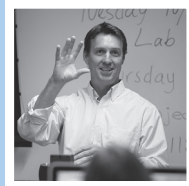


# Work place Core Skills Unit

## NUMERACY SCQF level 3 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
- ◆ 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, eg at trainee level. The Unit might be suitable for candidates who are currently working towards an SVQ/NVQ at level 1 or level 2.

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 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 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

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:  $13 + 68$ ;  $5.44 - 2.35$ ;  $6.5 \times 15$ ;  $78 \div 15$ .

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 take-home pay by subtracting income tax and national insurance from 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.

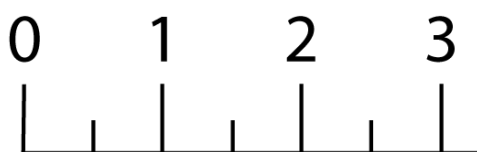
## Measuring

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 unnumbered 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 their 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

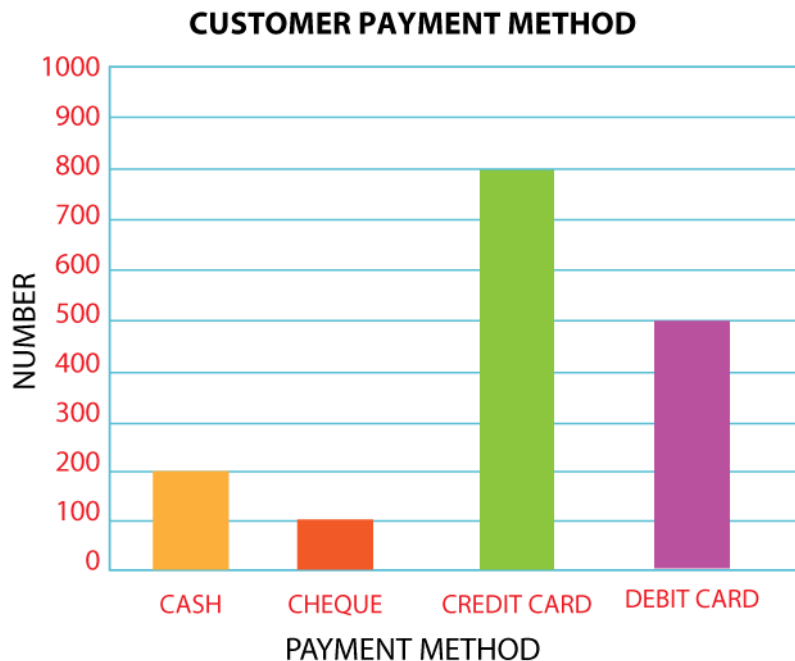
Although the candidates themselves are not required to make a choice of graphical form (table, graph, chart, or diagram), you should explain the appropriate applications for each type. Candidates are not required to create a graphical form from scratch. You will have to provide the partly prepared graphical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

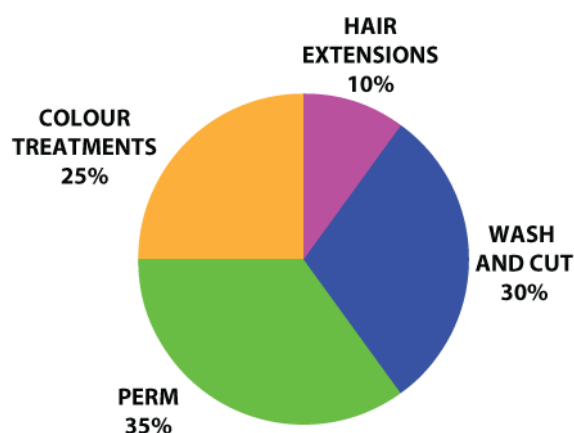
By definition, line graphs are used to show continuously varying information. However, at this level they may be used to display discrete but ordered information. This type of graph is often used to show trends and thus the x-axis is usually a time axis. It is important to place markers on the graph 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 snapshot 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 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 various hairdressing choices.



Diagrams are best used to show information that 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, carry out calculations involving one or two steps, and draw conclusions from their answers.

### Task 2: Measuring

Take measurements using instruments with scales.

### Task 3: Use graphical format to find out information

Extract information from tables, graphs, charts, or diagrams.

### Task 4: 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 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 that 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 two-dimensional representations of three-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 two-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 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 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 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

**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 that 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 that 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 per cent of a company's employees have been off sick this year. Write twenty five per cent 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 £2,800. 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.

