



**Australian Government**

# **CPPSIS3020A Perform basic surveying computations**

**Release 1**

## **CPPSIS3020A Perform basic surveying computations**

### **Modification History**

Unit revised and not equivalent to CPPSIS3010A Perform basic spatial computations

New unit title

Element structure, performance criteria, and critical aspects reviewed to reflect workplace requirements

Skills and knowledge requirements and the range statement updated

### **Unit Descriptor**

This unit of competency specifies the outcomes required to perform basic spatial computations. It requires the accuracy and ability to follow specifications. Functions would be carried out under direct supervision and within organisational guidelines.

### **Application of the Unit**

This unit of competency supports the application of accuracy, communication and problem-solving skills, and an understanding of technology. The skills and knowledge acquired upon completion of this unit would support the needs of employees in field work and data collection.

### **Licensing/Regulatory Information**

Licensing, legislative, regulatory and certification requirements may impact on this unit. Incorporate these requirements according to state, territory and federal legislation.

### **Pre-Requisites**

Nil

### **Employability Skills Information**

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

1	Prepare to perform basic traverse computations.	1.1	Task <b><i>objectives</i></b> are defined.
		1.2	<b><i>Pertinent standards</i></b> are identified, considered and adhered to in line with <b><i>project specifications</i></b> .
2	Execute the task.	2.1	Computations are performed on angles and bearings.
		2.2	Conversions between polar and rectangular modes are performed.
		2.3	Computations are performed on the coordinates of a simple closed <b><i>traverse</i></b> .
		2.4	<b><i>Organisational documented and undocumented practices</i></b> are adhered to.
3	Document the task.	3.1	Required documentation is completed according to <b><i>organisational guidelines</i></b> .
		3.2	Information acquired and documentation are stored according to organisational guidelines.

## Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

### Required skills

- communication skills to:
  - discuss vocational issues effectively with colleagues
  - impart knowledge and ideas through oral, written and visual means
- computer skills to develop required documentation
- literacy skills to:
  - assess and use workplace information
  - process workplace documentation
  - read and record data
  - read and interpret datums and projections
- numeracy skills to:
  - accurately record and collate
  - accurately use a calculator
  - apply the basic principles of algebra, geometry and trigonometry
  - mentally evaluate data for approximate results
  - undertake basic computations
- organisational skills to prioritise daily activities
- spatial skills to:
  - apply understanding of height, depth, breadth, dimension and position to actual operational activity and virtual representation
  - exercise precision and accuracy in computations

### Required knowledge

- accuracy requirements
- basic industry requirements and standards
- basic principles of algebra, circular geometry and trigonometry
- basic surveying computations involving basic mathematical principles
- spatial reference systems
- understanding and application of significance in calculations
- vocational problems involving computations of survey traverses
- vocational problems involving oblique triangles

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

<b>Overview of assessment</b>	This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example CPPSIS3015A Collect spatial data.
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>A person who demonstrates competency in this unit must be able to provide evidence of:</p> <ul style="list-style-type: none"><li>• applying mathematical principles and skills to a range of surveying problems</li><li>• conducting calculations in a logical and thorough manner</li><li>• knowledge of basic mathematical concepts and techniques</li><li>• understanding accurate surveying calculations</li><li>• using formulas appropriately and obtaining correct results.</li></ul>
<b>Specific resources for assessment</b>	<p>Resource implications for assessment include access to:</p> <ul style="list-style-type: none"><li>• assessment instruments, including personal planner and assessment record book</li><li>• assignment instructions, work plans and schedules, policy documents and duty statements</li><li>• registered training provider of assessment services</li><li>• relevant guidelines, regulations and codes of practice</li><li>• suitable venue and equipment.</li></ul> <p>Access must be provided to appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.</p>
<b>Context of assessment</b>	Holistic: based on the performance criteria, evidence guide, range statement, and required skills and knowledge.
<b>Method of assessment</b>	<p>Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment).</p> <p>Demonstrated competency in a range of situations, that may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace. Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation</p>

in realistic simulated environments may be substituted.

## Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of surveying and spatial information services requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Where assessment is for the purpose of recognition (recognition of current competencies [RCC] or recognition of prior learning [RPL]), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

Assessment processes will be appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

## 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. ***Bold italicised*** wording in the performance criteria is detailed below. 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.

***Objectives*** may include:

- agreed client requirements
- written survey data specifications.

***Pertinent standards*** are standards essential to the accuracy of:

- basic measurement:
  - circular geometry
  - trigonometry

- calculation of horizontal and vertical information
  - recording.
- Project specifications* refer to:
- detailed technical descriptions of the survey data and its requirements.
- Traverse* refers to:
- a method of surveying in which lengths and directions of lines between points on the earth are obtained by or from field measurements and are used in determining positions of the points.
- Organisational documented and undocumented practices* may include:
- appropriate timelines
  - data processing requirements
  - final product formats
  - formal design parameters
  - teamwork.
- Organisational guidelines* may include:
- company policy relating to surveying operational requirements
  - legislation relevant to the work or service function
  - manuals.

## Unit Sector(s)

Surveying and spatial information services

## Custom Content Section

Not applicable.