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Department of **Training**  
and **Workforce Development**



**central**  
INSTITUTE OF TECHNOLOGY

# CARRY OUT BASIC MEASUREMENTS AND CALCULATIONS FOR RESIDENTIAL BUILDINGS CERTIFICATE II IN BUILDING AND CONSTRUCTION (PATHWAY – PARAPROFESSIONAL) 30011

LECTURER'S GUIDE

BUILDING AND CONSTRUCTION



**BC1941**

Carry out basic measurements and  
calculations for residential buildings

30011

Lecturer's guide

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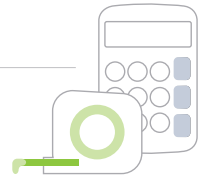
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# Introduction

This lecturer's guide supports the unit 30011 *Carry out basic measurements and calculations for residential buildings*. It provides suggestions to assist you in delivering and assessing the knowledge and skills learners need to use measurements and calculations in the residential building industry as a paraprofessional employee or self employed contractor.

Areas of explanation include:

- obtaining measurements from plans
- taking physical measurements
- performing calculations
- calculating material quantities.

## Qualification overview

This unit of competency, 30011 *Carry out basic measurements and calculations for residential buildings* forms part of Certificate II in Building and Construction (Pathway – Paraprofessional) and is aimed at people who are considering a paraprofessional career in the residential building industry (as opposed to a career in the trade sector).

The course consists of 12 units of study and a period of work placement. These two components, study and work, will provide learners with an introductory background to the paraprofessional side of the residential building industry.

To progress further in the industry, beyond this introductory level, learners will then need to specialise in a particular field of study, such as building, estimating, scheduling, drafting or building design. Courses for these careers usually commence at Certificate IV level and progress through to diploma or even advanced diploma levels at a registered training provider who delivers these programs.

Some areas of study, such as architecture, interior design and construction management, can then be studied further at degree level at a university.



## Unit overview

This unit of competency specifies the outcomes required to carry out basic measurements and perform common calculations to determine task and material requirements for a typical job in residential building. The unit supports the development of skills to obtain measurements and to use these to calculate material qualities and perform other calculations required for tasks commonly used and applied in residential building construction work. It includes obtaining measurements from plans as well as taking physical measurements.

The full unit of competency details are provided for you at Annex A to this guide.

Competence in this unit will be demonstrated by successful completion of three assessments:

- Assessment 1 – Calculations and units
- Assessment 2 – Calculating perimeter, area and volume
- Assessment 3 – Calculating material quantities.

## Resources and preparation

You will need to provide access to the following resources:

- at least one set of construction drawings, in addition to those provided at Annex E to the learner's guide
- measuring tapes of varying lengths and types
- scale rules and calculators for in class use.

Check the resources column of the delivery plan, provided at Annex B to this guide, for resources required for specific sessions.

You will also need to check all websites noted in the learner's guide before each delivery session, as addresses can change without notice.

Learners should provide:

- a USB thumb drive
- an A4 notepad
- an A4 file for notes, handouts and other printed documents
- a scale rule
- a basic calculator
- pens, pencils, eraser and highlighters.



Some of these resources may be useful or of interest. If you want learners to use them, you will need to provide access to them.

| Information area                                 | Resource                                                                                                              | Publisher                       |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------|
| All residential buildings covered by regulations | National Construction Code Series 2012, Volume Two, <i>Building Code of Australia: Class 1 and Class 10 Buildings</i> | Australian Building Codes Board |
| Australian Standards®                            | Varies with topic                                                                                                     | SAI Global                      |
| Careers in building                              | <a href="http://www.nolimits.com.au/great-careers/job-list">www.nolimits.com.au/great-careers/job-list</a>            | Construction Training Fund      |

## Legislation

The following is a list of legislation relevant to the residential construction industry in your state or territory. These documents may be referred to during the course.

- Building Act
- Building Regulations
- Health Regulations
- Occupational Health and Safety Act and Regulations
- Safe Design of Buildings and Structures (Code of Practice)
- Residential Design Codes



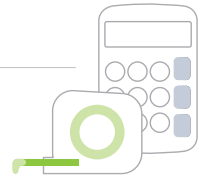


## Useful websites

The following is a list of websites that contain further information relevant to the residential construction industry.

- Australian Building Codes Board (ABCB) <[www.abcb.gov.au](http://www.abcb.gov.au)>
- Building Designers Association of Australia (BDAA) <[www.bdaa.com.au](http://www.bdaa.com.au)>
- Housing Industry Association (HIA) <[www.hia.com.au](http://www.hia.com.au)>
- Master Builders Australia (MBA) <[www.masterbuilders.com.au](http://www.masterbuilders.com.au)>
- SAI Global <[www.saiglobal.com](http://www.saiglobal.com)>

**Note:** Resources, legislation and websites noted in the guides may vary across regions, especially where state/territory legislation is referenced. Please review these within the context of your own local requirements.

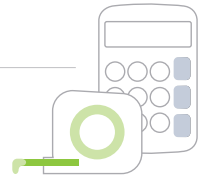


## Delivery strategy

As you prepare to deliver this unit, you should decide whether there is a particular type of construction that is most commonly used in your region and that it would be beneficial for your learners to know most about. If there is, try to source examples, stories and ideas that will enable you to provide learning experiences with an emphasis on that type of construction. Although the learner's guide refers to specific types of construction and materials, these can be modified to suit the area in which the unit is being delivered and the preferred construction type(s) in that area.

If you haven't already done so, get a copy of the learner's guide and familiarise yourself with it. Also have a look at the delivery plan provided at Annex B to this guide.





# The learner's guide

## Format and intent

### General

In the learner's guide you'll find a variety of material to help you deliver this unit. This material can be divided into two broad categories:

- content – text, images, diagrams and worked examples
- activities – interpreting plans, taking measurements, carrying out calculations and working out quantities, all related to the content most recently covered.

All written activities are designed to be written directly into the learner's guide. When learners have finished the unit, their guide should be complete and able to be used as a reliable reference in the future. For this to be the case, the activities need to be checked and/or discussed to give learners the opportunity to correct any incorrect or incomplete parts.

**Note:** The learner's guide is not intended to be content heavy, and it is not a textbook. It is designed to complement your classroom delivery and provide learners with a summary of the unit content.

### For this unit

Throughout the learner's guide, learners will complete activities to help them engage with the content being covered and to enhance their learning through reflection and research. Most of the topics have in class activities to be completed while the content is fresh in learners' minds.

You should try to complete these activities yourself before class, so that you're able to prompt learners with likely answers should they get stuck or be unable to find a suitable response.

You may choose to supplement the content of the learner's guide with additional activities and examples. Ending sessions with a group discussion designed to encourage further questions will also enhance learners' knowledge.



## Content

**Section 1** provides an overview of the types of plans and drawings used in the residential building industry, who uses them, what for and what information they contain. Learners should already have completed, or currently be enrolled in, the unit CPCCCM2001A *Read and interpret plans and specifications*, so plans are not explored in detail in this unit. You will need to determine what extra support and practice your learner group may benefit from to successfully complete this unit. Extra support could include working through a range of example plans in groups.

In this section, learners are introduced to the Australian Height Datum (AHD) and asked to think of examples of projects that might need to use it.

The AHD, and levels in general, can be difficult to understand, so it is advisable to prepare some examples and various ways to explain the concept in advance. Examples could include a pipeline across Australia and aircraft control towers.

This section also looks at units of measurement used in plans, and converting between these units. In talking about measurement units with learners, include a discussion about when the units are not written (for example, on plans), what assumptions learners can make about the unit(s) used and how they can check their assumptions.

Activity 1.3 requires learners to convert metres to millimetres and vice versa. An explanation precedes the activity, but you may need to also work through some examples before learners attempt the activity.

