# Topic Test 1 - Metrology

## Criteria

### Unit code, name and release number

MSL924003 - Process and interpret data Release 1

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

MSL60118 Advanced Diploma of Laboratory Operations Release 1

MSL50118 Diploma of Laboratory Technology Release 1

MSL40118 Certificate IV in Laboratory Operations Release 1

MSL30118 Certificate III in Laboratory Skills Release 1

\*\*Amend the qualification box before distributing to the student. The information here should only contain the qualification the student is enrolled in\*\*

## 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: *1 November 2018*

Date modified: *23/04/2019*

For queries, please contact:

*Innovative Manufacturing, Robotics and Science Skills Point*

*TAFE Hamilton Campus*

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This assessment can be found in the: [Learning Bank](https://share.tafensw.edu.au/share/access/searching.do?doc=%3Cxml%2F%3E&in=P7ac4831b-430a-4b8d-8b56-f7b32ed5b9cf&q=&type=standard&sort=rank&dr=AFTER)

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## Assessment instructions

Table 1 Assessment instructions

| Assessment details | Instructions |
| --- | --- |
| **Assessment overview** | The objective of this assessment is to assess your knowledge in the topic of metrology and how it applies to your work. |
| **Assessment Event number** | 1 of 7 |
| **Instructions for this assessment** | This is a written assessment and it will be assessing you on your knowledge of the unit.  This assessment has 13 questions. It is open book and will be conducted as a supervised test.  Assessment feedback will be provided at the end of this document. |
| **Submission instructions** | This assessment will be undertaken in the presence of a teacher or assessor. |
| **What do I need to do to achieve a satisfactory result?** | To achieve a satisfactory result for this assessment all questions must be answered correctly. |
| **What do I need to provide?** | You should bring a pen/s, calculator and your Student Workbook. |
| **Due date/time allowed** | You will have **one hour** to complete this assessment. |
| **Assessment feedback, review or appeals** | Your assessor will provided feedback as set out in the Unit Assessment Guide. Appeals are addressed in accordance with Every Students Guide to Assessment. |

## Short answer

Read each question carefully and write your answer in the space provided.

1. What is **metrology**? Why is it important in laboratory work?

Answer correct ☐ Yes ☐ No

1. Identify the three key **international bodies** that contribute to metrology in a laboratory setting.

Answer correct ☐ Yes ☐ No

1. Identify and list the two **national** bodies associated with the quality of metrology in Australia.

Answer correct ☐ Yes ☐ No

1. a) Define the term **base unit**.

Answer correct ☐ Yes ☐ No

b) In the table below, list all the base units used in the metric system by **physical quantity,** **name** and **symbol** (mass is given as an example).

| Physical quantity | Name | Symbol |
| --- | --- | --- |
| Mass | kilogram | kg |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Answer correct ☐ Yes ☐ No

1. a) What is a **derived** **unit**?

Answer correct ☐ Yes ☐ No

b) List three examples of derived units and **explain** the type of measurement that the unit relates to. *Example: Decibel (related to noise or signal measurements)*

|  |  |
| --- | --- |
| Derived unit | Type of measurement it relates to |
|  |  |
|  |  |
|  |  |

Answer correct ☐ Yes ☐ No

1. What is the difference between **metric** and **imperial** units?

Answer correct ☐ Yes ☐ No

1. Explain why a measurement is considered an **estimate**?

Answer correct ☐ Yes ☐ No

1. What is the difference between **accuracy** and **precision**?

Answer correct ☐ Yes ☐ No

1. a) What is meant by the term **error** in metrology?

Answer correct ☐ Yes ☐ No

b) List four different categories or types of error

Answer correct ☐ Yes ☐ No

1. a) What is **calibration** when applied to metrology?

Answer correct ☐ Yes ☐ No

b) List two pieces of equipment in your lab that need to be calibrated.

Answer correct ☐ Yes ☐ No

1. a) What is **traceability** when applied to metrology?

Answer correct ☐ Yes ☐ No

1. a) What is **repeatability** when applied to metrology?

Answer correct ☐ Yes ☐ No

b) Why is **repeatability** important?

Answer correct ☐ Yes ☐ No

1. Using an example of where you have measured something in the lab (such as pH, temperature or conductivity), identify three **sources of error** that can occur in this measurement process.

Answer correct ☐ Yes ☐ No

## Assessment Feedback

*NOTE: This section* ***must*** *have the assessor signature and student signature to complete the feedback.*

### Assessment outcome

Satisfactory

Unsatisfactory

### Assessor Feedback

Was the assessment event successfully completed?

If no, was the resubmission/re-assessment successfully completed?

Was reasonable adjustment in place for this assessment event?  
*If yes, ensure it is detailed on the assessment document.*

Comments:

### Assessor name, signature and date:

### Student acknowledgement of assessment outcome

Would you like to make any comments about this assessment?

### Student name, signature and date

***NOTE: Make sure you have written your name at the bottom of each page of your submission before attaching the cover sheet and submitting to your assessor for marking.***