# Knowledge Assessment

**Event 1 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: *6 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 knowledge as required to measure items with mechanical measurement devices and carry out associated calculations. |
| **Assessment Event number** | 1 of 2 |
| **Instructions for this assessment** | This is a written assessment and it will be assessing you on your knowledge of the unit. The assessment is closed book.  This assessment is in 4 parts:   1. Multiple choice questions 2. True or False questions 3. Short answer questions 4. Assessment feedback |
| **Submission instructions** | On completion of this assessment, you are required to upload it or hand it to your trainer for marking.  It is important that you keep a copy of all electronic and hardcopy assessments submitted to TAFE and complete the assessment declaration when submitting the assessment. |
| **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?** | Writing equipment |
| **Due date/time allowed** | 1 Hour |
| **Assessment feedback, review or appeals** | Appeals are addressed in accordance with [Assessment Guidelines for TAFE NSW](https://staff.tafensw.edu.au/documents/2017/11/assessment-guidelines-v02.pdf/). |

## Part 1: Multiple choice

Read the question and each answer carefully. Put an X in the table next to your chosen answer.

1. Which of the following tools is most suited to measuring the diameter of a drill bit?

Table 1 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. 300 mm rule |  |
| 1. 150 mm rule |  |
| 1. 150 mm outside callipers |  |
| 1. Vernier callipers |  |

1. Which of the following tools is most suited to measuring the outside diameter on a piece of 300 nominal bore (NB) pipe?

Table 2 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. 300 mm rule |  |
| 1. 8 metre tape measure |  |
| 1. 150 mm outside callipers |  |
| 1. Vernier callipers |  |

3. What is the smallest measurement gradient normally found on a 300 mm steel rule?

Table 3 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. 0.025mm |  |
| 1. 0.25mm |  |
| 1. 0.5mm |  |
| 1. 0.05mm |  |

1. An 8 Metre tape measure has a hook end which is loose to…

Table 4 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. Allow adjustments as the tape measure wears |  |
| 1. Enable measurements to be taken from the inside and outside of the hook |  |
| 1. Lessen the damage to the operators finger if the tape retracts too quickly |  |
| 1. Provide a point for lubrication to be applied |  |

1. Retracting the blade on a measuring tape when it is dirty can:

Table 5 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. Obliterate or damage the markings the tape markings |  |
| 1. Lead to inaccurate readings |  |
| 1. Nothing as they are made of corrosion resistant material |  |
| 1. Shorten the life span of the measuring tape. |  |

1. From the list below select the most appropriate method of non-verbal communication to provide technical information for the manufacture of an item:

Table 6 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. Face to face discussion |  |
| 1. Phone call |  |
| 1. Freehand sketch |  |
| 1. Twitter |  |

1. From the list below select three (3) common uses for sketches in engineering:

Table 7 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. Provides a means of presenting a component or part for fabrication |  |
| 1. Gives clear and concise information from field to factory |  |
| 1. A method of communication between tradespeople |  |
| 1. Provides a formal record for compliance with data assurance procedures |  |

## Part 2: True or false

Read the question and then write **True** or **False** in the space provided.