In **Section 2** learners look at the main pieces of equipment used to measure and calculate in the building industry. They are required to use a calculator for basic mathematical calculations. Although learners are expected to have basic maths skills, again you may need to work through some examples before learners attempt the activities.

Scale is explained, then how to use a scale rule, before learners practise using a scale rule in Activities 2.2 and 2.3.

**Section 3** provides an overview of working safely within the context of working as a residential construction paraprofessional. You will need to devise some examples or scenarios of OHS practices relevant to your learners' work placements and/or your local area to provide context for learners. You should show examples of policies and products relating to safety in an office environment and on a building site. This may include induction forms, white cards, evacuation plans and safety flip charts. You should discuss manual handling, ergonomics, PPE and codes of conduct in relation to the office and onsite environments.



**Section 4** is all about obtaining measurements, both physically and from plans, including checking whether they're correct and recording them accurately.

Activity 4.4 requires learners to measure a variety of items around the campus. Check the items listed to be measured in this activity in advance, and substitute others if some aren't suitable for measurement on your campus.

You may also wish to precede Activity 4.2 with an in-class activity to demonstrate and practise using the various pieces of measuring equipment before learners move outside to continue with the activity. There is also an opportunity prior to Activity 4.2 to look at the condition of the equipment, how to handle it and how to safely use it.

**Section 5** introduces the various types of calculations used in the building industry, including the most commonly used formulas. The content explores what the formulas are, why they are used, and when and how to use them. Perimeter, area, volume and mass are explained through worked solutions, which are immediately followed by practice examples for learners to try. You should work through these yourself in advance, to ensure that you can explain them clearly to learners. Some may need to be demonstrated in the classroom.

This section also introduces other units and quantities specific to the construction industry, which learners also need to understand and be able to use.

**Section 6** pulls together the learning from the previous five sections and leads learners through the skills and knowledge needed to calculate quantities for a range of typical construction-related tasks. Worked solutions are presented using a set of house plans. Learners then carry out calculations using another set of plans. They are required to apply formulas, perform multi step calculations and use the appropriate units to determine required quantities for a range of construction materials.

## Assessments

Assessments are scheduled at three points in the course to review the knowledge and skills presented in the preceding sections.





## Assessment summary

The three assessments for this unit are designed to assess competency in the elements of the unit.

**Assessment 1** is an open-book assessment giving learners the opportunity to demonstrate their competency in performing basic mathematical operations using a calculator, applying and converting units and using formulas.

**Assessment 2** is an open-book assessment. Learners choose and apply formulas to calculate the dimensions of a range of common shapes. They may also use a calculator.

**Assessment 3** is the final open-book assessment. Learners are required to interpret three simple plans to calculate quantities of materials needed for some common construction tasks. Again, learners may use a calculator and consult their learner's guide if they wish.

An assessment plan providing a suggested schedule of assessment is provided at Annex C to this guide.

A matrix is provided at Annex E showing how the assessment tasks map to the unit performance criteria.

## Results and appeals

Please refer to your training institution or association website or your supervisor for information about the assessment process.







## Annex A – Unit details

|                               |                                                                                                                                                                                                                                                                                                                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit title</b>             | <b>Carry out basic measurements and calculations for residential buildings</b>                                                                                                                                                                                                                                         |
| <b>Descriptor</b>             | This unit of competency specifies the outcomes required to carry out basic measurements and perform common calculations to determine task and material requirements for a typical job in residential building without a need to go onto a work site.                                                                   |
| <b>Employability skills</b>   | The following employability skills are an integral part of the delivery of this unit. They include: communication; teamwork; problem solving; initiative and enterprise; planning and organising; self-management; learning; and technology.                                                                           |
| <b>Pre/co-requisite units</b> | BSBOHS201A <i>Participate in OHS processes</i><br>CPCCCM2001A <i>Read and interpret plans and specifications</i>                                                                                                                                                                                                       |
| <b>Application</b>            | This unit of competency supports achievement of skills to take measurements and use these to calculate material quantities and perform calculations for tasks commonly used and applied in residential building construction work. It includes taking measurements from plans as well as making physical measurements. |

|                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element 1 Determine work requirements</b>                                                                                                                                        |
| 1.1 Read and understand appropriate drawings or plans                                                                                                                               |
| 1.2 Interpret <i>information</i> regarding levels, heights, gradients and other measurements                                                                                        |
| 1.3 Check that measuring and calculating <i>equipment</i> selected to carry out tasks is consistent with job requirements, is serviceable, and any faults are rectified or reported |
| 1.4 Work in accordance with <i>safety</i> policies                                                                                                                                  |
| <b>Element 2 Obtain measurements</b>                                                                                                                                                |
| 2.1 Select and apply appropriate industry methods of measurement                                                                                                                    |
| 2.2 Obtain <i>measurements</i> by physical measurement or from plans or other documentation to required degree of accuracy                                                          |
| 2.3 Confirm measurements, including <i>areas and volumes</i> , and record correctly                                                                                                 |



| Element 3 Perform calculations                                                                          |
|---------------------------------------------------------------------------------------------------------|
| 3.1 Select appropriate <i>calculation factors</i> and use correct methods for achieving required result |
| 3.2 Apply calculations to <i>basic estimating activities</i> related to residential building            |
| 3.3 Calculate <i>material quantities</i> for the project correctly using appropriate factors            |
| 3.4 Check, confirm and record results.                                                                  |

## Required skills and knowledge

### Essential knowledge

Understanding of:

- basic calculators
- scale rulers
- basic arithmetic rules and geometric principles
- company procedures
- residential building terminology
- measuring, calculating, geometry and determination of quantities
- processes for use and care of measuring equipment.

### Essential skills

Ability to:

- communicate and determine requirements
- provide clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- follow instructions
- read and interpret drawings and specifications
- write measurements, calculations and quantities
- demonstrate numeracy skills to apply measurements, calculations and geometry
- work with others to action tasks
- relate to people.



## Range statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

|                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Information may include:</i>                                                                                                                | <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions</li> <li>• diagrams or sketches</li> <li>• plans and specifications for simple projects</li> <li>• instructions issued by authorised organisational or external personnel</li> <li>• manufacturer specifications and instructions</li> <li>• organisation's work specifications and requirements</li> <li>• safe work procedures or equivalent</li> <li>• work schedule.</li> </ul> |
| <i>Safety (OHS) is to be in accordance with state or territory legislation and regulations, organisational safety policy, and may include:</i> | <ul style="list-style-type: none"> <li>• clothing and equipment</li> <li>• handling of materials</li> <li>• hazard control</li> <li>• hazardous materials and substances</li> <li>• use of tools and equipment</li> <li>• concepts associated with workplace environment and safety.</li> </ul>                                                                                                                                                                           |
| <i>Equipment may include:</i>                                                                                                                  | <ul style="list-style-type: none"> <li>• rulers, scale rulers, measuring tapes</li> <li>• calculators, computers.</li> </ul>                                                                                                                                                                                                                                                                                                                                              |
| <i>Measurements are to:</i>                                                                                                                    | <ul style="list-style-type: none"> <li>• be in metric scale</li> <li>• cover all necessary calculations and include units.</li> </ul>                                                                                                                                                                                                                                                                                                                                     |
| <i>Areas and volumes may include:</i>                                                                                                          | <ul style="list-style-type: none"> <li>• calculating regular and irregular shapes, such as rectangles, squares, circles, triangles, trapeziums, rectangular solids, cubes and cylinders that represent calculations taken in a residential building environment.</li> </ul>                                                                                                                                                                                               |
| <i>Calculation factors may include:</i>                                                                                                        | <ul style="list-style-type: none"> <li>• addition, subtraction, multiplication, division</li> <li>• length, area, weight, height, width, depth, volume, mass, scales, ratios, perimeters, quantities, numbers</li> <li>• calculation performed manually and with the aid of a calculator or other devices</li> </ul>                                                                                                                                                      |
| <i>Material quantities are to be:</i>                                                                                                          | <ul style="list-style-type: none"> <li>• calculated in either packed, bulk, loose or compacted stages</li> <li>• converted to volumes in the other states</li> </ul>                                                                                                                                                                                                                                                                                                      |



*Basic estimating activities may include:*

- building perimeter
- floor and wall area (ie vertical or horizontal surfaces)
- footing and slab volume
- count of numbers of bricks/blocks, sheets or tiles on vertical or horizontal surfaces.

