

Sample assessment material

Cambridge National in

Engineering Manufacture

**Cambridge OCR Level 1/Level 2 Cambridge National in
Engineering Manufacture**

J823

R015: Manufacturing a one-off product

Version 5.0

ocr.org.uk/cambridgenationals

Introduction

This is sample assessment material (SAM). It is an example Cambridge OCR-set assignment that we publish alongside a new specification to help illustrate the intended style and tasks of our set assignments.

We also produce two further specific resources to support you with using this SAM:

- An assessment story where we explain the research we have undertaken during the development of the qualification and how consultation with teachers, students and schools has helped shape our assessment approach.
- A student guide to NEA assignments in which we provide a summary for your students of key points about their Cambridge OCR-set assignments, including the importance of avoiding plagiarism.

Summary of updates

Section	Change	Version	Date
Tasks 1-5 You must/Advice sections	Updated to clarify what students are required to do and what is advisory for each task in the sample assignment.	5.0	June 2026

Cambridge OCR-set Assignment

Sample Assessment Material

Cambridge OCR Level 1/Level 2 Cambridge National in Engineering
Manufacture Sample Set Assignment

Unit R015: Manufacturing a one-off product

This is a sample set assignment which should only be used for practice.

This assignment **must not** be used for live assessment of students.

The live assignments will be available on our secure website, 'Teach Cambridge'.

The Cambridge OCR administrative codes associated with this unit are:

- unit entry code R015
- certification code J823

The regulated qualification number associated with this unit is:

603/7087/7

Duration: Approximately 10 - 12 hours

ALL OF THIS MATERIAL MAY BE PHOTOCOPIED. Any photocopying will be done under the terms of the Copyright Designs and Patents Act 1988 solely for the purposes of assessment.

Contents

Information for teachers Using this assignment	3
Scenario for the assignment	4
Your tasks and marking grids	5
Task 1 – Planning the manufacture	5
Task 2 – Risk assessment.....	7
Task 3 – Measuring and marking out.....	8
Task 4 – Machining	9
Task 5 – Use tools and equipment	10
Appendix 1	11
Working Drawing of the Clamp	11
Marking criteria words	12
Teacher Observation Record	15
Teacher Observation Record	16
Teacher observation record guidance notes	17
Risk Assessment Template	18

Information for teachers

Using this assignment

You must:

- familiarise yourself with the Assessment Guidance relating to the tasks. This is with the unit content in Section 4 of the [Specification](#).
- read and understand **all** the rules and guidance provided in Section 6 of the [Specification](#) **before** your students complete and you assess the set assignment.
- make sure that completion and assessment fully adhere to the rules and guidance provided in Section 6 of the [Specification](#).
- give students the [Engineering Manufacture Student guide to NEA assignments](#) before they start the assignment.
- allow students approximately 10-12 guided learning hours (GLH) to complete all tasks.
- complete the [Teacher Observation Record](#) provided on page 15 for Task 4 and the [Teacher Observation Record](#) provided page 16 for Task 5. You must adhere to the [guidance](#) given on page 17 when completing them.

You must not:

- change or modify this assignment in any way.

Additional information:

- the aluminium channel listed in the working drawing is a standard off-the-shelf product that comes in a $\frac{1}{4}$ (6.4) mm thickness.
- a steel channel may be used as an alternative to aluminium.

