

## Unit 18: Measurement Processes for Construction

**Unit code:** H/601/1277

**QCF level:** 4

**Credit value:** 15

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- **Aim**

This unit provides learners with the opportunity to understand measurement techniques and develop the skills needed to produce bills of quantities.

- **Unit abstract**

This unit provides learners with an understanding of measurement techniques and their uses in various project stages. Learners will gain an understanding of methods of measurement in terms of format, coding and measurement rules. Learners will develop the skills needed to produce quantities by applying appropriate mensuration techniques. Learners will be able to perform take-off and produce quantities for foundations and substructure, superstructure and simple mechanical services. Learners will develop skills to produce bills of quantities and analyse their various forms. Learners will also be able to analyse techniques and processes to suit particular situations.

- **Learning outcomes**

**On successful completion of this unit a learner will:**

- 1 Understand measurement techniques
- 2 Be able to produce quantities
- 3 Be able to produce bills of quantities.

## Unit content

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### 1 Understand measurement techniques

*Techniques:* floor area method; elemental estimating; approximate estimating techniques; measurement of variations

*Standard methods of measurement:* for construction, civil engineering and building services engineering; format; coding schemes; measurement rules; dimension sheets

*Uses:* project stages; sub-contract and supply chain packages; final account; maintenance and refurbishment works

### 2 Be able to produce quantities

*Producing quantities:* take-off procedures; mensuration procedures; computation of quantities

*Applications:* foundations and substructures; superstructure eg external walls, internal walls, flat roofs, pitched roofs (construction and coverings), internal finishes, external finishes, internal components (doors, windows, staircases, floors); simple mechanical engineering services (plumbing, below-ground drainage)

### 3 Be able to produce bills of quantities

*Measurement techniques and processes:* techniques eg traditional, cut-and-shuffle, computer-aided systems; associated working up processes

*Contract documentation:* different forms of bills of quantities, codes and other contract documentation; prime cost; provisional sums

*Application:* to construction projects (simple work sections, trade sections)

## Learning outcomes and assessment criteria

<b>Learning outcomes</b>  <b>On successful completion of this unit a learner will:</b>	<b>Assessment criteria for pass</b>  <b>The learner can:</b>
LO1  Understand measurement techniques	1.1 describe measurement techniques  1.2 discuss the requirements of a standard method of measurement  1.3 evaluate measurement techniques in relation to their uses on construction projects
LO2  Be able to produce quantities	2.1 perform a take-off  2.2 compute quantities using appropriate mensuration techniques  2.3 produce quantities for foundations and substructures  2.4 produce quantities for superstructure works  2.5 produce quantities for simple mechanical engineering services
LO3  Be able to produce bills of quantities	3.1 analyse measurement techniques and processes to suit particular applications  3.2 analyse the different forms of bills of quantities and contract documents  3.3 explain the application of prime cost and provisional sums  3.4 produce bills of quantities

## Guidance

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### Links

This unit links with other Edexcel BTEC HN Construction and the Built Environment units, for example:

- Unit 3: Applied Mathematics for Construction and the Built Environment
- Unit 7: Construction and Maintenance of Buildings
- Unit 16: Measuring, Tendering and Estimating for Construction and the Built Environment
- Unit 21: Specification and Contract Documentation for Construction
- Unit 23: Advanced Measurement for Construction.

The content of this unit has been designed and mapped against the current CIC National Occupational Standards and the current NVQs at levels 4 and 5. Completion of the learning outcomes will contribute knowledge, understanding and skills towards the evidence requirements of the NVQs.

- See *Annexe B* for summary of mapping information to NVQs.

This unit has also been mapped to illustrate the links to the NQF units.

- See *Annexe D* for summary of mapping information to NQF units.

### Essential requirements

It is important that the learners have access to the main standard methods of measurement and use them where appropriate. These should be current or include amendments where appropriate.

It is essential that a culture of health and safety is embedded in all the units to ensure that the learners understand the importance and relevance of health and safety issues. Therefore there should be clearly signposted aspects of current legislation and health, safety and welfare implications throughout the delivery and assessment of this unit.

### Employer engagement and vocational contexts

Tutors should organise site visits, for example to the quantity surveying section of a main contractor/government agency. To ensure site visits are successful tutors should outline the aims and objectives of the visits, conduct preparatory briefings and encourage learners to review the site visits once completed. Tutors should organise presentations by visiting speakers, for example quantity surveyors on current industrial practices.