# National Unit Specification

## General information

## Unit title: Data Skills (SCQF Level 3)

## Unit code: J698 43

**Superclass:** **CB**

**Publication date:** May 2022

**Source:** Scottish Qualifications Authority

**Version:** 02 (September 2022)



## Unit purpose

The purpose of this unit is to introduce learners to the fundamentals of working with data so that they understand basic statistics and can interpret simple datasets. No previous knowledge is assumed apart from basic numeracy skills, which could be evidenced by possession of the Core Skill unit in Numeracy at SCQF Level 2. This unit is one of a series of units designed to improve learners' data literacy and statistical literacy.

Learners will be introduced to the uses of data in daily life, and how it is commonly presented in the media. They will learn to interpret simple data in both numerical and visual forms. Learners will be introduced to simple statistical measures and will learn to recognise the misleading use of statistics. They will learn to use software to create simple graphs and charts. The unit will also develop learners' numeracy skills by exploring a range of basic numerical calculations.

On completion of this unit, learners will have gained basic data literacy and number skills, sufficient to understand data as it is commonly presented in the media. Learners could progress to J698 44Data Skills at SCQF Level 4.

## Outcomes

On successful completion of the unit the learner will be able to:
1 interpret simple data
2 summarise data
3 create graphs and charts

## National Unit Specification: General information (continued)

**Unit title:** Data Skills (SCQF Level 3)

## Credit points and level

1 National Unit credit(s) at Scottish Credit and Qualifications Framework (SCQF) level 3: (6 SCQF credit points at SCQF level 3)

## Recommended entry to the unit

Entry is at the discretion of the centre. No previous knowledge or experience is required. Basic number skills are assumed.

## Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Core Skill component Critical Thinking at SCQF level 3

and

Complete Core Skill Information and Communication Technology at SCQF level 3

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

## Context for delivery

If this unit is delivered as part of a group award, it is recommended that it should be taught and assessed within the subject area of the group award to which it contributes.

This is an entry level unit within a family of units relating to data skills. The unit is likely to be the learner's first exposure to formal data skills, although it is assumed that they will be familiar with computing devices. No previous experience of working with data is assumed.

Learners should use digital tools, such as spreadsheets, to carry out the numerical and statistical calculations, and produce graphs and charts.

The target cohort is school and college learners, particularly school learners. The unit may also be of interest to adult learners.

The unit provides an opportunity to develop Core Skills in Numeracy and IT at SCQF Level 3.

## Equality and inclusion

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website **https://www.sqa.org.uk/assessmentarrangements**.

## National Unit Specification: Statement of standards

## Unit title: Data Skills (SCQF Level 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 SQA.

## Outcome 1

Interpret simple data.

### Performance criteria

(a) Identify the personal uses of data.
(b) State common data types.
(c) Identify familiar sources of data.
(d) Perform simple numerical calculations on data.
(e) Interpret numerical and visual data.
(f) Identify bias and misleading statistics.

## Outcome 2

Summarise data.

### Performance criteria

(a) Tidy data to remove errors and duplicates.
(b) Create a well-formed table from the data.
(c) Store data securely.
(d) Summarise a small dataset using mean and range.
(e) Draw a valid conclusion from the data.

## Outcome 3

Create graphs and charts.

### Performance criteria

(a) Select appropriate data to visualise.
(b) Select an appropriate type of graph or chart.
(c) Create a graph or chart to illustrate data.
(d) Format the graph of chart to improve clarity.

## National Unit Specification: Statement of standards (continued)

## Unit title: Data Skills (SCQF Level 3)

### Evidence requirements for this unit

Evidence is required to demonstrate that learners have achieved all outcomes and performance criteria.

Learner must provide **product** evidence.

The product evidence must demonstrate that learners can:

4 interpret simple data
5 summarise data
6 create graphs and charts

The scale and scope of data may be small. The dataset may be small, simple and familiar to learners.

At least one dataset must be interpreted and summarised, which must include percentages, rounding, and the calculation of mean and range. At least one graph or chart must be produced. The visualisation(s) must be appropriate and well presented.

