



Australian Government

Department of Education, Employment and Workplace Relations

FDFTEC4007A Describe and analyse data using mathematical principles

Revision Number: 2

FDFTEC4007A Describe and analyse data using mathematical principles

Modification History

November 2011: updated to include correct prerequisite.

Unit Descriptor

Unit descriptor	This unit of competency covers the skills and knowledge required to apply mathematical principles to interpret data relating to properties and production of food products.
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Application of the Unit

Application of the unit	This unit builds on an understanding of common units of measurement, formulae and mathematical skills related to production activities.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	
	FDFOP2015A Apply principles of statistical process control* <i>FDFOP2061A Use numerical applications in the workplace</i>

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify common units of measurement and dimensions used to describe physical properties of materials and food	1.1. SI units of measurement and related unit symbols are identified 1.2. Common formulae used to measure characteristics of food are identified and applied 1.3. Calculations involving fractions and ratios are performed
2. Apply linear algebra to analyse workplace information	2.1. Given two known values, an unknown value is calculated 2.2. The principles of transposing values are applied to solve workplace problems
3. Use graphs to analyse workplace information	3.1. Data analysis and presentation requirements are identified 3.2. Graphs are generated to analyse and display workplace information 3.3. A process control chart is constructed

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Ability to:

- identify the fundamental units (SI) of measurement (metres, kilograms and seconds)
- identify common derived units/measurements, related formulae and their application in a food processing context, such as:
 - density, specific gravity
 - viscosity
 - temperature
 - volume, weight and mass
 - velocity
 - other measures as appropriate to a production process
- apply relevant formulae to measure physical characteristics of food products and/or processes
- select production calculation requirements, such as the adjustment of a recipe formulation, to:
 - select required formulae
 - express the problem as an equation
 - identify the known and unknown values
 - manipulate equations by transposing values as required
 - convert units into compatible formats (i.e. SI units, multiples and sub-multiples)
 - calculate of percentages and ratios
 - conduct the calculation to obtain a solution
 - record the result in the appropriate units and level of detail
- identify graphs commonly used in the workplace and relevance to displaying workplace information
- construct charts to analyse and illustrate workplace information, such as use of relevant software
- calculate standard deviation for a given data set
- apply an understanding of standard deviation to determine capability of a process
- identify the target (mean value) for the process
- identify upper and lower control limits to provide for 98% of units to fall within the limits
- use communication skills to interpret and complete work information to support operations of work team or area

REQUIRED SKILLS AND KNOWLEDGE

- demonstrate and support cooperative work practices within a culturally diverse workforce

Required knowledge***Knowledge of:***

- SI units of measurement and related unit symbols
- common formulae used to measure characteristics of food
- principles of transposing values to solve workplace problems
- relevant formulae to measure physical characteristics of food products and/or processes
- processes for developing charts and graphs
- calculations to determine unknown values, percentages and ratios, standard deviation, conversion of units into compatible formats, target (mean value) for the process, upper and lower control limits

Evidence Guide

EVIDENCE GUIDE	
<p>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 the Training Package.</p>	
<p>Overview of assessment</p>	<p>Assessment must be carried out in a manner that recognises the cultural and literacy requirements of the assessee and is appropriate to the work performed. Competence in this unit must be achieved in accordance with food safety standards and regulations.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Evidence of ability to:</p> <ul style="list-style-type: none"> • identify SI units of measurement • identify common derived units/measurements, related formulae and their application in a food processing context • apply relevant formulae to measure physical characteristics of food products and/or processes • calculate standard deviation • construct charts • identify mean value • identify upper and lower control limits.
<p>Context of and specific resources for assessment</p>	<p>Assessment must occur in a real or simulated workplace where the assessee has access to:</p> <ul style="list-style-type: none"> • workplace processes and procedures • workplace documentation, including conversion charts, sampling plan and control chart formats, related data collection methods, such as log sheets, and relevant formulae to be applied to a production process.
<p>Method of assessment</p>	<p>This unit should be assessed together with core units and other units of competency relevant to the function or work role. An example could be:</p> <ul style="list-style-type: none"> • FDFPPL4005A Establish process capability.
<p>Guidance information for assessment</p>	<p>To ensure consistency in one's performance, competency should be demonstrated on more than one occasion over a period of time in order to cover a variety of circumstances, cases and responsibilities, and where possible, over a number of assessment activities.</p>

Range Statement

RANGE STATEMENT	
<p>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, if used in the performance criteria, is detailed below. 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) may also be included.</p>	
Common measurements	<p>Common measurements include but are not limited to:</p> <ul style="list-style-type: none"> • density • specific gravity • volume • weight • mass • speed
Graphs	<p>Graphs include but are not limited to:</p> <ul style="list-style-type: none"> • statistical process control (SPC) charts • x-y charts

Unit Sector(s)

Unit sector	Technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		

Co-requisite units		