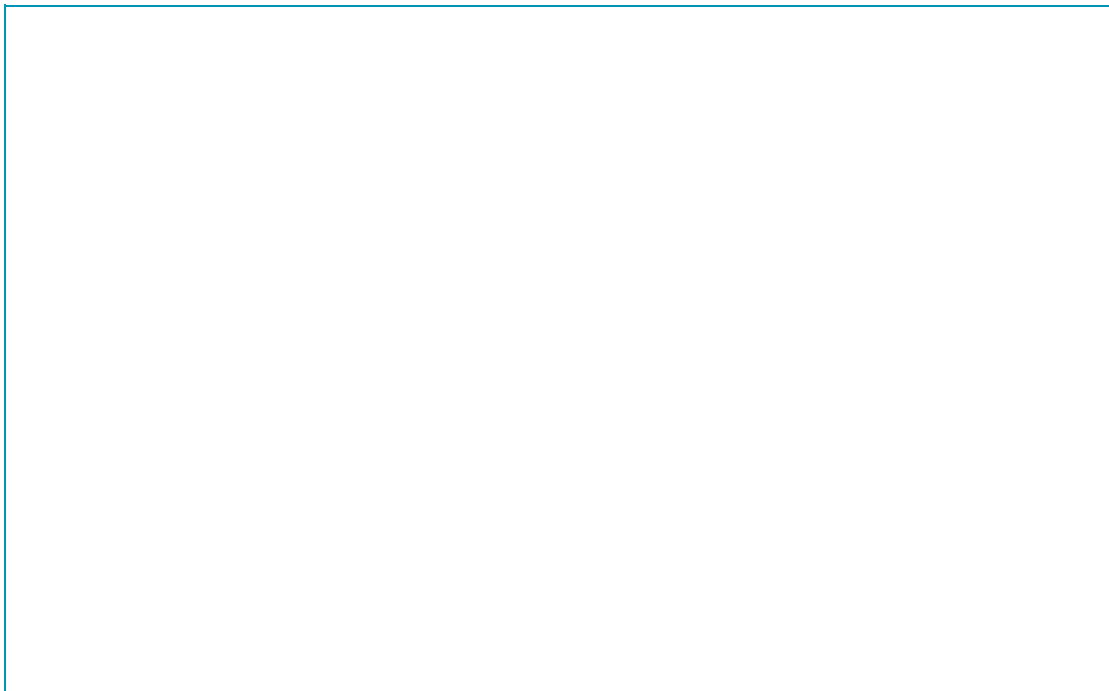
**11** An employee has made up 60 information packs. One quarter of them have to be posted out. How many have to be posted? Write down your answer in the box below.

## 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?



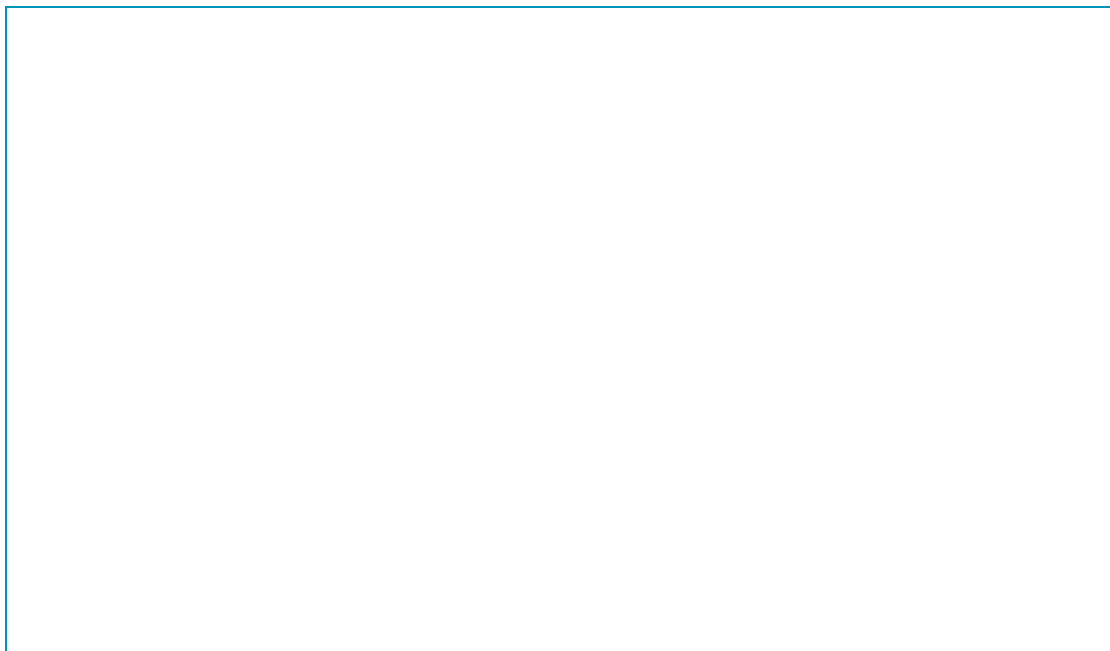
- 2 An employee works a standard working week of 35 hours. Overtime is paid at £10 per hour. In one week she works for 39 hours. How much is she paid for her overtime?



