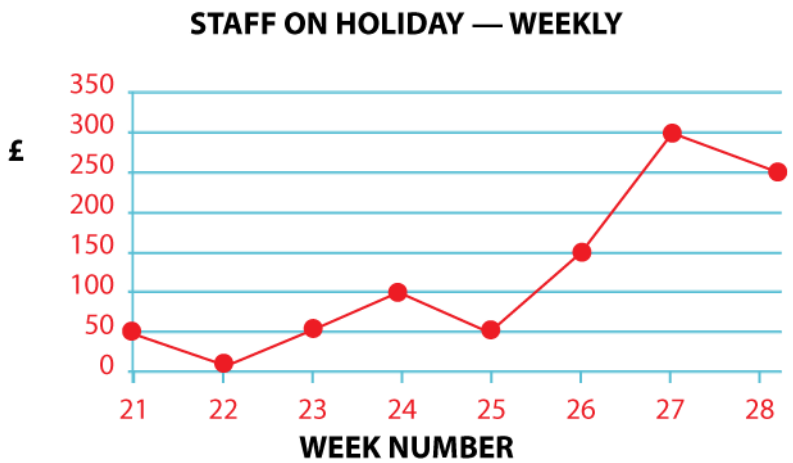
2 Use the measuring tape provided to:

a) Measure the width of your office to the nearest centimetre.

b) Measure the length of your office to the nearest centimetre.

Task 3: Use graphical format to find out information

The graph below is to be used to show the number of a company's staff off on holiday during each week of the popular summer holiday period.



How many staff are on holiday in week 26?

Task 4: Use graphical format to communicate information

The table below shows the monthly production figures for a small company producing lawnmowers.

Month	Number produced
January	129
February	168
March	156
April	160
May	203
June	170
July	
August	
September	
October	
November	
December	

Complete the table with the values from July to December:

July – 45 October – 145 November – 174

September – 133 August – 98 December – 155

Marking Scheme

Candidates must successfully complete all four tasks to achieve the Unit.

The calculation examples are presented in these notes not as model answers but to indicate how they satisfy the requirements of the Unit.

Task 1: Using number

Part A

Questions **1** to **5** cover the use of numerical notation.

Questions **6** to **11** cover:

6 Addition. Answer = 3.85 kilograms

7 Subtraction. Answer = 316 grams

8 Multiplication. Answer = 18 kilograms

9 Division. Answer = £200

10 Percentages. Answer = 20%

11 Fractions. Answer = 15

Part B

Questions 1 to 4 cover one or two calculation steps, deciding on the order of steps and conclusions drawn from the calculations.

1 requires division and subtraction

24/4 = 6

24 - 6 = 18

Answer = 18 kilometres

2 requires subtraction and multiplication

39 - 35 = 4 Overtime hours

Overtime payment = 4 × 10 = 40

Answer = £40

3 uses two multiplications and a conclusion drawn

Box A volume = 3 × 5 × 2.5 = 37.5 cm3

Box B volume = 4 × 2 × 3 = 24 cm3

Answer = Box A has the greater volume

4 uses multiplication and a conclusion drawn

tariff B will cost £5.00 + 400 × 0.04 = £21

tariff A will cost £20

Answer: tariff A is cheaper

Task 2: Measuring

Questions 1 and 2 each give two measuring opportunities.

1 Note that the task requires a thermometer with all the degrees marked. You will need to make sure that you have one of this type. You should check that as well as making a correct reading that the thermometer reading is not influenced by say the candidate holding it too near the bulb.

2 The measuring tape required is of a fairly common format with the centimetres numbered. You should check that as well as making a correct reading off the tape, that it is positioned parallel to the side walls ie the shortest distance is measured in each case.

Task 3: Use graphical format to find out information

A line graph is used here. The answer is 150 staff.

Task 4: Use graphical format to communicate information

The candidates should complete the table correctly.

Part 3: Exemplar recording documentation

This section gives some examples of forms which 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 candidate's preferred approach i.e. 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 3)

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 3) Task 1: Using number

Candidate Name:_____ Date:_____

Task 1: Use number to carry out a variety of simple number tasks which involve calculations requiring one or two steps.			
Used notation for each of the following:	**Evidence**	**Assessor initials & date**	**Comments**
Whole numbers (eg 5)			
Decimals (eg 2.45)			
Percentages (eg 30%)			
Simple fractions (eg $\frac{2}{3}$)			
Simple ratios (eg 1.3)			
Carried out calculations involving each of the following:	**Evidence**	**Assessor initials & date**	**Comments**
Addition			
Subtraction			
Multiplication			
Division			
Carried out calculations	**Evidence**	**Assessor initials & date**	**Comments**
Involving either whole number percentages or simple fractions			
Decided which calculations needed to be carried out and in what order (eg add, then multiply)			
Drew conclusions from calculation results			

Assessment Checklist

Numeracy (SCQF Level 3) Task 2: Measuring

Candidate Name:_____ Date:_____

Task 2: Read and use a simple scale on a graph or a familiar measuring instrument.			
	Evidence	**Assessor initials & date**	**Comments**
Used a measuring instrument to measure to the nearest numbered division or Used the scale on a graph to determine quantities to the nearest numbered division			

Assessment Checklist

Numeracy (SCQF Level 3)

Task 3: Use graphical format to find out information

Candidate Name:_____ Date:_____

Task 3: Use graphical format to find out information			
Extracted information from at least ONE of the following:	**Evidence**	**Assessor initials & date**	**Comments**
Table containing two categories of information			
Chart (eg bar or pie chart)			
Graph (eg a line graph with a scale)			
Diagram (eg of a 2-dimensional shape)			

Assessment Checklist

Numeracy (SCQF Level 3)

Task 4: Use graphical format to communicate information

Candidate Name:_____ Date:_____

Task 4: Use graphical format to communicate information.			
Communicated information by completing at least ONE of the following:	**Evidence**	**Assessor initials & date**	**Comments**
Table containing two categories of information			
Chart (eg bar or pie chart)			
Graph (eg a line graph with a scale)			
Diagram (eg of a 2-dimensional shape)			

Summary Checklist

Numeracy (SCQF Level 3)

Candidate Name:_____

Candidate Number:_____

Centre:_____

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

ADMINISTRATION INFORMATION

Credit Value

6 SCQF credit points at SCQF Level 3

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