## Evidence guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, Range Statement and the Assessment Guidelines for this course.

**Critical aspects for assessment and evidence required to demonstrate competency in this unit**

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment relevant to measurement and calculation
- communicate and work effectively and safely with others in a setting similar to a builder's or estimator's office
- complete measurements, calculations and determination of quantities for different projects of basic complexity
- measure at least five separate tasks using a scale rule
- complete measurements, calculations and determinations of quantities for at least three areas of construction such as:
  - concrete
  - brickwork
  - plaster
  - wall and ceiling lining
  - joinery
  - timber.



|                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Access and equity considerations</b>                 | Reasonable adjustment may be made to meet individual learner needs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Context of and specific resources for assessment</b> | <p>This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment of essential underpinning knowledge will usually be conducted in an off-site context.</p> <p>Assessment is to comply with relevant regulatory or Australian Standards' requirements.</p> <p>Resource implications for assessment include: realistic tasks or simulated tasks covering the mandatory task requirements</p> <ul style="list-style-type: none"> <li>• relevant specifications and work instructions</li> <li>• tools and equipment relevant to measurement and calculation</li> <li>• support materials appropriate to activity</li> <li>• research resources, including industry related systems information.</li> </ul> <p>Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.</p> |



|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Method of assessment</b> | <p>Assessment methods must:</p> <ul style="list-style-type: none"><li>• satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package</li><li>• include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential</li><li>• underpinning knowledge required for practical application</li><li>• reinforce the integration of employability skills with work place tasks and job roles</li><li>• confirm that competency is verified and able to be transferred to other circumstances and environments.</li></ul> <p>Validity and sufficiency of evidence require that:</p> <ul style="list-style-type: none"><li>• competency will need to be demonstrated over a period of time, reflecting the scope of the role and the practical requirements of the workplace</li><li>• where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice. A decision on competency should only be taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge</li><li>• all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.</li></ul> <p>Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.</p> <p>Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.</p> |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## Annex B – Delivery plan

The following notes will help you to prepare for the delivery of this unit's content.

The learner's guide is a required resource for all sessions. In addition, each session may require specific resources (see below), while some will share resources over a number of weeks' delivery.

This delivery strategy is not the only way the content could be delivered. You may also need to make changes depending on local and/or regional content and requirements or to meet your institution's or organisation's preferred delivery methods.

Given that learners in this unit are likely to lack experience of any of this content, you will have to guide them through the content for the most part. However, learners should also be encouraged to find their own answers to questions so as to develop their knowledge of where information can be sourced, even if they don't have any background in the residential building industry at all.

**Note:** This delivery plan is based on 15 × two hour sessions. A different session length or number of sessions will require adjustments to the plan.

| Session | Performance criteria | Guide                                                                                                 | Resources                                                                                  |
|---------|----------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1       | 1.1, 1.2             | Introduction<br>Types of plans and drawings<br>Users and uses<br>Finding information                  | Additional set(s) of plans                                                                 |
| 2       | 1.1, 1.2             | Measurements on plans<br>Linear measurements<br>Converting metres and millimetres                     | Calculators<br>Additional set(s) of plans                                                  |
| 3       | 1.1, 1.2, 1.3        | Review<br>Activity 1.4 Interpreting a site plan<br>Equipment for measuring and calculating<br>Scaling | Calculators<br>Scale rules                                                                 |
| 4       | 1.3, 1.4             | Review<br>Activity 2.4 Using measuring and calculating equipment<br>Working safely                    | Scale rules<br>Variety of tape measures<br>Induction form<br>White card<br>Evacuation plan |





| Session | Performance criteria            | Guide                                                                          | Resources                               |
|---------|---------------------------------|--------------------------------------------------------------------------------|-----------------------------------------|
| 5       | 1.2, 2.1,<br>2.2, 2.3           | Obtaining measurements<br>Confirming and recording measurements                | Scale rules<br>Variety of tape measures |
| 6       | 2.1, 2.3                        | Using measurements in calculations<br>Formulas<br>Linear, square or cubic?     | Calculators                             |
| 7       | 2.3,<br>3.1                     | <b>Assessment 1 due</b>                                                        | Calculators<br>Scale rules              |
| 8       | 2.3,<br>3.1, 3.4                | Calculating perimeter<br>Calculating circumference                             | Calculator                              |
| 9       | 2.3,<br>3.1, 3.4                | Calculating area                                                               | Calculator                              |
| 10      | 2.3,<br>3.1, 3.4                | Calculating volume<br>Calculating mass<br>Ratio<br>Other units of measurement  | Calculator                              |
| 11      | 2.3,<br>3.1, 3.4                | <b>Assessment 2 due</b>                                                        | Calculators<br>Scale rules              |
| 12      | 1.1, 1.2,<br>3.1, 3.2, 3.3, 3.4 | Calculating quantities – bricks                                                | Calculators<br>Scale rules              |
| 13      | 1.1, 1.2,<br>3.1, 3.2, 3.3, 3.4 | Calculating quantities – concrete<br>Calculating quantities – timber<br>Review | Calculators<br>Scale rules              |
| 14      | 1.1, 1.2,<br>3.1, 3.2, 3.3, 3.4 | <b>Assessment 3 due</b>                                                        | Calculator                              |
| 15      |                                 | Review                                                                         | Calculators<br>Scale rules              |



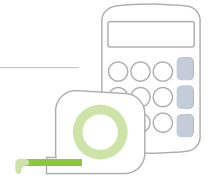
## Annex C – Assessment plan

The three assessments in this unit are designed to assess your competency in the elements of 30011 *Carry out basic measurements and calculations for residential buildings* as listed in the unit details at Annex A to this guide.

Suggested answers for the assessments are provided at Annex F to this guide.

| Due        | Assessment                                                                                                                                                                                                   | Elements |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Session 7  | <b>Assessment 1 – Calculations and units</b><br>This is an open-book assessment. Learners may seek guidance from you and they may refer to their learner's guide. They may use a calculator.                 | 1, 2     |
| Session 11 | <b>Assessment 2 – Calculating perimeter, area and volume</b><br>This is an open-book assessment. Learners may seek guidance from you and they may refer to their learner's guide. They may use a calculator. | 1, 2, 3  |
| Session 14 | <b>Assessment 3 – Calculating material quantities</b><br>This is an open-book assessment. Learners may seek guidance from you and they may refer to their learner's guide. They may use a calculator.        | 1, 2, 3  |





## Annex D – Assessments





## Assessment 1 – Calculations and units

This is an open-book assessment. Learners may seek guidance from you and they may refer to their learner's guide. They may use a calculator.

### Materials and equipment

Lecturer to provide:

- the assessment paper.

Learner to provide:

- their learner's guide
- a calculator
- a pen or pencil and an eraser.





## 30011

### Carry out basic measurements and calculations for residential buildings

#### Assessment 1 – Calculations and units

Name \_\_\_\_\_ Date \_\_\_\_\_

I have received feedback on this assessment.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Assessor's initials







## Assessment 1 – Calculations and units

Use a calculator to find the answers to questions 1–4. Show your working out if you wish.

