SQA Advanced Unit Specification

General information for centres

Unit title: IT in Business: Advanced Spreadsheets (SCQF level 8)

Unit code: HP0H48

Superclass: CD

Publication date: August 2017

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This unit is designed to develop in-depth technical skills to facilitate a high level of competence in use of spreadsheet software to resolve business problems and facilitate business processes. Learners will develop spreadsheet skills to support the management, analysis and forecasting of data for decision making. Learners will also develop critical, analytical and evaluative skills allowing them to create customised solutions to business problems.

Outcomes

On successful completion of the unit the learner will be able to:

1 Apply data management features using spreadsheet software.
2 Use spreadsheet analysis tools to forecast statistical data.
3 Use a range of spreadsheet functions to propose solutions to a business problem.

Credit points and level

1 SQA credit at SCQF level 8: (8 SCQF credit points at SCQF level 8).

Recommended entry to the unit

Access to this unit is at the discretion of the centre. However, it would be beneficial if learners have achieved the unit: *IT in Business: Spreadsheets* (HP78 47) or equivalent. Where this is not the case, centres are encouraged to identify appropriate pre-course preparation for applicants.

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes for this unit specification.

There is no automatic certification of Core Skills or Core Skill components in this unit.

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.

The Assessment Support Pack (ASP) for this unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website **(http://www.sqa.org.uk/sqa/46233.2769.html)**.

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 www.sqa.org.uk/assessmentarrangements.

Unit specification: statement of standards

Unit title: IT in Business: Advanced Spreadsheets (SCQF level 8)

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.

Where evidence for outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Learners should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1
Apply data management features using spreadsheet software.

Knowledge and/or Skills
- Import data
- Data validation
- Trace errors
- Advanced sort and Advanced filter
- Complex consolidation

Outcome 2
Use spreadsheet analysis tools to forecast statistical data.

Knowledge and/or Skills
- Qualitative graphs
- Determine trends
- Correlation
- Forecasting tools
- Analysis and reporting techniques

Outcome 3
Use a range of spreadsheet functions to propose solutions to a business problem.

Knowledge and/or Skills
- Statistical function
- Financial function
- Lookup and Reference function
- Subtotal
- Analysis and Reporting Techniques

Evidence requirements for this unit

All tasks should be completed in the context of one or more business scenarios/problems.

Outcome 1

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills across all outcomes by showing that they can:

- import data from two sources using one linked and one embedded object
- set up data validation to restrict entry based on one type of validation criterion
- trace and correct two errors in formulae
- use advanced sort on two fields and use an advanced filter based on two criteria
- create one pivot table
- perform complex consolidation to a new sheet based on data from a minimum of three columns and 12 rows (minimum of 36 cell range) using three functions and displaying information in a pivot table

Outcome 2

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- identify and produce an appropriate quantitative graph to convey one of the following — patterns, scatter, discontinuities, rates of change
- use Time Series Analysis to identify a trend and forecast a future event
- determine degree of correlation between two sets of data
- identify and apply one forecasting tool

Outcome 3

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- identify and apply two statistical functions to provide a solution to a business problem
- identify and apply two financial functions to provide a solution to a business problem
- use one lookup or reference function to source data based on one criterion
- use the Subtotal function, applying one function available in this feature, to automatically calculate subtotals and grand totals in a list

Unit specification: support notes

Unit title: IT in Business: Advanced Spreadsheets (SCQF level 8)

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 designed to provide learners with the knowledge and skills for further study or employment in an administrative environment. It may form part of a group award or be completed as a free-standing Unit.

Outcome 1
This outcome develops the skills to share and organise data with other programs to create information. This information will then be summarised to allow analysis to provide recommendations to support decision making by self or others.

Outcome 2
This outcome develops the skills to use spreadsheet analysis tools to forecast statistical data. Learners will develop the technical knowledge to apply spreadsheet software tools, such as forecasting, statistical and what-if analysis to solve business problems.

Outcome 3
This outcome develops the use of spreadsheet functions to aid managerial decision making. Learners will use financial, statistical and lookup and reference functions to provide to analyse, evaluate and provide solutions to business problems.

Guidance on approaches to delivery of this unit

There are links between this unit and other mandatory units if this unit is delivered as part of the SQA Advanced Diploma in *Administration and Information Technology* (GM68 48) group award. Some examples are suggested but they are not exhaustive.

As they progress through this unit learners should be made aware that topics covered are linked to *Administration and Information Technology*: *Graded unit 2* (HP6J 48) and *Administration and Information Technology: Graded unit 3* (HP6K 48). As part of teaching, learners should be asked to reflect on the circumstances in which they would use advanced spreadsheet features in the context of real life business examples. The knowledge and problem solving skills developed will support knowledge required for both Graded unit 2 (HP6J 48) and 3 (HP6K 48).

The knowledge gained in Outcome 1 of this unit can be linked to that in Outcome 1 of *Office Management* (HP6A 48).