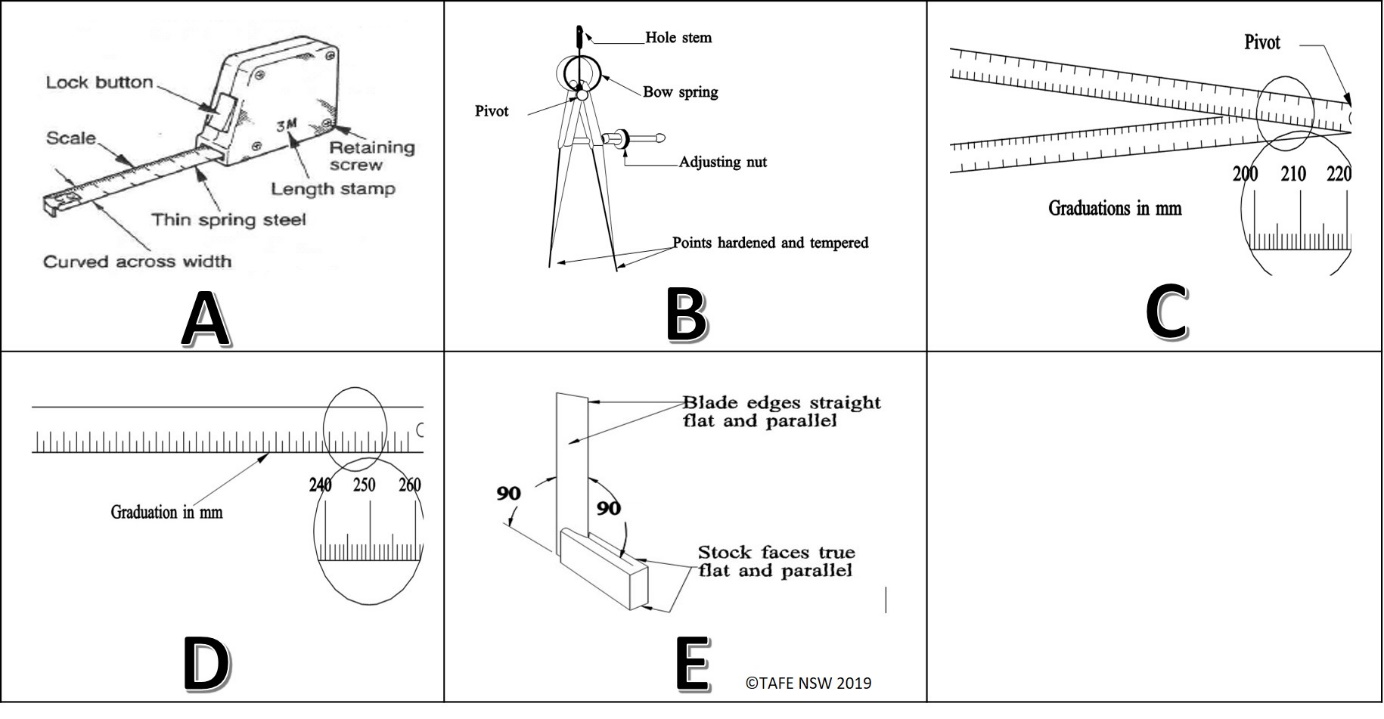
| Question | Write *True* or *False* |
| --- | --- |
| 1. A pressure gauge which gives a negative pressure is known as a vacuum gauge |  |
| 2. Accumulative error is when the final measurement is too long or short |  |
| 3. Geometric development requires the operator to use a calculator to determine bisection points and angles of 900 , 600 , 450 , 300 , 150 |  |
| 4. Kilograms is really a measure of mass not weight |  |
| 5. Newton is a measure of mass |  |
| 6. The hook end of an 8m tape measure should not move |  |
| 7. Measuring tools are designed to withstand exposure to wet weather |  |
| 8. When welding, it is OK to leave measuring tools near the heat source |  |
| 9. Measuring tools should only be used on tasks for which they were designed |  |
| 10. When not in use, measuring tools should be stored in a dry location where other tools will not damage them |  |

## Part 3: Short answer

Read the question carefully. Your answer should be a minimum of 1 word but no longer than 50 words.