1. Carry out the following additions.

- a)  $20 + 316 + 4300$  = \_\_\_\_\_
- b)  $5.592 + 12.476 + 0.500$  = \_\_\_\_\_
- c)  $0.750 + 8.7744 + 2.345$  = \_\_\_\_\_

2. Carry out the following subtractions.

- a)  $653 - 179$  = \_\_\_\_\_
- b)  $6.76 - 1.610$  = \_\_\_\_\_
- c)  $2969.445 - 845.708$  = \_\_\_\_\_

3. Carry out the following multiplications.

- a)  $27.76 \times 35$  = \_\_\_\_\_
- b)  $18.017 \times 3.58$  = \_\_\_\_\_
- c)  $0.976 \times 0.675$  = \_\_\_\_\_

4. Carry out the following divisions.

- a)  $1565 \div 25$  = \_\_\_\_\_
- b)  $85.325 \div 27.5$  = \_\_\_\_\_
- c)  $750 \div 0.75$  = \_\_\_\_\_

Write the answers to the following questions in the spaces provided.

5. a) The two metric units of length used in the building industry are:

\_\_\_\_\_ and \_\_\_\_\_.

b) The metric unit of area used in the building industry is \_\_\_\_\_.

c) The metric unit of volume used in the building industry is \_\_\_\_\_.

6. Convert the following from metres to millimetres.

Metres

Millimetres

- a) 15.662 = \_\_\_\_\_
- b) 0.195 = \_\_\_\_\_



7. Convert the following from millimetres to metres

|    | Millimetres |   | Metres |
|----|-------------|---|--------|
| a) | 830         | = | _____  |
| b) | 5150        | = | _____  |

8. When dimensions in millimetres are to be used for either area or volume calculations, what should be done to the dimensions *before* making the calculation?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9. Write the formula for each of the following.

|                               |     |       |
|-------------------------------|-----|-------|
| Perimeter of a rectangle      | P = | _____ |
| Area of a rectangle           | A = | _____ |
| Area of a circle              | A = | _____ |
| Volume of a rectangular prism | V = | _____ |
| Area of a triangle            | A = | _____ |

### End of Assessment 1



## Assessment 2 – Calculating perimeter, area and volume

This is an open-book assessment. Learners may seek guidance from you and they may refer to their learner's guide. They may use a calculator.

### Materials and equipment

Lecturer to provide:

- the assessment paper.

Learner to provide:

- their learner's guide
- a calculator
- a pen or pencil and an eraser.





## 30011

### Carry out basic measurements and calculations for residential buildings

#### Assessment 2 – Calculating perimeter, area and volume

Name \_\_\_\_\_ Date \_\_\_\_\_

I have received feedback on this assessment.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Assessor's initials

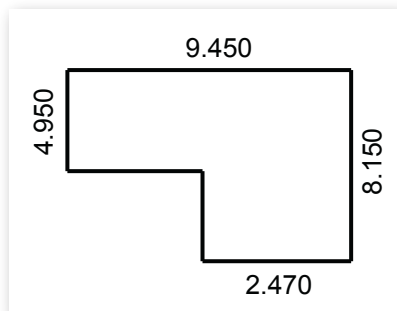




## Assessment 2 – Calculating perimeter, area and volume

1. Calculate the perimeters of the following two shapes.

a)

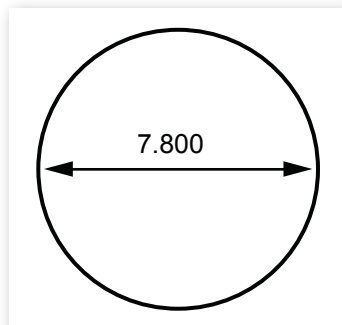


Formula = \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Answer = \_\_\_\_\_

b)



Formula = \_\_\_\_\_

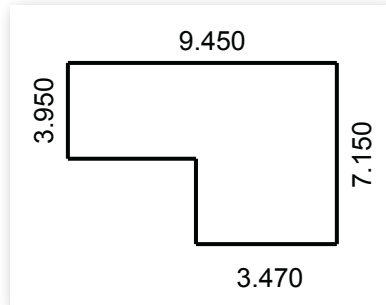
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Answer = \_\_\_\_\_





2. Calculate the area of this shape.

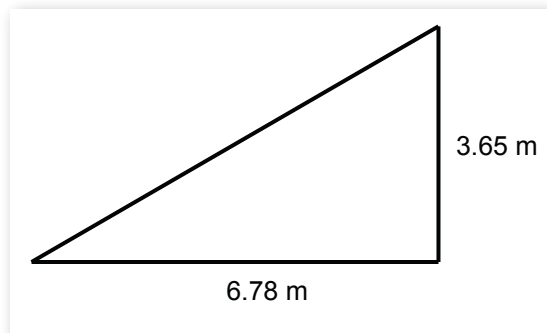


Formula = \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Answer = \_\_\_\_\_

3. Calculate the area of this triangle.



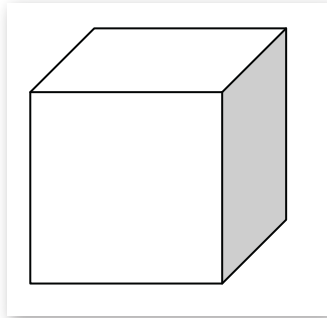
Formula = \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Answer = \_\_\_\_\_



4. The measurements of this concrete cube are  $2.4 \text{ H} \times 2.4 \text{ W} \times 2.4 \text{ L}$ .  
Calculate the volume in cubic metres.



Formula = \_\_\_\_\_

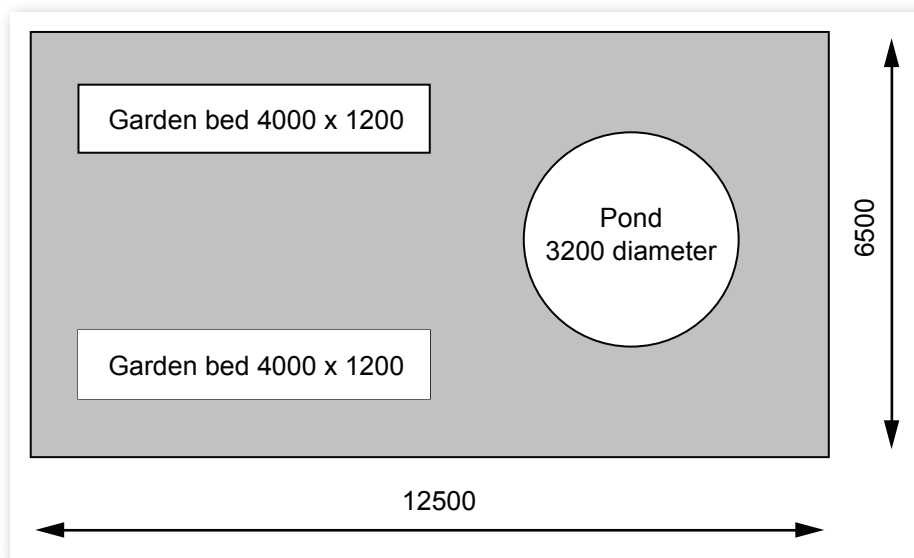
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer = \_\_\_\_\_

5. Calculate the net area of brick paving (the shaded area) in this sketch of a courtyard.



Formula = \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer = \_\_\_\_\_

**End of Assessment 2**





## Assessment 3 – Calculating material quantities

This is an open-book assessment. Learners may seek guidance from you and they may refer to their learner's guide. They may use a calculator.

### Materials and equipment

Lecturer to provide:

- the assessment paper.

Learner to provide:

- their learner's guide
- the Hopscotch Homes plans (provided at Annex E to the Learner's guide)
- a calculator
- a pen or pencil and an eraser
- a scale rule.





## 30011

### Carry out basic measurements and calculations for residential buildings

#### Assessment 3 – Calculating material quantities

Name \_\_\_\_\_ Date \_\_\_\_\_

I have received feedback on this assessment.