The evidence may be produced over an extended period of time in loosely controlled conditions. Authentication is required when the evidence is produced in lightly controlled conditions.

The SCQF Level of this unit provides additional context relating to the quality of evidence.

## National Unit Support Notes

## Unit title: Data Skills (SCQF Level 3)

Unit support notes are offered as guidance and are not mandatory.

While the exact time allocated to this unit is at the discretion of the centre, the notional design length is 40 hours.

## Guidance on the content and context for this unit

This unit is the first in a family of units that relate to data skills. It is designed for learners with little, or no, pre-existing data skills and limited numerical skills. A significant part of this unit will involve the development of number skills such as calculating percentages and rounding numbers. Although software will be used for these calculations, it is recommended that learners are able to perform these calculations on paper.

Given the level of this unit, a minimalist approach should be taken to the performance criteria. For example, "common data types" (Outcome 1, PC b) should be limited to basic data types such as number, text, date and time. Similarly, the treatment of data security (Outcome 2, PC c) should be limited to making simple copies of files and password protection. Outcome 3 (graphs and charts) should relate to common graphs and charts such as bar charts, pie charts and line graphs.

The unit will cover the following knowledge and skills.

**Knowledge**

- Uses of data in daily life.
- Value of data to individuals, groups, and organisations.
- Types of data.
- Basic data protection.
- Sources of data (familiar/internal).
- Data bias.
- Basic numerical calculations including operator precedence and percentages.
- Rounding numbers.
- Mean and its use.
- Range and its use.
- Spreadsheet formulas and functions.
- Basic graphs and charts.
- Misleading statistics.

**Skills**

- Read simple graphs and charts.
- Round numbers.
- Perform calculations.
- Calculate percentages.
- Calculate mean.
- Calculate range.
- Summarise small datasets using mean and range.
- Access familiar data sources.
- Use spreadsheet software.
- Tidy small datasets.
- Create simple spreadsheets.
- Create simple graphs and charts.
- Draw conclusions from data.

Similarly, the treatment of bias should be simple, but sufficient for learners to appreciate that biased data (for whatever reason) will lead to biased results. Common sources of bias (such as the bias contained within historical datasets) should be explored.

Any appropriate software can be used during this unit, although it is anticipated that most learners will use spreadsheet software.

## Guidance on approaches to delivery of this unit

It may benefit learners to cover the outcomes in the order of the outcomes. This would allow learners to develop their understanding of data, its uses, and value before developing knowledge and skills in statistics and summarising data, and finally creating visualisations.

The following distribution of time is suggested.

| | |
|---|---|
| Outcome 1 | 10 hours |
| Outcome 2 | 15 hours |
| Outcome 3 | 15 hours |

Tasks should be designed to take a learner-centred, participative, and practical approach. At this level, learners would work with small, local, familiar datasets, such as data relating to members of the class. However, small does not mean a trivial number of records. For example, data relating to all members of a class (which might be 25 records) would be appropriate.

It is encouraged to use interesting datasets that will engage learners such as those relating to the school (or college) or a favourite sports team. For example, concepts such as dispersion (measured by range in this unit) can be exemplified by exploring the various football leagues in Europe to determine the most competitive league (based on the smallest range in points between the top and bottom teams).

## Guidance on approaches to assessment of this unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners and the type of learner assessment activities will vary depending on the resources available.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

The product evidence could be produced by a simple practical exercise that requires learners to use spreadsheet software to summarise a small dataset, by carrying out basic statistic functions, and producing one or more graphs or charts. The data would be small and from a familiar context such as a simple dataset relating to members of their class, perhaps 25 records. Learners should demonstrate basic data protection skills whilst working with data.

## National Unit Support Notes (continued)

## Unit title: Data Skills (SCQF Level 3)

Cognitive competence is inferred from product evidence. However, assessors may choose to confirm this through oral questioning or other forms of knowledge assessment.

Centres may produce a brief for learners, stating the activities to be undertaken and the resources available to them. It is at the centre's discretion how prescriptive the brief should be in terms of the activities and accessibility of resources they can make use of. A learner-centred, participative, and practical approach is encouraged.