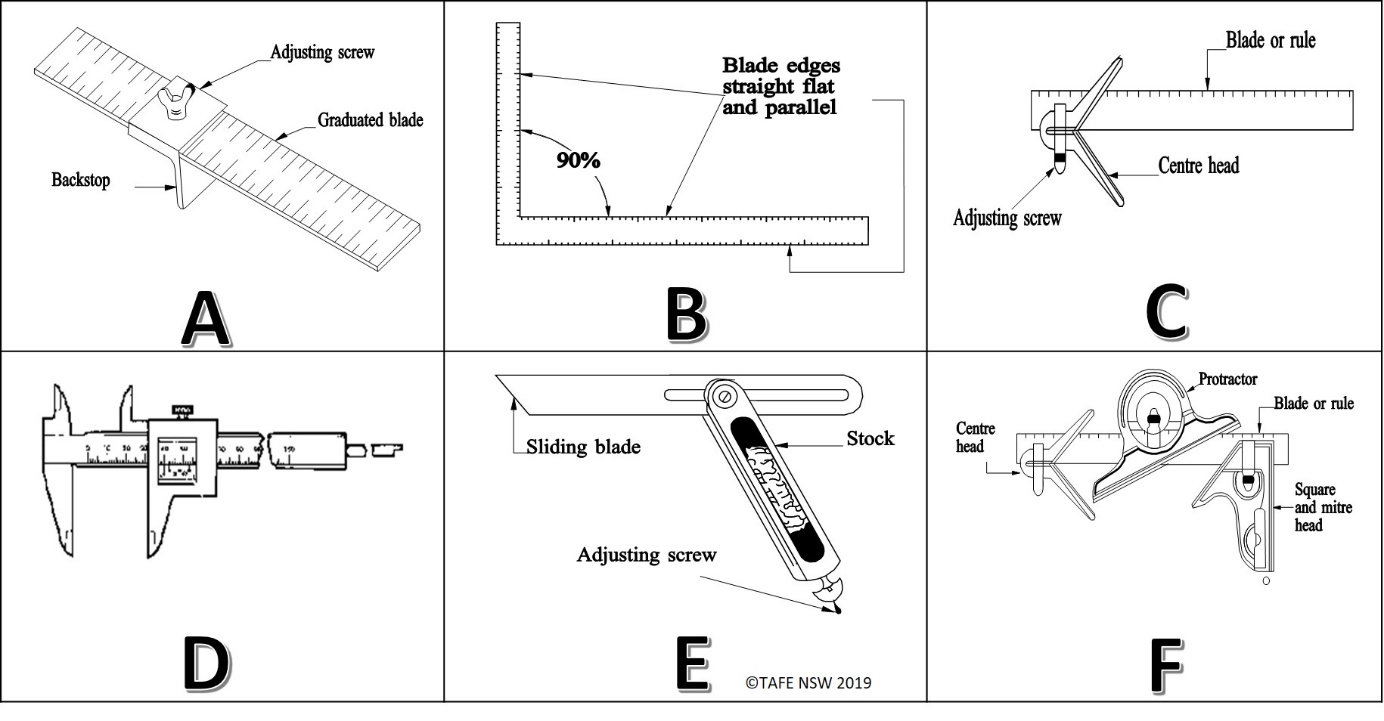
1. In the table below, name the tool shown with the corresponding letter.

E.g. A = Tape measure.



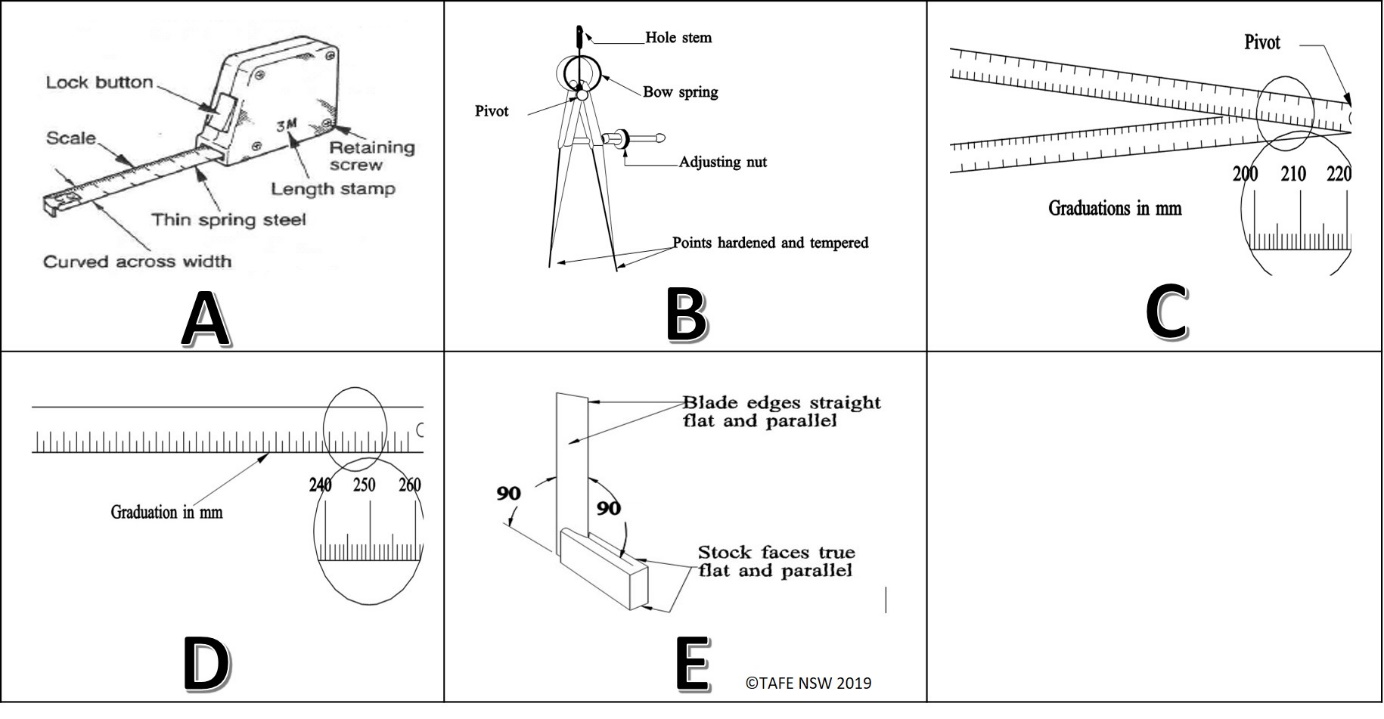
|  |  |
| --- | --- |
| Picture | Tool Name |
| **A** | **Tape measure** |
| B |  |
| C |  |
| D |  |
| E |  |