Signature \_\_\_\_\_ Date \_\_\_\_\_

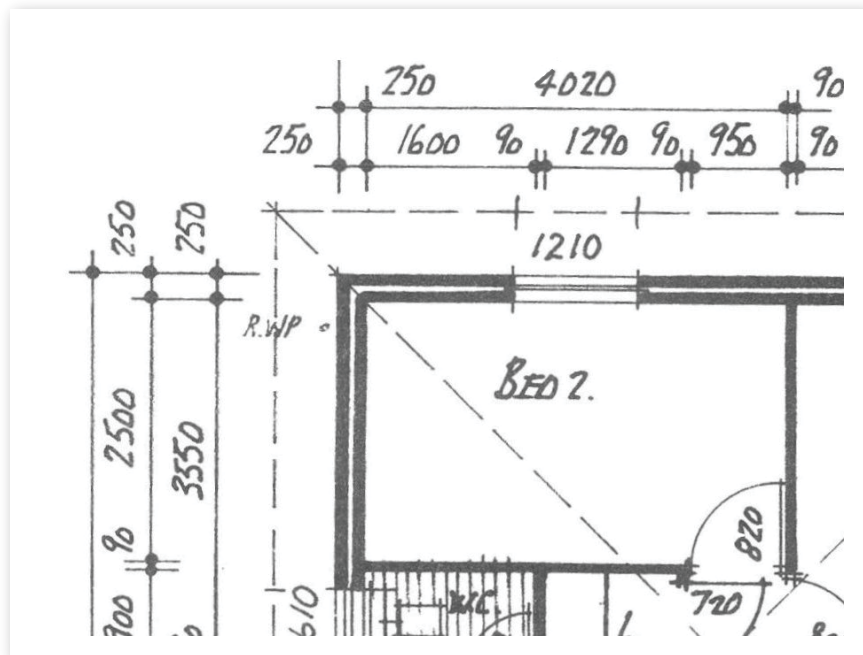
Assessor's initials





## Assessment 3 – Calculating material quantities

- Calculate the net surface area of the walls of Bed 2 in this part plan.  
The ceiling height is 2450, the door is 2060 high and the window is 1810 high.



Formula = \_\_\_\_\_

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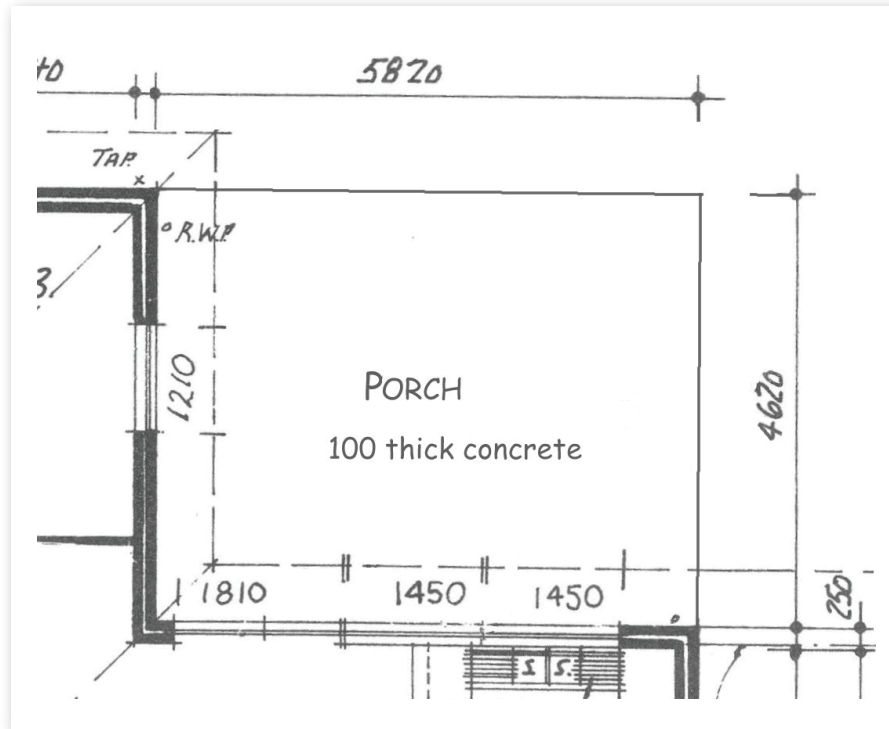
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Answer = \_\_\_\_\_





2. Calculate the volume of concrete required for the porch slab in this part plan.



Formula = \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

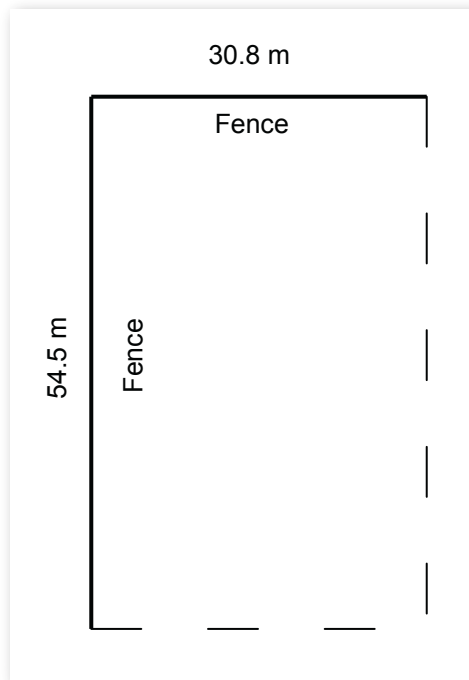
\_\_\_\_\_

Answer = \_\_\_\_\_



3. This sketch shows part of a block of land. A fence is to be erected on the two sides shown.

Calculate how many fence posts will be required for the job if they are to be placed at a maximum of 2.4 m centres.



Formula = \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer = \_\_\_\_\_



4. View the Hopscotch Homes floor plan. Use your scale rule to measure the following. Give your answers in metres (m).

a) Internal perimeter of Bed 2, excluding the walk-in-robe (WIR).

---

b) External perimeter of the building including the garage.

---

c) Length of the kitchen benchtops.

---

d) Perimeter of the alfresco cover.

---

e) Length of the steel beam (200 UB) that spans the family and meal rooms.

---



5. Point A has a height of 3 m above natural ground level, and point B has a height of 1 m above ground level. These two points are 10 m distance apart.

a) What is the height difference between the two points?

---

b) With the aid of a sketch, describe how the ground slopes upwards or downwards from point A to point B.

c) What is the gradient from A to B, stated as a ratio?

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6. Consider the safety policies for as estimator working in an office environment. List four safety requirements in an office environment.

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7. Consider the safety policies for workers on a building site. List four safety requirements on a typical building site.