Assessment for this unit would be generated under supervised open-book conditions at the end of the unit, once all outcomes have been covered. It could be a practical exercise involving the learner carrying out simple exercises using spreadsheet software to load and clean data, then summarise this using spreadsheet formulas before creating visualisations of the spreadsheet model. Learners should ensure basic data protection is carried out when working with datasets. For example, learners could load and clean a small dataset of 25 records, analyse this using basic numerical calculations, rounding, averaging, and calculating the range, then producing graphs or charts to visualise and draw conclusions from the data.

## Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the evidence requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at **https://www.sqa.org.uk/e-assessment**.

## Opportunities for developing Core and other essential skills

This unit provides opportunities to develop Core Skills, particularly ICT and Numeracy (at SCQF Level 3).

The unit covers a wide range of competences relating to Using Graphical Information, such as extracting information from tables and communicating information using graphs and charts. Using Number competencies, such as using basic numerical notation and carrying out simple numerical calculations, are also included in the unit.

The unit covers a wide range of competencies relating to Accessing information, such as using application software for simple tasks. It also covers a range of specific skills relating to Providing/Creating Information, such as carrying out simple processing tasks using ICT.

The Critical Thinking component of Problem Solving at SCQF level 3 is embedded in this unit. When a learner achieves the unit, their Core Skills profile will also be updated to include this component.

The Core Skill of Information and Communication Technology SCQF level 3 is also embedded in this unit. When a learner achieves the unit, their Core Skills profile will also be updated to include this Core Skill.

## History of changes to unit

| Version | Description of change | Date |
|---|---|---|
| 02 | Core Skills Component Critical Thinking at SCQF level 3 and Core Skill Information and Communication Technology at SCQF level 3 are embedded. | 13/09/2022 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |



Unit template: June 2017

## General information for learners

## Unit title: Data Skills (SCQF Level 3)

This section will help you decide whether this is the unit for you by explaining what the unit is about, what you should know or be able to do before you start, what you will need to do during the unit and opportunities for further learning and employment.

The Critical Thinking component of Problem Solving at SCQF level 3 is embedded in this unit. When you achieve the unit, your Core Skills profile will also be updated to include this component.

The Core Skill of Information and Communication Technology at SCQF level 3 is also embedded in this unit. When you achieve the unit, your Core Skills profile will also be updated to include this Core Skill.

This unit is designed to be undertaken by all learners. It will develop basic literacies, particularly your number and digital literacies. No previous knowledge or experience of data is required, although a familiarity with computers is beneficial. The unit has three outcomes covering interpreting data, summarising data, and creating graphs and charts.

In Outcome 1 you will learn about the uses and importance of data, the different types of data and basic data protection, internal sources of data, data bias and interpreting data in both numerical and visual forms.

In Outcome 2 you will learn about basic statistics including misleading statistics, accessing, extracting, and cleaning simple datasets from data sources, and using software to summarise datasets.

In Outcome 3 you will learn to create simple graphs and charts.

The unit covers the following knowledge and skills.

**Knowledge**

- Uses of data in daily life.
- Value of data to individuals, groups, and organisations.
- Types of data.
- Basic data protection.
- Sources of data (familiar/internal).
- Data bias.
- Basic numerical calculations including operator precedence and percentages.
- Rounding numbers.
- Mean and its use.
- Range and its use.
- Spreadsheet formulas and functions.
- Basic graphs and charts.
- Misleading statistics.

**Skills**

- Read simple graphs and charts.
- Round numbers.
- Perform calculations.
- Calculate percentages.
- Calculate mean.
- Calculate range.
- Summarise small datasets using mean and range.
- Access familiar data sources.
- Use spreadsheet software.
- Tidy small datasets.
- Create simple spreadsheets.
- Create simple graphs and charts.
- Draw conclusions from data.

You can be assessed in a variety of ways, which may include a practical exercise that would involve you using spreadsheet software to summarise a dataset and produce graphs and charts.