BCATS

BUILDING, CONSTRUCTION AND ALLIED TRADE SKILLS

Maths processes

Teacher/Tutor resource

Unit Standard 24361 (v3), **Level 2**

Apply mathematical processes to BCATS projects

3 CREDITS

BCITO buildingpeople

Building and Construction Industry Training Organisation (BCITO)

Level 5, 234 Wakefield Street
PO Box 2615
Wellington 6140
0800 422 486
www.bcito.org.nz

Table of contents

Teaching and assessment tips

Purpose

This unit standard credits learners who are able to:

- decide which mathematical methods should be used to solve problems and
- use those methods accurately to achieve an acceptable outcome.

A variety of maths skills are required and should be spread throughout two different projects.

Unit standard interpretation

Students need to choose and apply correct mathematical processes to at least two projects. They must use trigonometry and at least one of:

- calculations
- measurement
- geometry.

Students need to:

- identify what information is needed
- choose the best mathematical methods for the situation and problem from a combination of at least two of numerical calculation, measurement, geometry, and trigonometry.
- correctly use the chosen methods
- accurately present the information and results.

Please see the Assessment Schedule at the end of this document for more-detailed requirements.

It is preferable that information to support assessment decisions is gathered as students work on their BCATS projects. However, Knowledge Assessment Sheets are included in the set of resources to enable mathematics teachers to assess their contextualisation of teaching and learning to theoretical BCATS projects. The skills and knowledge required for this unit standard may therefore be assessed through practical BCATS projects, the Knowledge Assessment Sheets, or a combination of both of these.

Order form and cutting list templates can be found in the 'Level 2 - Generic resources' folder on www.bconstructive.org.nz and www.mybcito.nz. Students' calculations needed to complete these must be attached to the completed forms.

The Learner Self-reflection Sheets are useful exercises to support students' learning. These are not required for assessment purposes.

Assessment

Information to support assessment decisions should, wherever possible, be collected naturally as the BCATS projects progress.

Please attach photographic or other evidence of completed project(s) to the Assessor Observation Sheet if this unit standard is offered as part of a BCATS programme.

Assessment of this unit standard consists of:

- **two correctly completed Knowledge Assessment Sheets or**
- **a completed Assessor Observation Sheet and evidence of two practical projects where the mathematical solutions are accurate and consistent with the required outcomes or**
- **a combination of Knowledge Assessment Sheet(s) scenarios and practical projects equalling two different projects.**

Alignment with other unit standards

Developing programmes that integrate teaching and learning helps to provide students with meaningful and manageable learning opportunities. The following unit standards are not an exhaustive list of those you could include in your programme and nor should one feel obligated to offer all as linked units. Other unit standards you include will depend on your overall programme of study and what best meets your learners' needs.

Examples of other standards that could be offered concurrently are:

12932: *Construct timber garden furniture as BCATS projects*

12933: *Complete minor concrete works as a BCATS project*

12935: *Construct a spaced residential timber deck up to one metre high as a BCATS project*

12936: *Construct a non-consent timber framed utility building as a BCATS project*

12938: *Lay paving blocks as a BCATS project*

12939: *Construct a basic retaining wall as a BCATS project*

25921: *Make a cupboard with a drawer as a BCATS project*

31812: *Complete a BCATS project*

The projects specified in the unit standards above could all be appropriate for contextualising students' use of trigonometry and at least one of numerical calculation, measurement, and/or geometry.

Assessment Schedule

US 24361 (v3) - Apply mathematical processes to BCATS projects (Level 2, Credit 3)

Outcome 1	Establish BCATS projects' outcome requirements and select mathematical methods for solving problems associated with achieving them.	Assessment evidence and judgement
PC 1.1	Outcome requirements are identified.	Evidence must be for 2 different projects using: • correctly completed Knowledge Assessment Sheets **or** • a completed Assessor Observation Sheet and evidence of practical projects where outcome requirements of a project are identified **or** • a combination of Knowledge Assessment Sheet(s) and practical project(s).
PC 1.2	Mathematical methods are chosen in accordance with the situation and the problem. Range: a combination of two of the following – numerical calculation, measurement, geometry, trigonometry.	Evidence must be for 2 different projects using: • correctly completed Knowledge Assessment Sheet(s) • a completed Assessor Observation Sheet(s) and evidence of practical projects where chosen mathematical methods include a combination of two of the following - numerical calculation, measurement, geometry, trigonometry • or a combination of Knowledge Assessment Sheet(s) scenarios and practical project(s).
Outcome 2	Use mathematical skills to solve problems for BCATS projects. Range: trigonometry and at least one of the following – numerical calculation, measurement, geometry.	**Assessment evidence and judgement**
PC 2.1	Chosen methods applied in the context of the situations provided.	Evidence must be for 2 different projects using: • correctly completed Knowledge Assessment Sheets **or** • a completed Assessor Observation Sheet and evidence of practical projects where the correct mathematical skill has been applied to solve problems including trigonometry and at least one of numerical calculation, measurement, geometry **or** • a combination of Knowledge Assessment Sheet(s) scenarios and practical project(s).
PC 2.2	Mathematical skills are used in conjunction to solve problems.	Evidence must be for 2 different projects using: • correctly completed Knowledge Assessment Sheets **or** • a completed Assessor Observation Sheet and evidence of practical projects where the correct mathematical skill has been applied to solve problems including trigonometry and at least one of numerical calculation, measurement, geometry **or** • a combination of Knowledge Assessment Sheet(s) scenarios and practical project(s).
PC 2.3	Solutions are accurate, and consistent with the outcome requirements of the problems.	Evidence must be for 2 different projects using: • correctly completed Knowledge Assessment Sheets **or** • a completed Assessor Observation Sheet and evidence of practical projects where the correct mathematical skill has been applied to solve problems including trigonometry and at least one of numerical calculation, measurement, geometry **or** • a combination of Knowledge Assessment Sheet(s) scenarios and practical project(s).
PC 2.4	Information and results are accurately presented.	Evidence must be for 2 different projects using: • correctly completed Knowledge Assessment Sheets **or** • a completed Assessor Observation Sheet and evidence of practical projects where the correct mathematical skill has been applied to solve problems including trigonometry and at least one of numerical calculation, measurement, geometry **or** • a combination of Knowledge Assessment Sheet(s) scenarios and practical project(s).