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### End of Assessment 3



## Annex E – Assessment guide

| Unit name                                                               | State ID (WA) |
|-------------------------------------------------------------------------|---------------|
| Carry out basic measurements and calculations for residential buildings | 30011         |

|                                                                                                                                                                                     | Assessment 1 | Assessment 2   | Assessment 3 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|--------------|
| <b>Element 1 Determine work requirements</b>                                                                                                                                        |              |                |              |
| 1.1 Read and understand appropriate drawings or plans                                                                                                                               |              | Q1, Q2, Q3, Q4 | Q4           |
| 1.2 Interpret <i>information</i> regarding levels, heights, gradients and other measurements                                                                                        |              |                | Q5           |
| 1.3 Check that measuring and calculating <i>equipment</i> selected to carry out tasks is consistent with job requirements, is serviceable, and any faults are rectified or reported |              |                | Q4           |
| 1.4 Work in accordance with <i>safety</i> policies                                                                                                                                  |              |                | Q6, Q7       |
| <b>Element 2 Obtain measurements</b>                                                                                                                                                |              |                |              |
| 2.1 Select and apply appropriate industry methods of measurement                                                                                                                    | Q5, Q6, Q7   | Q1, Q2, Q3, Q4 | Q1, Q2, Q3   |
| 2.2 Obtain <i>measurements</i> by physical measurement or from plans or other documentation to required degree of accuracy                                                          |              | Q1, Q2, Q3, Q4 | Q1, Q2, Q3   |
| 2.3 Confirm measurements, including <i>areas and volumes</i> , and record correctly                                                                                                 | Q8           | Q1, Q2, Q3, Q4 | Q1, Q2, Q3   |



|                                                                                                         | Assessment 1 | Assessment 2 | Assessment 3 |
|---------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|
| <b>Element 3 Perform calculations</b>                                                                   |              |              |              |
| 3.1 Select appropriate <i>calculation factors</i> and use correct methods for achieving required result |              | Q5           | Q1, Q2, Q3   |
| 3.2 Apply calculations to <i>basic estimating activities</i> related to residential building            |              | Q5           | Q1, Q2, Q3   |
| 3.3 Calculate <i>material quantities</i> for the project correctly using appropriate factors            |              | Q5           | Q1, Q2, Q3   |
| 3.4 Check, confirm and record results                                                                   |              |              | Q1, Q2, Q3   |

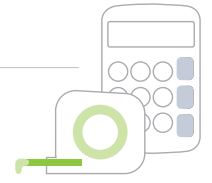


|                                                                                                                                                      | Assessment 1 | Assessment 2 | Assessment 3 |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|
| <b>Essential knowledge</b>                                                                                                                           |              |              |              |
| Understanding of:                                                                                                                                    |              |              |              |
| basic calculators                                                                                                                                    | Q1–Q5        | Q1–Q5        | Q1–Q3        |
| scale rulers                                                                                                                                         |              |              | Q4–Q5        |
| basic arithmetic rules and geometric principles                                                                                                      | Q1–Q9        | Q1–Q5        | Q1–Q5        |
| company procedures                                                                                                                                   |              |              | Q6–Q7        |
| residential building terminology                                                                                                                     | Q6–Q8        |              | Q1–Q3        |
| measuring, calculating, geometry and determination of quantities                                                                                     |              | Q5           | Q1–Q5        |
| processes for use and care of measuring equipment                                                                                                    |              |              | Q4           |
| <b>Essential skills</b>                                                                                                                              |              |              |              |
| Ability to:                                                                                                                                          |              |              |              |
| determine requirements                                                                                                                               | Q6–Q9        | Q4–Q5        | Q6–Q7        |
| demonstrate clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand         |              |              | Q6–Q7        |
| follow instructions                                                                                                                                  |              | Q4–Q5        | Q1–Q4        |
| read and interpret documents from a variety of sources, drawings and specifications                                                                  |              |              | Q1–Q4        |
| demonstrate numeracy skills to apply calculations                                                                                                    | Q1–Q4        | Q1–Q3        | Q1–Q4        |
| demonstrate organisational skills including the ability to plan and set out work                                                                     |              | Q4–Q5        | Q1–Q3        |
| work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities |              |              | Q6–Q7        |





|                                                                                                                                                                                                                                                                                                     | Assessment 1 | Assessment 2 | Assessment 3 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|
| <b>Critical aspects of evidence</b><br>A person who demonstrates competency in this unit must be able to provide evidence of the ability to:                                                                                                                                                        |              |              |              |
| locate, interpret and apply relevant information                                                                                                                                                                                                                                                    | Q5, Q9       | Q5           | Q4           |
| comply with organisational policies and procedures, including quality requirements                                                                                                                                                                                                                  |              |              | Q6–Q7        |
| safely and effectively use tools and equipment relevant to measurement and calculation                                                                                                                                                                                                              |              | Q4–Q5        | Q1–Q4        |
| communicate and work effectively and safely with others in a setting similar to a builder's or estimator's office                                                                                                                                                                                   |              |              | Q1, Q6       |
| complete measurements, calculations and determination of quantities for different projects of basic complexity                                                                                                                                                                                      |              |              | Q1–Q4        |
| measure at least five separate tasks using a scale rule                                                                                                                                                                                                                                             |              |              | Q4           |
| complete measurements, calculations and determinations of quantities for at least three areas of construction such as: <ul style="list-style-type: none"> <li>• concrete</li> <li>• brickwork</li> <li>• plaster</li> <li>• wall and ceiling lining</li> <li>• joinery</li> <li>• timber</li> </ul> |              | Q4–Q5        | Q1–Q3        |
| <b>Dimensions of competency</b>                                                                                                                                                                                                                                                                     |              |              |              |
| Task skills                                                                                                                                                                                                                                                                                         | Q1–Q7        | Q1–Q5        | Q1–Q5        |
| Task management skills                                                                                                                                                                                                                                                                              | Q8           |              | Q4–Q5        |
| Task contingency skills                                                                                                                                                                                                                                                                             | Q9           | Q1–Q5        | Q4–Q5        |
| Job role/Work environment skills                                                                                                                                                                                                                                                                    | Q1–Q9        |              | Q6–Q7        |



## Annex F – Assessment marking keys





# Marking key – Assessment 1

## Calculations and units

The following answers are provided to you as a guide only. You should review them all to ensure that they meet your requirements.

1. Carry out the following additions.

$$\text{a) } 20 + 316 + 4300 = 4636$$

$$\text{b) } 5.592 + 12.476 + 0.500 = 18.568$$

$$\text{c) } 0.750 + 8.7744 + 2.345 = 11.869$$

2. Carry out the following subtractions.

$$\text{a) } 653 - 179 = 474$$

$$\text{b) } 6.76 - 1.610 = 5.15$$

$$\text{c) } 2969.445 - 845.708 = 2123.737$$

3. Carry out the following multiplications.

$$\text{a) } 27.76 \times 35 = 971.6$$

$$\text{b) } 18.017 \times 3.58 = 64.501$$

$$\text{c) } 0.976 \times 0.675 = 0.659$$

4. Carry out the following divisions.

$$\text{a) } 1565 \div 25 = 62.6$$

$$\text{b) } 85.325 \div 27.5 = 3.103$$

$$\text{c) } 750 \div 0.75 = 1000$$

Write the answers to the following questions in the spaces provided.

5. a) The two metric units of length used in the building industry are:

millimetres (mm) and metres (m).

b) The metric unit of area used in the building industry is square metres (m<sup>2</sup>).

c) The metric unit of volume used in the building industry is cubic metres (m<sup>3</sup>).



6. Convert the following from metres to millimetres.

|    | Metres |   | Millimetres   |
|----|--------|---|---------------|
| a) | 15.662 | = | <u>15 662</u> |
| b) | 0.195  | = | <u>195</u>    |

7. Convert the following from millimetres to metres

|    | Millimetres |   | Metres       |
|----|-------------|---|--------------|
| a) | 830         | = | <u>0.830</u> |
| b) | 5150        | = | <u>5.150</u> |

8. When dimensions in millimetres are to be used for either area or volume calculations, what should be done to the dimensions *before* making the calculation?

They should be converted from millimetres to metres.