Outcome 1
Learners are required to import data from other sources and can therefore be made aware of the advantages of using the import feature. For example, data may be sourced from text files, database files, database queries, web pages or web queries. It may be beneficial for learners to understand the distinction between linked and embedded objects and this can be incorporated within its teaching.

A practical demonstration of data validation may be provided to illustrate the advantages of this feature. A typical spreadsheet software package may have the following validation criteria: whole number, decimal, list, date, time, text length and customised. It is recommended that learners are made familiar with most if not all of these.

Learners can be encouraged to make use of the 'Input Message' and 'Error Alert' data validation options to provide user support and the Formula Auditing feature. The use of the Trace Error feature makes it possible to identify cells contained within calculations and therefore trace any errors present. Use of both the Trace Precedents and Trace Dependents features can be covered as part of teaching.

The pivot table allows users to summarise data in a variety of ways, and centres may use data from a range of worksheets and files to demonstrate this. Teaching can also illustrate how the pivot chart option can be used to display results graphically. This can integrated with Outcome 2 where quantitative graphs are covered.

Outcome 2

Learners should be made aware of the various types of quantitative graph and the possible situations where each may be most appropriate. Following on from this, different types of trend lines, such as linear and moving average, should be covered so that learners understand the differences and when each trendline should be used. Examples of possible What-If Analysis available in a typical spreadsheet package include: Scenarios, Goal Seek, Data Table, Regression. It is recommended that several possibilities are taught as part of delivery so that learners have a range to draw from when undertaking assessment.

Outcome 3

This outcome develops the use of spreadsheet functions to aid managerial decision making. Learners should use financial, statistical and lookup and reference functions to provide solutions to a business problem.

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.

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.

A holistic approach to assessment across all outcomes is encouraged. This unit lends itself well to a portfolio approach. Evidence generated through the use of software is likely to feature prominently and may be captured via screenshots, saved in a hard/removable drive or in an e-portfolio. The aforementioned are a few suggestions but there are many ways evidence could be captured and stored. As with any other SQA Advanced unit, evidence must be retained for external verification as per centre and SQA policies and procedures.

Problem solving is a critical aspect of the unit, therefore assessments should require learners to judge correctly the appropriate tool/feature/function required to complete/resolve each task/problem and to communicate their findings in a meaningful and accurate way. Assessment should not direct learners to specific tools/functions and should not be excessively atomised (ie broken down into many individual small tasks) as this hinders learners from developing the critical thinking skills to customise their own solutions based on their own learning and to develop understanding of the contexts in which these spreadsheet functions may be used in the real world. Conclusions based on findings should not simply re-state the content of data/results/graphs in narrative form, they should say something meaningful in the context of the case study (ie what may be the implications of the data for the business organisation in the assessment).

Evidence can be generated via a case study or real work place situation. Where a case study is created based on a hypothetical scenario, the situation and tasks should be as realistic as possible. It is recommended that one case study is used to generate evidence for all outcomes as there are many opportunities to integrate evidence between them which can help keep assessment to a minimum as well as making the experience more meaningful for learners. As an example, the data generated for Outcome 1 may be used for the statistical and financial analysis for Outcomes 2 and 3. Also, the results of statistical functions used in Outcome 2 may be used as raw data for the financial functions required for Outcome 3.

Outcome 1

The Advanced Sort and Advanced Filter in Outcome 1 and the Subtotal feature in Outcome 3 may be assessed together. For example, learners can filter on two specific fields and then provide a subtotal for one and an overall total for both. Learners have the option to filter in place or to another appropriate location. If combining assessment in this way, the filters should be applied in an appropriate order so that the resultant subtotals are meaningful. A number of functions are available within the Subtotal feature and the most appropriate function should be selected in relation to the case study or workplace situation.

Summarised data generated from the Advanced Sort, Filter and Subtotal may be used as the data for the pivot table. If this approach is not used then data will need to be imported from another data source.

Learners must identify and extract relevant data for the pivot table and then analyse and interpret the results contained within the summary data. Specific fields can be filtered on to compare results across different variables (eg geographical regions). Learners can also be

advised to use the pivot chart option to display results of the pivot table graphically. The pivot table and chart allow learners to summarise data in a variety of ways and provides a useful pictorial method to support managerial decision making based on variable data.

Any of the statistical functions available within the data consolidate feature may be used to consolidate the data and used as evidence for the statistical functions required for Outcome 3. Use of the Data Consolidate feature can be used as evidence of complex consolidation

Outcome 2

In this outcome learners are required to forecast data from a time series analysis to determine trends, particularly from data which is subject to fluctuation, such as seasonal fluctuations in the hospitality and tourism industry.

Learners are required to determine the degree of correlation between two sets of data. One possibility would be a scatter diagram with a trendline to determine whether any correlation exists between the two sets. The Subtotal data generated for Outcome 3 may be used to provide evidence for the quantitative graph, providing this data is shown over a sufficient period of time (for example, quarterly sales figures over three years).