1. In the table below, name the tool shown with the corresponding letter.



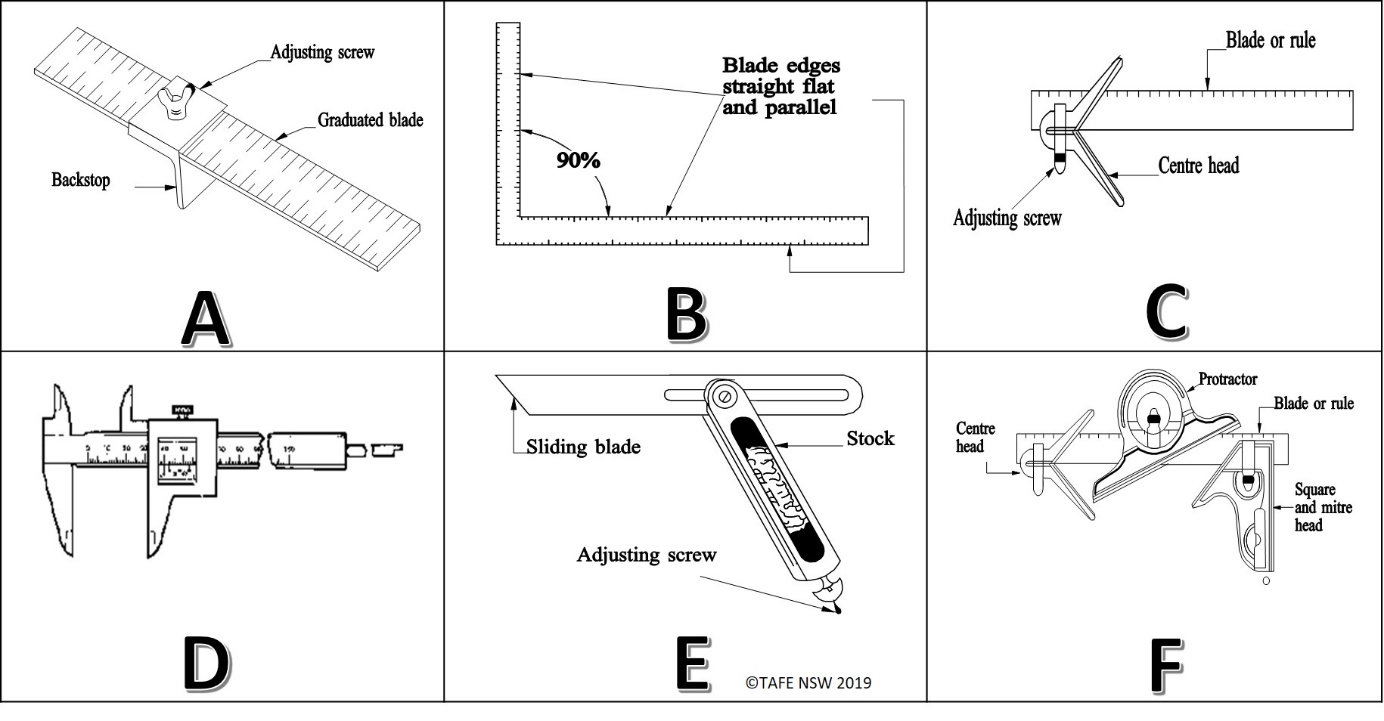
|  |  |
| --- | --- |
| Picture | Tool Name |
| A |  |
| B |  |
| C |  |
| D |  |
| E |  |
| F |  |