9. Write the formula for each of the following.

|                               |     |                                                                                 |
|-------------------------------|-----|---------------------------------------------------------------------------------|
| Perimeter of a rectangle      | P = | <u><math>(\text{length} + \text{width}) \times 2</math></u>                     |
| Area of a rectangle           | A = | <u><math>\text{length} \times \text{width}</math></u>                           |
| Area of a circle              | A = | <u><math>\pi \times \text{radius}^2</math></u>                                  |
| Volume of a rectangular prism | V = | <u><math>\text{length} \times \text{width} \times \text{height}</math></u>      |
| Area of a triangle            | A = | <u><math>\frac{1}{2} \text{ base} \times \text{perpendicular height}</math></u> |

### End of Assessment 1



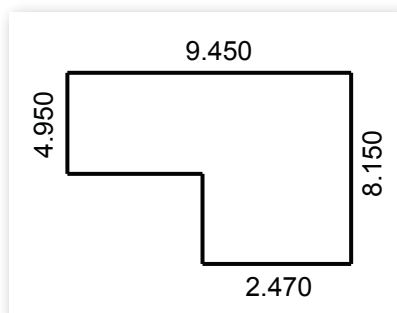
## Marking key – Assessment 2

### Calculating perimeter, area and volume

The following answers are provided to you as a guide only. You should review them all to ensure that they meet your requirements.

1. Calculate the perimeters of the following two shapes.

a)



$$\text{Formula} = 9.45 + 8.15 = 17.6$$

$$17.6 \times 2 = 35.2$$

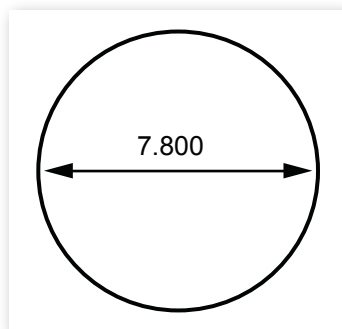
or

$$9.45 + 8.15 + 2.47 + 4.95 + (8.15 - 4.95) + (9.45 - 2.47) =$$

$$9.45 + 8.15 + 2.47 + 4.95 + 3.2 + 6.98 =$$

$$\text{Answer} = 35.2$$

b)



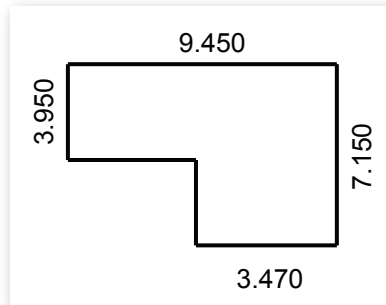
$$\text{Formula} = \pi \times d$$

$$3.14 \times 7.8$$

$$\text{Answer} = 24.49$$



2. Calculate the area of this shape.



Formula = Treat as a compound shape.

$$9.45 \times 3.95 = 37.3275$$

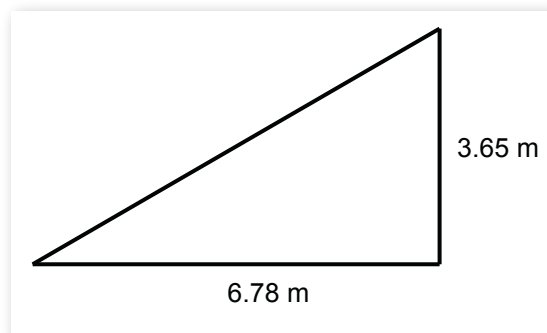
$$3.47 \times (7.15 - 3.95) = 11.104$$

$$37.3275 + 11.104 = 48.4315$$

Round the answer to three decimal places.

Answer = 48.432 m<sup>2</sup>

3. Calculate the area of this triangle.



Formula = Area =  $\frac{1}{2}$  base  $\times$  height

$$= \left( \frac{6.78}{2} \right) \times 3.65$$

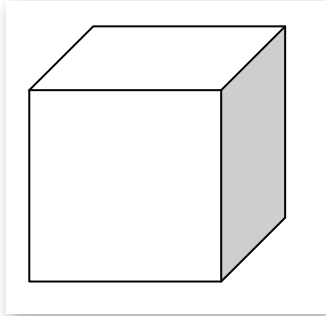
$$= 12.3735$$

Round the answer to three decimal places.

Answer = 12.374 m<sup>2</sup>



4. The measurements of this concrete cube are  $2.4 \text{ H} \times 2.4 \text{ W} \times 2.4 \text{ L}$ .  
Calculate the volume in cubic metres.

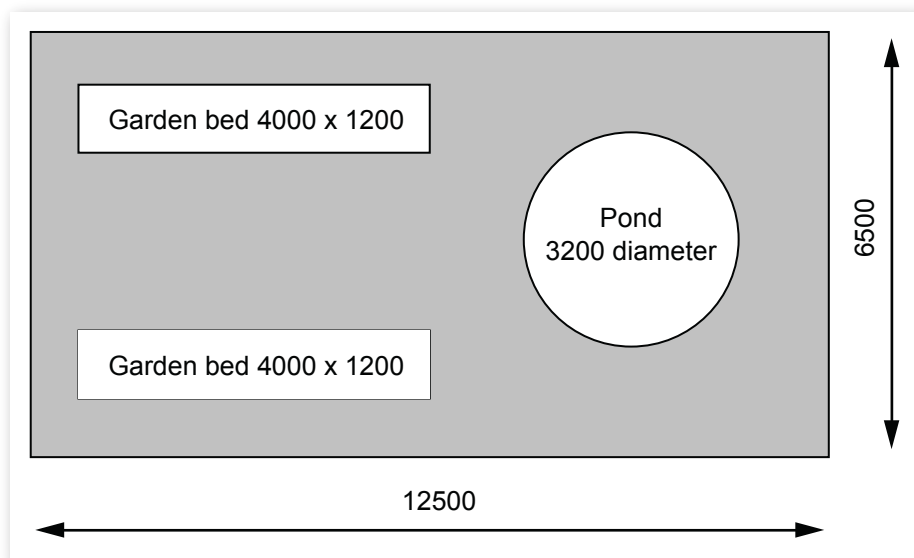


Formula =  $L \times W \times H$

$$2.4 \times 2.4 \times 2.4 =$$

Answer =  $13.824 \text{ m}^3$

5. Calculate the net area of brick paving (the shaded area) in this sketch of a courtyard.



Formula =  $A = L \times W \text{ of paving, then deduct area of garden beds and pond}$

$$L \times W = 12.50 \times 6.50 = 81.25$$

$$\text{Two garden beds} = 2 \times (4.00 \times 1.20) = 2 \times (4.80) = 9.60$$

$$\text{Pond} = 3.14 \times (1.6 \times 1.6) = 8.04$$

$$A = 81.25 - (9.60 + 8.04)$$

$$= 63.61$$

Answer =  $63.61 \text{ m}^2$

**End of Assessment 2**







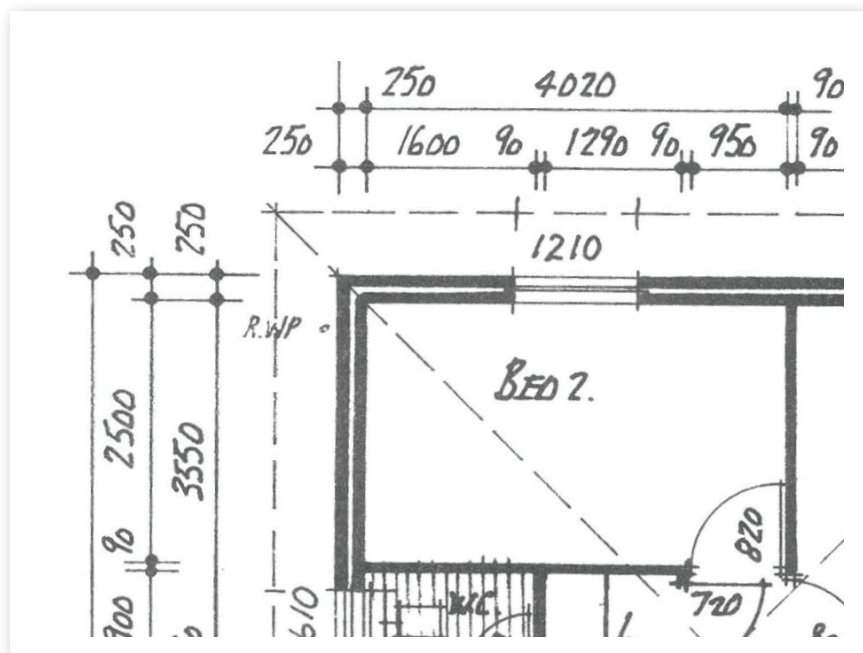
## Marking key – Assessment 3

### Calculating material quantities

The following answers are provided to you as a guide only. You should review them all to ensure that they meet your requirements.

