# Skills Assessment - Measurement

**Event 2 of 2**

## Criteria

### Unit code, name and release number

MEM12023A - Perform engineering measurements (1)

### Qualification/Course code, name and release number

MEM30305 - Certificate III in Engineering - Fabrication Trade (4)

## Student details

### Student number

### Student name

## Assessment Declaration

* This assessment is my original work and no part of it has been copied from any other source except where due acknowledgement is made.
* No part of this assessment has been written for me by any other person except where such collaboration has been authorised by the assessor concerned.
* I understand that plagiarism is the presentation of the work, idea or creation of another person as though it is your own. Plagiarism occurs when the origin of the material used is not appropriately cited. No part of this assessment is plagiarised.

### Student signature and Date

Version: *1.0*

Date created: *3 July 2018*

Date modified: *01/10/2019*

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Assessment instructions

Table 1 Assessment instructions

| Assessment details | Instructions |
| --- | --- |
| **Assessment overview** | The objective of this assessment is to assess your required skills and knowledge as required to measure items with mechanical measurement devices and carry out associated calculations. |
| **Assessment Event number** | 2 of 2 |
| **Instructions for this assessment** | This is a skill-based assessment and you will be assessed on your ability to demonstrate the skills required in measuring items allocated to you and carrying out associated calculations.  This assessment is in 3 parts:   1. Practical 2. Observation Checklist 3. Assessment Feedback |
| **Submission instructions** | On completion of this assessment, you are required to hand it to your assessor for marking  Ensure you have written your name at the bottom of each page of this assessment. |
| **What do I need to do to achieve a satisfactory result?** | To successfully complete this assessment the student will be available at the arranged time to complete all the assessment criteria as outlined in the assessment instructions.  All parts of the observable task must be performed to a satisfactory level as indicated in the criteria section of the Observation Checklist.  All oral questions must be answered correctly to be deemed satisfactory in this assessment task; however, Assessors may ask questions to clarify understanding. |
| **What do I need to provide?** | Calculator, pen, pencil, eraser, PPE that conforms to Workshop Operations SOP |
| **Due date/time allowed/venue** | 90 minutes |
| **Assessment feedback, review or appeals** | Appeals are addressed in accordance with Every Students Guide to Assessment. |

## Specific task instructions

The instructions and the criteria in the tasks and activities below will be used by the assessor to determine whether the tasks and activities have been satisfactorily completed. Use these instructions and criteria to ensure you demonstrate the required skills and knowledge.

If this assessment requires you to record information, your assessor will provide you with an appropriate document/template.

## Part 1: Practical

To complete this part of the assessment, you will be required to participate in a practical demonstration of how to complete a task or activity.

These practicals will be observed by your assessor, or can be digitally recorded and submitted as evidence.

Your responses will be used as part of the overall evidence requirements of the unit.

You should refer to the list of criteria in the Observation Checklist to understand what you need to demonstrate in this section of the assessment. This Checklist outlines the assessment criteria used to assess your performance.

Once completed you will need to submit this assessment and the tasks and activities you are required to complete to your assessor for marking.

**Contingency Management:**

While undertaking this task a number of unforeseen circumstances may arise. The assessor will have the opportunity to question you to gather an understanding of how you will respond to these events. Below is a table with examples of possible questions.

Table 1: Possible questions

|  |  |  |
| --- | --- | --- |
| Scenario | Assessors question | Acceptable students response |
| Power failure in workshop | What is the correct action in the case of power failure? |  |
| Emergency evacuation | What do you do if an emergency evacuation drill happens during the assessment? |  |
| Measurement tool defective | What do you do if you find a measurement tool is defective |  |

#### Assessment requirements

In this Skills Practical assessment you are required to satisfactorily perform the following:

* Identify and check the condition of measuring tools issued in a kit
* Select the appropriate measuring tool(s)
* Measure and record the dimensions of allocated items
* Perform verification calculations as detailed
* Provide a sketch of an item measured in Task 2
* Follow any further instructions given by the assessor.