1. Using the sketches of measuring tools, complete the table below by indicating the correct name next to their most suited application e.g. picture **A** – Taking measurements over a long distance.



|  |  |
| --- | --- |
| Picture of Measurement tool | Part letter selection from pictures |
| Accurate measurements over the length of the device |  |
| Drawing arcs and circles, transferring measurements and angles from one place to another, geometric construction of angle, geometric division of lines, angles |  |
| Taking measurements over long distances | A |
| Marking square lines off plate edges or existing lines and rolled steel sections |  |
| Accurate measurements over the length of the device and the transfer of angles |  |

1. Using the sketches of measuring tools, complete the table below by indicating the correct name next to their most suited application.

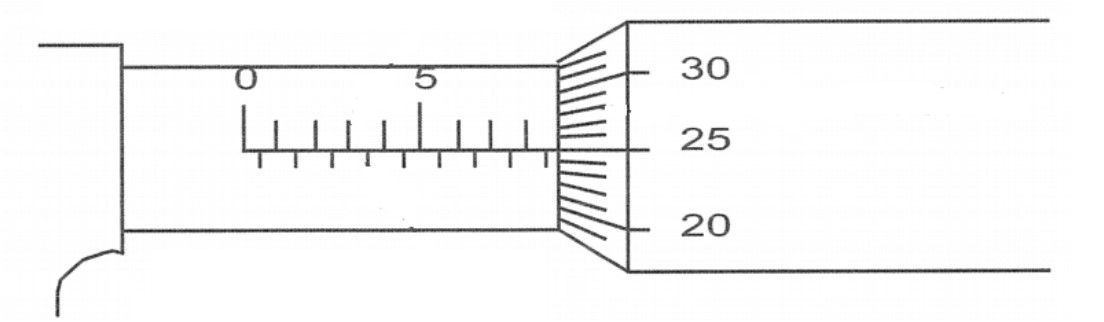


|  |  |
| --- | --- |
| Picture of Measurement tool | Part letter selection from pictures |
| Marking square lines off plate edges or existing lines |  |
| Transferring angles |  |
| High accuracy measuring instrument for measuring inside, outside and depth dimensions |  |
| Locating the centre on circular objects |  |
| Marking lines at any angle and to locate the centre of circular objects |  |
| Accurately locating gauge lines to position items or hole centres. |  |

1. Complete the table below by writing the correct answer next to the questions.

|  |  |
| --- | --- |
| Question | Answer |
| 1. The measurement of length in a straight line from one side of a circle to the other is known as the: |  |
| 1. A measurement taken in a straight line is known as: |  |
| 1. How many millimetres (mm) are there in 1 metre? |  |
| 1. How many meters are there in 1 Kilometre? |  |
| 1. How many millimetres (mm) are there in one inch (1”)? |  |

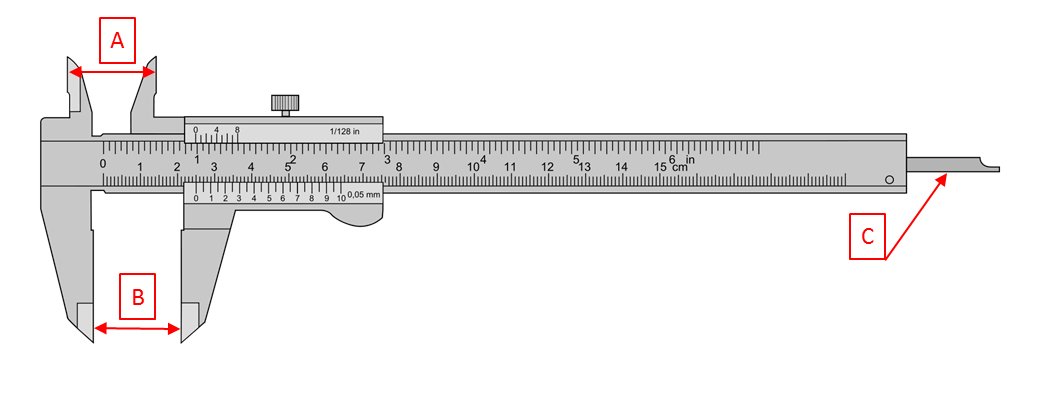
6. The reading on the Micrometre scale as shown in the diagram below is:



Answer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. ~~The reading on the Vernier calliper scale as shown in the diagram below is~~

7. The Vernier calliper shown below has three (3) parts labelled. In the space provided give an example of an item that can be measured with each.



|  |  |
| --- | --- |
| Part | Example of an item that measured |
| A |  |
| B |  |
| C |  |

1. Complete the table below by writing the correct answer next to the questions.

|  |  |
| --- | --- |
| Question | Answer |
| 1. How many millimetres (mm) are there in 10” inches |  |
| 1. Convert 3 ¼ “ inches to millimetres (mm) |  |
| 1. Convert 19.75mm to inches ( round off to 2 decimal points) |  |
| 1. 1,239 + 4,367 + 5,874 = |  |
| 1. 8,329 – 4,367 = |  |
| 1. 127 x 96 = |  |
| 1. 11,176 ÷ 88 = |  |
| 1. Convert 5/8 to a decimal ( round off to 3 decimal places) |  |

1. Drawing A and Drawing B below are showing the same joining plate. Using the dimensions given in Drawing A, calculate and record the dimensions for Drawing B in the space provided.

|  |  |  |
| --- | --- | --- |
| ***Drawing A*** | ***Dimension*** | ***Record Missing Dimension*** |
|  | ***A*** |  |
| ***B*** |  |
| ***C*** |  |
| ***D*** |  |
| ***E*** |  |
| ***F*** |  |
| ***Drawing B*** | ***G*** |  |
| ***H*** |  |
| ***I*** |  |
| ***J*** |  |
| ***K*** |  |
|  | |

1. Using the drawing of the joining plate in question 9 above, calculate the length required to mark out 40 off joining plates from a 6 metre length of flat bar.

Answer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Using the answer from Question 9 above. What would be the length of offcut left from the 6 metre length of flat bar?

Answer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. In the table below mark a letter X for three (3) points that are to be considered when storing measuring devices:

|  |  |
| --- | --- |
| Storage consideration points | Place X in box for considerations |
| Store each measuring device in its own case or box to protect it from damage |  |
| Stack all measuring devices together on top of each other in the bottom corner of a toolbox |  |
| Store all measuring devices in a dry place away from corrosive chemicals or solvents |  |
| Allocated pockets in tool bags for measuring devices to be stored individually away from heavy tools |  |

1. In the table below circle in the yes or no box to indicate if the listed measuring tool can be routinely adjusted

|  |  |  |  |
| --- | --- | --- | --- |
| Measuring tool | Tick correct response Check box | | |
| **YES** | **NO** | |
| Plate Square |  | |  |
| Combination Square |  | |  |
| Block Square |  | |  |
| Line of Chords |  | |  |
| 300mm Rule |  | |  |

1. List four (4) safe practices you must follow when using marking tools.

|  |
| --- |
|  |
|  |
|  |
|  |

1. Using the planning and sequencing job steps below, place a number from 1 to 5 in each box on the left to reflect the correct order measurement operations are carried out.

|  |  |
| --- | --- |
| Planning and sequencing | |
|  | |
| *4* | Check measurements are taken twice for accuracy. |
|  | Store measuring devices in accordance with manufacturers' specifications or standard operating procedures. |
|  | Selecting the appropriate measuring device for the given measuring task. |
| *1* | Fill out TAFE risk identification tool, ensure correct PPE is worn for the environment and safe work practices and procedures are adhered to. |
| *3* | Take measurements with the selected device using the appropriate technique accurately to the finest graduation. |

1. (RK 5) In the space below explain the process for zeroing a Vernier calliper.

|  |
| --- |
|  |

## Part 4: 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.***