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

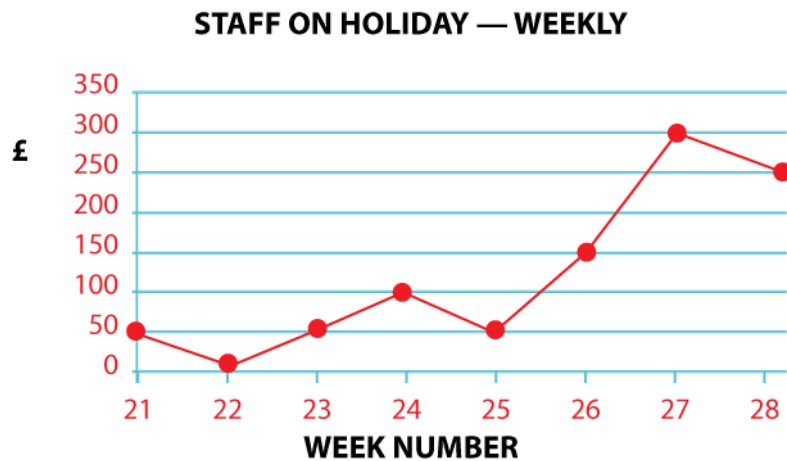
OR

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

$$39 - 35 = 4 \text{ overtime hours}$$

$$\text{Overtime payment} = 4 \times 10 = 40$$

Answer = £40

**3** Uses two multiplications and a conclusion drawn

$$\text{Box A volume} = 3 \times 5 \times 2.5 = 37.5 \text{ cm}^3$$

$$\text{Box B volume} = 4 \times 2 \times 3 = 24 \text{ cm}^3$$

Answer = Box A has the greater volume

**4** Uses multiplication and a conclusion drawn

$$\text{Tariff B will cost } £5.00 + 400 \times 0.04 = £21$$

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 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 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 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 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 that involve calculations requiring one or two steps.

|  | Evidence | Assessor initials and date | Comments |
|--|----------|----------------------------|----------|
| <p>Used notation for each of the following:</p> <ul style="list-style-type: none"> <li>◆ whole numbers (eg 5)</li> <li>◆ decimals (eg 2.45)</li> <li>◆ percentages (eg 30%)</li> <li>◆ simple fractions (eg <math>\frac{2}{3}</math>)</li> <li>◆ simple ratios (eg 1.3)</li> </ul> |          |                            |          |
| <p>Carried out calculations involving each of the following:</p> <ul style="list-style-type: none"> <li>◆ addition</li> <li>◆ subtraction</li> <li>◆ multiplication</li> <li>◆ division</li> </ul>   |          |                            |          |
| <p>Carried out calculations: involving either whole number percentages or simple fractions</p>   |          |                            |          |
| <p>Decided which calculations needed to be carried out and in what order (eg add, then multiply)</p>   |          |                            |          |
| <p>Drew conclusions from calculation results</p>   |          |                            |          |



## 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 and 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.   |          |                            |          |
|---|----------|----------------------------|----------|
|   | Evidence | Assessor initials and date | Comments |
| Extracted information from at least ONE of the following: <ul style="list-style-type: none"><li>◆ table containing two categories of information</li><li>◆ chart (eg bar or pie chart)</li><li>◆ graph (eg a line graph with a scale)</li><li>◆ diagram (eg of a two-dimensional shape)</li></ul> |          |                            |          |

## 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.  |          |                            |          |
|---|----------|----------------------------|----------|
|   | Evidence | Assessor initials and date | Comments |
| Communicated information by completing at least ONE of the following: <ul style="list-style-type: none"><li>◆ table containing two categories of information</li><li>◆ chart (eg bar or pie chart)</li><li>◆ graph (eg a line graph with a scale)</li><li>◆ diagram (eg of a two-dimensional shape)</li></ul> |          |                            |          |

## 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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