#### Instructions

* Verify the measuring tool kit issued for the assessment is complete and each measuring device (tool) is in good working order so that accurate measurements can be taken to within the tolerance specified
* Select the most appropriate measuring tool(s) from the list on the procedure sheet to attain the measurements for the tasks
* Circle the tool selected from the tool list to perform the measurement task. Some measuring tasks may require a second tool
* Measure the allocated items as detailed on the procedure sheets with each measuring tool selected, using appropriate handling and measuring techniques
* Record measurements in the spaces provided on each procedure sheet. Use millimetres (mm) unless noted otherwise.
* Ensure measurements are taken **within tolerances specified** on the top right corner of each procedure sheet.
* Perform calculations as detailed on the procedure sheet
* Ensure measuring devices are used and stored correctly
* Sketch an item as detailed for Task 8
* Clarify any details of this assessment you are unsure of with your teacher/assessor
* Use the OBSERVATION CHECKLIST to confirm the Tasks have been completed
* Ensure all measuring tools are packed and returned to store at the completion of the Tasks

**Please Note:** Results and comments for each task are recorded in the observation check list by your teacher/assessor.

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| Task 1 Procedure Sheet – Verify measurement tools checklist | | | | | | | | |
| To complete this assessment you will be issued with a kit containing the tools listed below.  You are required to complete this checklist verifying the tools have been issued and are suitable to carry out accurate measurements to the tolerances specified on each procedure sheet.  Any tool marked with an  must be discussed with your assessor.  Clarify any details of this assessment you are unsure of with your teacher/assessor.  | | | | | | | | |
| **Tool** | **Checks and Verifications**   | | | | | | | |
| *Example line* | *Issued* |  | *Checked and OK* |  | *Checked and Not OK* |  |  | |
| Tape Measure ( 8 Meter) | Issued |  | Hook end is loose |  | Graduations are clear |  |
| Block Square ( engineers) | Issued |  | Squareness confirmed |  |  | | | |
| Combination Square | Issued |  | Rotates freely |  | Locks in position |  | Graduations are clear |  |
| Plate Square | Issued |  | Squareness confirmed |  |  | | | |
| Folding rule 600 mm (line of chords) | Issued |  | Hinges freely |  | Has line of chords |  | Graduations are clear |  |
| Steel Rule 300 mm | Issued |  | Graduations are clear |  |  | | | |
| Vernier caliper | Issued |  | Closes to zero |  | Slides freely |  | Graduations are clear |  |
| Dividers | Issued |  | Adjusting nut spins |  | Legs slide freely |  | Points are sharp |  |

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| Task 2.0 Procedure Sheet – Measure workbench/table and perform calculations | | | | |
| You will be allocated a workbench or table to perform the measurement tasks and calculations as detailed below | | | | |
| 1. **Circle appropriate tool used to take measurements for this task** | | | | **Tolerance ±2.0mm** |
| Tape measure (8 metre) | Block square (engineers) | Combination square | Plate square |
| Steel rule (300 mm) | Folding rule 600 mm (line of chords) | Vernier caliper | Dividers |
| 1. **Measure item and record result in the spaces below** | | | | |
| Record your results below in millimetres (mm) | Convert your results to Meters (m) |  | | |
| Length A (mm) = | Length A (m) = |
| Width B (mm) = | Width B (m) = |
| Diagonal C (mm) = | Diagonal C (m) = |
| Diagonal D (mm)= | Diagonal D (m)= |
| Height E (mm) | Height E (m) |

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| Task 2.1 Procedure Sheet– Perform verification calculations | | |
| **Using the measurements recorded from Task 2.0, complete the calculations in the space provided below for:**   1. **Perimeter b) Area c) Diagonal** | | |
| 1. **Perimeter** | **b) Area** | **c) Diagonal** |
| Perimeter Formula = 2(L+W)  Provide answer in Metres (m) | Area Formula = (L x W)  Provide answer in Metres (m) | Diagonal Verification Formula = √ A² + B²  Provide all working and Answer in Metres (m) |
| Length = m | Length A = m | A = m |
| Width = m | Width B = m | B = m |
| Length + Width = m | Length x Width = m | A² = m |
| 2 x Length + Width = m |  | B² = m |
| √ A² + B² = m |
| **Perimeter = Metres** | **Area = m²** | **Diagonal Verification = Metres** |

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| Task 3 Procedure Sheet– Measure hole position, size, pitch and verification calculations | | | | | |
| You will be allocated a drilled item similar to the drawing to perform the measurement tasks and calculations as detailed below | | | | | |
| 1. **Circle appropriate tool used to take measurements for this task** | | | | | **Tolerance ± 0.04 mm** |
| Steel rule (300 mm) | Folding rule 600 mm (line of chords) | | Vernier caliper | Dividers |
| 1. **Measure item and record result in the spaces below.** | | | | | |
| Length A = | Width H = | | ∅ K = |  | |
| Edge B = | Edge I = | |
| Hole Centre C = | Edge J = | |
| Hole Centre D = |  | | |
| Hole Centre E = |
| Hole Centre F = |
| Edge G = |
| 1. **Verification Calculations -** Using the measurements recorded above, add edge distance and hole centres to confirm length (A) and width (H) | | | |
| **Sum of B to G =** | | **Sum of IJ =** | |