1. Calculate the net surface area of the walls of Bed 2 in this part plan.

The ceiling height is 2450, the door is 2060 high and the window is 1810 high.



Formula =  $A = \text{length} \times \text{width}$ ,  $P = (\text{length} + \text{width}) \times 2$

$$P = (4.020 + 2.500) \times 2 = 13.040$$

$$\text{Gross A} = 13.040 \times 2.450 = 31.948$$

$$\text{Deductions } 1.210 \times 1.810 = 2.190 \text{ (window)}$$

$$0.82 \times 2.060 = 1.689 \text{ (door)}$$

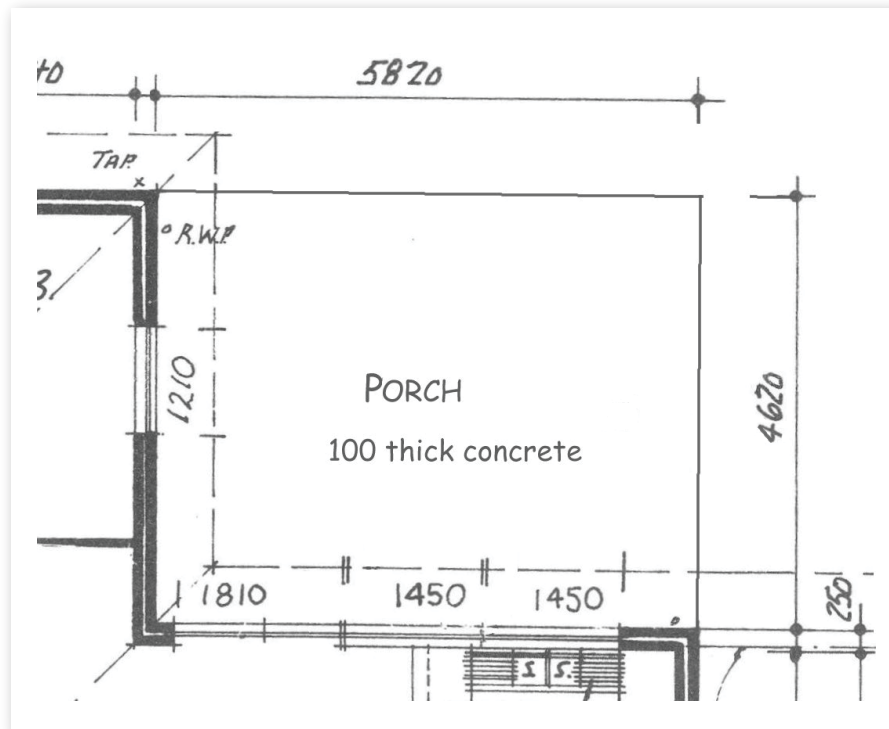
$$2.190 + 1.689 = 3.879$$

$$31.948 - 3.879 = 28.069 \text{ m}^2$$

Answer = **28.069 m<sup>2</sup>**



2. Calculate the volume of concrete required for the porch slab in this part plan. Allow approximately 5% wastage.



Formula =  $V = L \times W \times H$  (thickness)

$$= 5.820 \times 4.620 \times 0.100$$

$$= 2.689$$

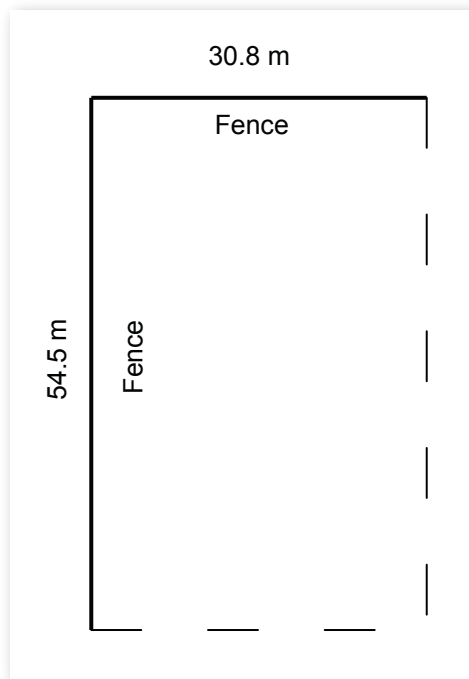
To allow for wastage, round up to nearest 0.2.

Answer =  $2.8 \text{ m}^3$



3. This sketch shows part of a block of land. A fence is to be erected on the two sides shown.

Calculate how many fence posts will be required for the job if they are to be placed at a maximum of 2.4 m centres.



Formula =  $54.5 \div 2.4 = 22.7$

Round up to 23 and include corner post + 1 = 24

$30.8 \div 2.4 = 12.8$

Round up to 13

$24 + 13 = 37$

Answer = **37 posts**



4. View the Hopscotch Homes floor plan. Use your scale rule to measure the following. Give your answers in metres (m).

a) Internal perimeter of Bed 2, excluding the walk-in-robe (WIR).

13.28 m

b) External perimeter of the building including the garage.

33.94 m

c) Length of the kitchen benchtops.

7.88 m

d) Perimeter of the alfresco cover.

8.40 m

e) Length of the steel beam (200 UB) that spans the family and meal rooms.

6.83 m

5. Point A has a height of 3 m above natural ground level, and point B has a height of 1 m above ground level. These two points are 10 m distance apart.

a) What is the height difference between the two points?

2 m

b) With the aid of a sketch, describe how the ground slopes upwards or downwards from point A to point B.

The ground slopes downwards from A to B

c) What is the gradient from A to B, stated as a ratio?

1:5



6. Consider the safety policies for an estimator working in an office environment. List four safety requirements in an office environment.

inductions completed

evacuation plan

fire wardens

location of fire-fighting equipment known

safety information flip charts available

proper use of equipment

code of ethics/conduct

7. Consider the safety policies for workers on a building site. List four safety requirements on a typical building site.

inductions completed

scaffolds in place

hazard signage

code of ethics/conduct

PPE provided

### End of Assessment 3



# CARRY OUT BASIC MEASUREMENTS AND CALCULATIONS FOR RESIDENTIAL BUILDINGS CERTIFICATE II IN BUILDING AND CONSTRUCTION (PATHWAY – PARAPROFESSIONAL) 30011

## LECTURER'S GUIDE

### DESCRIPTION

This lecturer's guide has been written to support the delivery and assessment of the unit 30011 *Carry out basic measurements and calculations for residential buildings* from Certificate II in Building and Construction (Pathway – Paraprofessional). The course, and the learner's guide, focus on the skills and knowledge required as a paraprofessional in the residential building industry.

The lecturer's guide provides you with the following resources and tools:

- unit delivery strategy
- unit delivery plan
- assessment plan
- assessment instruments and marking keys
- assessment matrix.

Support is also provided through highlighting of any pre-delivery preparation required, and of any specific requirements for each delivery session and assessment.

### EDITION

Edition 1, 2012

Unit and course codes updated 2014

### COURSE/QUALIFICATION

Certificate II in Building and Construction (Pathway – Paraprofessional)

### UNIT

30011 *Carry out basic measurements and calculations for residential buildings*

### RELATED PRODUCTS

This resource is one of a series that covers all 12 units of the Certificate II in Building and Construction (Pathway – Paraprofessional) qualification. Please refer to our product catalogue for more information.



Government of **Western Australia**  
Department of **Training**  
and **Workforce Development**

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