If using a trendline, trendline options such as linear and moving average can be covered to aid learners understanding of the differences between trendlines and the purposes for which each should be used. If adding a trendline, learners can be made aware of the trendline options such as adding the regression equation to the trendline. The regression equation is a statistical technique which can be used to predict the behaviour of a dependent variable and can therefore be used as evidence of a forecasting tool for Outcome 2. This strengthens the learner's knowledge of statistical theory and can help learners identify patterns in complex graphical information.

Outcome 3

Learners are required to determine trends in data and use statistical functions to provide forecasts to support managerial decision making. Learners must also determine the degree of correlation between two sets of data and determine the reliability of this correlation.

A range of statistical and financial functions appropriate to the scenario within the assessment will be used. Some suggested statistical functions for inclusion in assessment include: CORREL, FORECAST, GROWTH, STDEVP and VAR. Possible financial functions include: FV, PMT, RATE, NPER, NPV, SLN. These are provided for guidance and other functions may be appropriate. See outcomes 1 and 2 for guidance on assessment of Subtotals.

Having analysed the business problem learners will also provide a response recommending a course of action. This supports evidence of the student's knowledge and understanding of the chosen statistical and financial functions used to resolve the business problem.

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 **www.sqa.org.uk/e-assessment**.

Opportunities for developing Core and other essential skills

Achievement of this unit gives automatic certification of the Critical Thinking component of the Core Skill *Problem Solving* at SCQF level 6.

In the assessment of this unit, learners are required to analyse a complex business problem in an unfamiliar context from a given scenario and use critical thinking and analysis to find efficient and effective solutions to solve business problems. Learners will analyse data and use their technical knowledge to apply spreadsheet software tools to solve a business problem(s). Spreadsheet tools such as forecasting, statistical and what-if analysis require the learner to identify variables, determine if a relationship exists between these variables and recommend a course of action. Learners will also use financial functions to provide solutions to business problems including budgeting, forecasting, and preparing information to support managerial decision making.

Learners will therefore need to be competent in methods of problem solving to meet evidence requirements. Learners will also be able to judge correctly the appropriate spreadsheet tool required for analysis and problem solving and will summarise and explain their findings to support managerial decision making.

Outcome 1

This outcome develops the skills to share and organise data with other programs to create information. This information will then be summarised to allow analysis to provide recommendations to management to support decision making and therefore meets the following specific skills required for the Critical Thinking component of the Core Skill:

- Identify the factors involved in the situation or issue
- Assess the relevance of these factors to the situation or issue

Outcome 2

This outcome develops the skills to use spreadsheet analysis tools to forecast statistical data. Learners should develop the technical knowledge to apply spreadsheet software tools, such as forecasting, statistical and what-if analysis to solve business problems and therefore meets the following specific skills required for the Critical Thinking component of the Core Skill:

- Identify the factors involved in the situation or issue
- Assess the relevance of these factors to the situation or issue
- Develop and justify an approach to deal with the situation or issue

Outcome 3

This outcome develops the use of spreadsheet functions to aid managerial decision making. Learners should use financial, statistical and lookup and reference functions to provide recommendations to management based on common business problems and therefore meets the following specific skills required for the Critical Thinking component of the Core Skill:

- Identify the factors involved in the situation or issue
- Assess the relevance of these factors to the situation or issue
- Develop and justify an approach to deal with the situation or issue

Learners must analyse a complex business problem and provide solutions using numerical, financial and statistical methods. Learners will develop the technical knowledge to apply the following spreadsheet software tools:

- Forecasting tools (eg Regression Equation, Scenario Manager, Goal Seek or Data Table)
- Statistical functions (eg CORREL, FORECAST, GROWTH, STDEVP and VAR)
- Financial functions (eg FV — Future Value of an Investment, NPV — Net Present value of an Investment, SLN — Straight Line Depreciation, NPR — No of Payments Loan, PMT — Payment value on a loan)
- What-if analysis

Specific skills met:

- Work confidently with numerical or statistical methods
- Decide on the steps and operations to be carried out to solve a complex problem
- Carry out a number of sustained, complex calculations

Achievement of this unit gives automatic certification of the Using Graphical Information component of the Core Skill *Numeracy* at SCQF level 6.

History of changes to unit

Version	Description of change	Date

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of SQA Advanced Qualifications.

FURTHER INFORMATION: Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000. Alternatively, complete our Centre Feedback Form.

General information for learners

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There may be assessments for each outcome; two outcomes may be combined together; or combined into one overall assessment. The assessment task(s) itself may take the form of a case study, investigation or project. Assessment will require you to create solutions using spreadsheet software to problems presented to you, or via your own research.

The achievement of this unit will give automatic certification of the following:

The Core Skill of *Numeracy* and the Core Skill component of *Critical Thinking* at SCQF level 6.