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| Task 4 Procedure Sheet– Measure Angle, Length, Width, Thickness | | | | |
| You will be allocated a bent flatbar similar to the drawing to perform the measurement tasks as detailed below | | | | |
| 1. **Circle appropriate tool used to take measurements for this task** | | | | **Tolerance ± 1 mm on lengths** |
| Steel rule (300 mm) | Folding rule 600 mm (line of chords) | Dividers | Combination square | **Tolerance ± 1° on angle** |
| 1. **Measure item and record result in the spaces below** | | | | |
| Angle A° = | | | A°  B  D  C  Top View  Front View  Press Line | |
| Length B = | | |
| Width C = | | |
| Thickness D = | | |

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| Task 5 Procedure Sheet– Measure deviation from 90° | | | | |
| You will be allocated a fabricated item similar to the drawing to perform the measurement tasks as detailed below | | | | |
| 1. **Circle appropriate tool used to take measurements for this task** | | | | **Tolerance ± 1.0 mm** |
| Tape measure (8 metre) | Steel rule (300 mm) | Folding rule 600 mm (line of chords)) | Combination square | Plate square |
| 1. **Measure item and record result in the spaces below** | | | | |
| Length = | | |  | |
| Width = | | |
| Thickness = | | |
| Inset Distance = | | |
| Deviation = | | |
|  | | |

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| Task 6 Procedure Sheet– Check for 90° | | | | |
| You will be allocated a flatbar, cut at an angle similar to the drawing, to perform the measurement tasks as detailed below | | | | **Tolerance ± 1 mm** |
| 1. **Circle appropriate tool used to take measurements for this task** | | | |
| Steel rule (300 mm) | Folding rule 600 mm (line of chords) | Block square (engineers) | Combination square |
| 1. **Measure item and record result in the spaces below** | | | | |
| Height = | | |  | |
| Width = | | |
| Deviation = | | |

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| Task 7 Procedure Sheet– Check cut angle |

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| You will be allocated a flatbar cut an angle similar to the drawing to perform the measurement task as detailed below perform the measurement tasks and as detailed below |  |

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| 1. **Circle appropriate tool used to take measurements for this task** | | | | **Tolerance ± 1 mm on lengths** |
| Steel rule (300 mm) | Folding rule 600 mm (line of chords) | Dividers | Combination square | **Tolerance ± 1° on angle** |
| 1. **Measure item and record result in the spaces below** | | | | |
| Height = | | |  | |
| Width = | | |
| Cut Angle° = | | |

**Task 8: Free hand sketch of workbench used for Measurements in Task 1.**

**Instructions**

* Complete a free hand sketch on the Task 8 Procedure Sheet on the following page
* Provide a front view, top view and left or right side view in third angle projection
* Dimensions required include, Length, width and height
* Itemise each part of the bench/table. Eg top Item 1
* Complete a parts list in the space provided
* Refer to the Task 2.1 (a) Perimeter and (b) calculations and notate onto the drawing in the space provided
* Sketch to be in proportion and legible
* Line weight conventions to be used are - outlines dark, dimension lines light

**NOTE** –Hidden detail is not required on the sketch

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| Task 8 – Procedure Sheet – Produce a Sketch | | | | | |
|  | **PARTS LIST** | | | | |
| **ITEM** | **DESCRIPTION** | | **SIZE** | **QTY** |
| 1 | BENCH/DESK TOP | |  |  |
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| Perimeter Item 1 = | | Area Item 2 = | | |

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## Part 2: Observation Checklist

The Observation Checklist will be used by your assessor to mark your performance in the previous event. Use this Checklist to understand what skills you need to demonstrate in the practical assessment. The Checklist lists the assessment criteria used to determine whether you have successfully completed this assessment event. All the criteria must be met. Your demonstration will be used as part of the overall evidence requirements of the unit. The assessor may ask questions while the demonstration is taking place or if appropriate directly after the task/activity has been completed.

