Unit 18: Business calculations

Learning hours: 60

NQF level 3: BTEC National

Description of unit

This unit provides a basis for revision and an introduction to more complex arithmetical calculations and mathematical tools and techniques.

This unit will provide learners with a good foundation for progression into further skills in the areas of programming and logic within the overall qualification. Learners will be expected to apply a range of mathematical tools to include integers and indices, simple formulae, the use of geometry, tables, graphs and accounting procedures.

It is perceived that this unit will complement the 'application of number' key skill with the addition of adding depth and breadth to any existing numerical knowledge.

This unit presents opportunities to demonstrate key skills in application of number, communication and information technology.

This is an internally assessed unit.

Summary of learning outcomes

To achieve this unit a learner must:

1 Apply a range of **numerical tools for data manipulation** purposes

2 Use **geometrical tools and techniques**

3 Demonstrate the ability to **represent data in graphical formats**

4 Use a range of **accounting tools and techniques**.

Content

1 **Numerical tools for data manipulation**

Arithmetical calculations: add, subtract, multiply and divide integers, fractions and decimal quantities

Logical operators: truth tables and Boolean algebra

Manipulation using tables: frequency tables, arrays, manipulating rows and columns, storing information in tabular format

2 **Geometrical tools and techniques**

Terminology: two and three dimensional figures, properties of geometrical figures

Scaling: produce scaled drawings

Elevations: identify geometrical figures from different elevations

3 **Represent data in graphical formats**

Formats: bar, chart, pie, scatter, line and 3D

Techniques: linear functions, determination of the equation of a straight line, quadratic functions, quadratic equations

4 **Accounting tools and techniques**

Accounting concepts: purchase, sales and nominal ledgers, debtors and creditors, expense and capital accounts, double entry

Documentation: profit and loss account, trial balance sheet, balance sheet

Assessment guidance

This unit is internally assessed

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all of the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

Grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that the learner is able to**:	**To achieve a distinction grade the evidence must show that the learner is able to**:
• use a range of basic arithmetical calculations • provide a description for a truth table • understand the importance of scale and dimension in geometry • create a bar graph • create a line graph • prepare a profit and loss account and a balance sheet for a given set of data.	• perform complex arithmetical calculations on a large data set • apply a range of logical operators to a large data set • produce two and three dimensional geometrical figures • provide evidence of using a range of graphical formats with justification as to their selection • provide full justifications as to where the data has come from in your profit and loss account and balance sheet templates.	• provide accurate workings which illustrate a logical approach to your calculations • ensure that all graphical representations are in a professional format with full justifications • work independently to problem solve • critically analyse the function of accounting templates and the benefits they bring to the process of preparing financial accounts.

Essential information for teachers

Delivery strategies

This unit is aimed at bridging the gap between formal mathematics taught at school and the practical application of mathematics to support other units within the qualification.

Learners will need to understand the principles of arithmetical operators and more complex mathematical tools and techniques. This formal learning can be supported through the use of exercises to consolidate information.

It is advised that most of this unit will be devoted to practical sessions applying the theory learnt. To support this, lectures will need to focus on a range of mathematical concepts to include logical operators, frequency tables, arrays, geometry and accounting procedures.

Assessment strategies

Learners need to understand how to apply certain mathematical tools and techniques.

Opportunities should be available for peer and self-assessment in order to develop learners' skills in being responsible for their own learning and development.

Assessment can consist of a combination of formative and summative assessments. Written assessments might include templates for accounting documents and graphical representations of data.

Learners aiming for a pass grade should be able to apply their learning at a basic level to carry out low level calculations. Learners wishing to achieve at a higher level are expected to incorporate more complex mathematical calculations and graphical representations and provide full justifications as to their designs. Learners aiming for a distinction grade should demonstrate an ability to work independently and be able to show draft workings prior to their final submissions.

Grade descriptions

Pass

To achieve a pass learners should be able to apply their learning at a basic level to carry out low level calculations. They need to show a basic understanding of a range of arithmetic and business calculations to include geometry and accounting concepts. Learners will be required to transfer data into a variety of templates and graphical formats.

Merit

To achieve a merit learners are expected to incorporate more complex mathematical calculations and graphical representations and provide full justifications as to their designs. It is expected that the amount of errors in calculations will also be substantially reduced at the merit level, demonstrating a higher level of comprehension.

Distinction

To achieve a distinction learners should demonstrate an ability to work independently and be able to show draft workings prior to their final submissions. All calculations should be accurate and presented in an appropriate template or structure. Learners should also critically analyse the function of accounting templates and the benefits they bring to the process of preparing financial accounts.

Links

This unit links with *Unit 20: Software Applications*. This unit presents opportunities to demonstrate key skills in application of number, communication and information technology.

Suggested reading

Textbooks

- Hand, S and Mulchrone, B — *Business Calculations* — (Gill and MacMillan, 2001) ISBN: 0717132021
- Marcouse, I — *Business Calculations and Statistics* — (Longman, 1994) ISBN: 058207410X

Key skills

Highlighted here are the key skills that have already been identified in the *Description of unit* and *Links* sections. Achievement of key skills is not a requirement of this qualification but it is encouraged. Suggestions of opportunities for the generation of level 3 key skills evidence are given here. Staff should check that learners have produced all the evidence required by part B of the key skills specifications when assessing this evidence. Learners may need to develop additional evidence elsewhere to fully meet the requirements of the key skills specifications.

Application of number level 3	
When learners are:	**They should be able to develop the following key skills evidence**:
• using arithmetical calculations	N3.1 Plan, and interpret information from **two** different types of sources, including a large data set.
• using arithmetical calculations • working with logical operators • using scales	N3.2 Carry out multi-stage calculations to do with: a amounts and sizes b scales and proportion c handling statistics d rearranging and using formulae. You should work with a large data set on at least **one** occasion.
• using graphical formats to represent data	N3.3 Interpret results of your calculations, present your findings and justify your methods. You must use at least **one** graph, **one** chart and **one** diagram.
Communication level 3	
When learners are:	**They should be able to develop the following key skills evidence**:
• providing descriptions for truth tables • providing accurate workings	C3.3 Write **two** different types of documents about complex subjects. One piece of writing should be an extended document and include at least **one** image.
Information technology level 3	
When learners are:	**They should be able to develop the following key skills evidence**:
• producing a line/bar graph • producing geometric figures	IT3.2 Explore, develop, and exchange information, and derive new information, to meet **two** different purposes.