

# Engineering Skills 2019 v1.0

Sample assessment instrument

November 2018

## Practical demonstration — Working cooperatively in engineering workplaces

### Information for teachers

This sample has been compiled by the QCAA to help and support teachers in planning and developing assessment instruments for individual school settings.

Schools develop internal assessments for each Applied subject, based on the learning and assessment described in the approved study plan.

### Purpose of the practical demonstration

This technique assesses the practical application of a specific set of teacher-identified production skills and procedures. Responses are completed individually in a set timeframe.

Further information about the specifications for this assessment technique can be found in the Assessment techniques section of the Engineering Skills syllabus.

### Assessment dimensions

This assessment instrument is used to determine student achievement in the following dimensions:

- Knowing and understanding
- Analysing and applying
- Producing and evaluating.

Not every objective from each dimension needs to be assessed.

<b>Subject</b>	Engineering Skills
<b>Technique</b>	Practical demonstration — Working cooperatively in engineering workplaces
<b>Unit number and module number and name</b>	<b>Unit: 4</b> <b>Module: 4. Working cooperatively in engineering workplaces</b>

<b>Conditions</b>	<b>Units 3–4</b>
<b>Practical demonstration</b>	Manufacture a set of two hinges using specifications
<b>Further information</b>	
<b>Duration (including class time)</b>	3 weeks
<b>Individual/group</b>	Individual
<b>Resources available</b>	Access to manufacturing space, tools and machines Detailed drawings and technical information provided by the teacher
<b>Context</b>	
<p>As a class, you have been exploring the skills required to work cooperatively in engineering workplaces. Fitting and machining refers to the manufacture, maintenance and repair of mechanical plant machinery and equipment to operational standards. A range of tools and joining procedures are used to assemble components.</p> <p>Sheet metal working refers to the cutting, forming and joining of sheet metal to manufacture products. Production procedures predominantly involve cutting, folding, bending, rolling, stretching, riveting and spot welding.</p>	
<b>Task</b>	
Individually, manufacture a set of two hinges using specifications.	
<b>To complete this task:</b>	
<p>Select, apply and demonstrate fundamental production skills to complete the engineering demonstration, including:</p> <ul style="list-style-type: none"> <li>• interpreting detailed drawings and technical information</li> <li>• measuring and marking dimensions and reference lines on sheet metal</li> <li>• using fitting and machining equipment to mill, grind and drill components</li> <li>• planning the production processes, considering any adaptations needed</li> <li>• cleaning and maintaining work areas to ensure a safe working environment</li> <li>• communicating evidence of the completed sheet metal hinges using annotated photographs.</li> </ul>	
<b>Checkpoints</b>	
<input type="checkbox"/> Term [X] Week [X]/[X]: Receive feedback on marking out, fitting and machining of sheet metal work prior to assembly	
<input type="checkbox"/> [Due date]: Submit two hinges and photographic evidence (with annotations)	

**Authentication strategies**

Your teacher will use ways to check that the work you are assessed on is your own work.

- Your teacher will observe you completing work in class.
- Submit the declaration of authenticity.
- Your results may be cross-marked by a teacher from another class.

## Stimulus

Detailed drawings and technical information will be provided by the teacher, e.g.

- orthographic views of the butt hinges
- isometric pictorials of the butt hinges
- assembly drawings or exploded views of the butt hinges
- technical information from industry-standard drawings and documents.

## Instrument-specific standards matrix

	Standard A	Standard B	Standard C	Standard D	Standard E
Knowing and understanding	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• consistent and proficient demonstration of fundamental production skills</li> <li>• informed and accurate interpretation of drawings and technical information.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• effective demonstration of fundamental production skills</li> <li>• effective interpretation of drawings and technical information.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• demonstration of fundamental production skills</li> <li>• interpretation of drawings and technical information.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• partial demonstration of aspects of fundamental production skills</li> <li>• statements about drawings and technical information.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• minimal demonstration of aspects of fundamental production skills</li> <li>• inconsistent statements about drawings and technical information.</li> </ul>
Analysing and applying	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• discerning selection and proficient application of production skills and procedures in manufacturing tasks</li> <li>• coherent and succinct use of visual representations, language conventions and features to communicate for particular purposes.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• relevant selection and purposeful application of production skills and procedures in manufacturing tasks</li> <li>• effective use of visual representations, language conventions and features to communicate for particular purposes.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• selection and application of production skills and procedures in manufacturing tasks</li> <li>• use of visual representations, language conventions and features to communicate for particular purposes.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• partial application of aspects of production skills and procedures in manufacturing tasks</li> <li>• vague use of visual representations, language conventions and features to somewhat communicate.</li> </ul>	<p>The student work has the following characteristics:</p> <ul style="list-style-type: none"> <li>• minimal application of aspects of some production skills and procedures in manufacturing tasks</li> <li>• unclear use of visual representations, language conventions and features that impedes communication.</li> </ul>

	Standard A	Standard B	Standard C	Standard D	Standard E
Producing and evaluating	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:
	<ul style="list-style-type: none"> <li>thorough planning and discerning adaptation of production processes</li> <li>proficient creation of products that meet specifications.</li> </ul>	<ul style="list-style-type: none"> <li>effective planning and adaptation of production processes</li> <li>methodical creation of products that meet specification with minor variations.</li> </ul>	<ul style="list-style-type: none"> <li>planning and adaptation of production processes</li> <li>creation of products from specifications.</li> </ul>	<ul style="list-style-type: none"> <li>partial planning of production processes</li> <li>creation of incomplete products with obvious variation from specifications.</li> </ul>	<ul style="list-style-type: none"> <li>minimal planning of some production processes</li> <li>creation of aspects of products.</li> </ul>