| Task | Task/Activity Performed | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the  required skills and knowledge) |
| --- | --- | --- | --- | --- |
| Task 1 | Select appropriate measurement tool.   * **Complete the Tool Verification Checklist**   + Identify the measuring tools in the kit issued   + Check the condition of the tools   + Communicate with the Assessor if your tool kit is incomplete or tools are not in suitable working order   + Discuss any aspects of the assessment you are unclear of with your assessor |  |  |  |

| Task | Task/Activity Performed | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the  required skills and knowledge) |
| --- | --- | --- | --- | --- |
| 2.0 | Measure item as detailed and record dimensions   * **Complete Task 2.0 (a)**   + Select appropriate measuring tool   + Measure item to tolerance specified   + Use measuring tools correctly and carefully   + Store tools appropriately * **Complete Task 2.0 (b)**   + Record dimensions for the item specified   + Ensure item dimensions are recorded within tolerance   + Check correct unit of measurement has been recorded |  |  |  |

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| **Task** | **Task/Activity Performed** | **S** | **U/S** | **Assessor Comments (Describe the student’s ability in demonstrating the**  **required skills and knowledge)** |
| 2.1 | Perform calculations   * **Complete Task 2.1 (a)**   + Carry out perimeter calculation * **Complete Task 2.1 (b)**   + Carry out area calculation * **Complete Task 2.1 (c)**    + Verify recorded dimension for measurement D and measurement C (diagonals) correspond to calculated answer |  |  |  |

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| **Task** | **Task/Activity Performed** | **S** | **U/S** | **Assessor Comments (Describe the student’s ability in demonstrating the**  **required skills and knowledge)** |
| 3 | Perform calculations   * **Complete Task 3 (a)**   + Select appropriate measuring tool   + Measure item to tolerance specified   + Use measuring tools correctly and carefully   + Store tools appropriately * **Complete Task 3 (b)**   + Record dimensions for the item specified   + Ensure item dimensions are recorded within tolerance   + Check correct unit of measurement has been recorded * **Complete Task 3 (c)**    + Complete calculations to verify length (A) of item and width (H) of item |  |  |  |

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| **Task** | **Task/Activity Performed** | **S** | **U/S** | **Assessor Comments (Describe the student’s ability in demonstrating the**  **required skills and knowledge)** |
| 4 | Measure item as detailed and record dimensions   * **Complete Task 4 (a)**   + Select appropriate measuring tool   + Measure item to tolerance specified   + Use measuring tools correctly and carefully   + Store tools appropriately * **Complete Task 4 (b)**   + Record dimensions for the item specified   + Ensure item dimensions are recorded within tolerance   + Check correct unit of measurement has been recorded |  |  |  |
| **Task** | **Task/Activity Performed** | **S** | **U/S** | **Assessor Comments (Describe the student’s ability in demonstrating the**  **required skills and knowledge)** |
| 5 | Measure item as detailed and record dimensions   * **Complete Task 5 (a)**   + Select appropriate measuring tool   + Measure item to tolerance specified   + Use measuring tools correctly and carefully   + Store tools appropriately * **Complete Task 5 (b)**   + Record dimensions for the item specified   + Ensure item dimensions are recorded within tolerance   + Check correct unit of measurement has been recorded |  |  |  |

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| **Task** | **Task/Activity Performed** | **S** | **U/S** | **Assessor Comments (Describe the student’s ability in demonstrating the**  **required skills and knowledge)** |
| 6 | Measure item as detailed and record dimensions   * **Complete Task 6 (a)**   + Select appropriate measuring tool   + Measure item to tolerance specified   + Use measuring tools correctly and carefully   + Store tools appropriately * **Complete Task 6 (b)**   + Record dimensions for the item specified   + Ensure item dimensions are recorded within tolerance   + Check correct unit of measurement has been recorded |  |  |  |

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| **Task** | **Task/Activity Performed** | **S** | **U/S** | **Assessor Comments (Describe the student’s ability in demonstrating the**  **required skills and knowledge)** |
| 7 | Measure item as detailed and record dimensions   * **Complete Task 7 (a)**   + Select appropriate measuring tool   + Measure item to tolerance specified   + Use measuring tools correctly and carefully   + Store tools appropriately * **Complete Task 7 (b)**   + Record dimensions for the item specified   + Ensure item dimensions are recorded within tolerance   + Check correct unit of measurement has been recorded * **Revise Tasks 1 to 7 to ensure dimension recordings are correct** |  |  |  |
| **Task** | **Task/Activity Performed** | **S** | **U/S** | **Assessor Comments (Describe the student’s ability in demonstrating the**  **required skills and knowledge)** |
| 8 | Prepare a detailed sketch to specifications   * **Complete Task 8**   + Provide front, top and side view   + Include dimensions for length, width and height   + Include perimeter and area   + Complete a parts list   + Ensure line weights and clarity of drawing conform to specification |  |  |  |