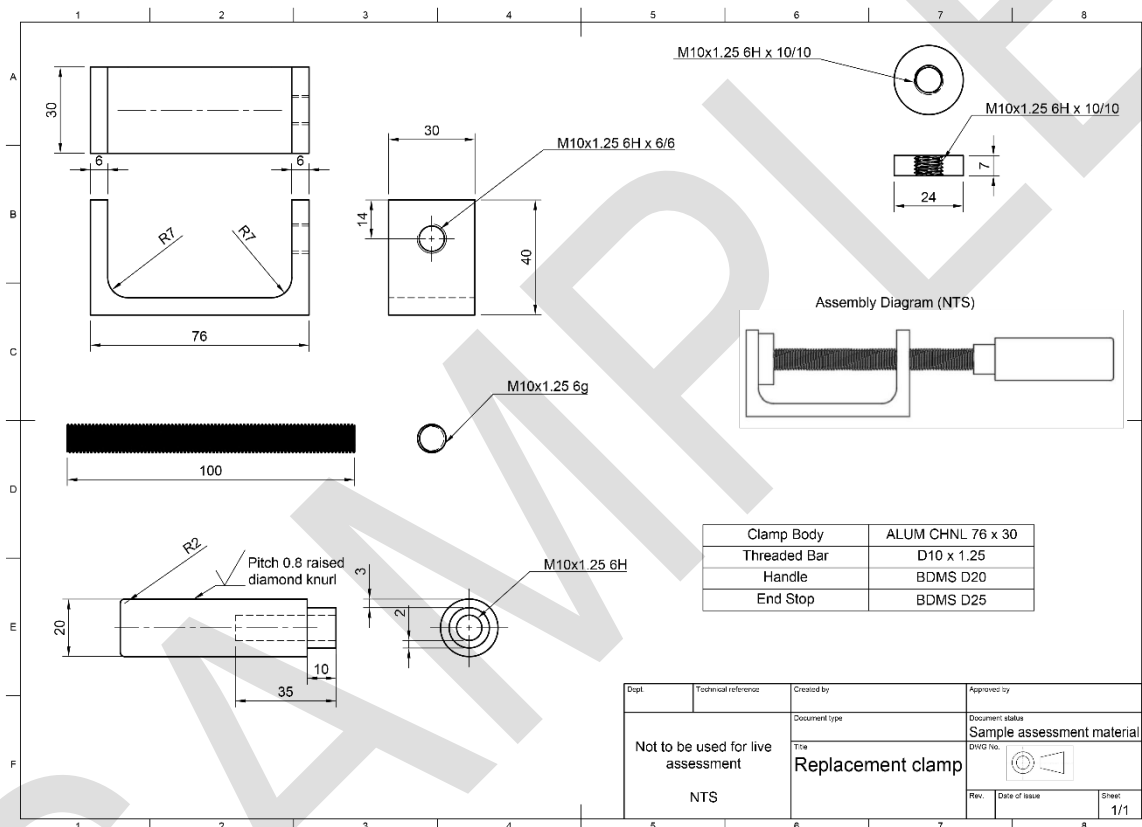
Scenario for the assignment

Replacement clamp

You are a production engineer in an engineering company. You have been asked to make a replacement clamp needed to support production activities.

The original clamp was a one-off item, designed so that the end slots into a jig, holding it in place. Unfortunately, this clamp was accidentally damaged. The replacement is urgently needed to allow production activities to continue.

A working drawing of the clamp is shown below and enlarged in Appendix 1.



Important Advice:

- Read through all the tasks carefully, so that you know what you will need to do to complete this assignment.
- Look at the marking criteria grids to see how the tasks will be marked. Your teacher can explain the marking criteria if you need help.
- You will need to use relevant skills/knowledge/understanding from other units you have studied in this qualification.
- You can use the risk assessment provided for Task 2. Your teacher can give you a Word version to use.

Your tasks and marking grids

Task 1 – Planning the manufacture

Topic Areas 1.1 and 1.2 are assessed in this task.

A working drawing for the clamp is provided in Appendix 1. You **must** use this to identify the information needed to make the clamp.

You **must** prepare a production plan that includes:

- the materials needed.
- the processes, tools and equipment required.
- the sequence in which the operations must be carried out.
- any health and safety considerations.
- actions needed for quality control.

Total marks for Task 1: 14 marks

Advice

- Identify all the materials, processes, tools and equipment that you will need.
- Think about the order in which things will need to be done.
- Make sure your plan indicates any safety considerations.

Topic Area 1.1, 1.2: Interpret an engineering drawing and prepare a production plan

MB1: 1–5 marks	MB2: 6-10 marks	MB3: 11-14 marks
<p>A basic plan that includes information that could be used when making the product, however additional content would be required to facilitate manufacture.</p> <p>A few of the materials needed are identified.</p> <p>Few suitable processes, tools and equipment are identified.</p> <p>Few health and safety issues have been considered.</p> <p>At least one quality control measure has been identified.</p>	<p>An adequate plan that includes information that could be used when making the product to facilitate manufacture.</p> <p>Some of the materials needed are identified.</p> <p>Some of the processes, tools and equipment are suitable and presented in a workable sequence.</p> <p>Some health and safety issues have been considered.</p> <p>Some quality control measures identified.</p>	<p>A comprehensive plan that includes all the information required to facilitate manufacture of the product.</p> <p>All materials needed are accurately identified.</p> <p>All processes, tools and equipment are appropriate and presented in a logical sequence.</p> <p>All health and safety issues have been considered.</p> <p>Appropriate quality control measures identified to support the manufacture of an effective outcome.</p>

If your work does not meet any Mark Band 1 criteria, you will be awarded zero marks for this task.

Task 2 – Risk assessment

Topic Area 1.3 is assessed in this task.

You must prepare a risk assessment for the process used to make the handle for the clamp.

The risk assessment **must** include:

- the potential hazards.
- the risks (the probability of each hazard occurring).
- the control measures.

Total marks for Task 2: 6 marks

Advice

- You should include any potential hazards in your risk assessment.
- Make sure that your risk assessment identifies the risks and control measures required for every potential hazard you identify.
- You can use the template we provide on page 18 for your risk assessment.

Topic Area 1.3: Risk assessment

MB1: 1–2 marks	MB2: 3-4 marks	MB3: 5-6 marks
At least one potential hazard is identified and the risk of occurrence estimated.	Some potential hazards are identified and the risk of occurrence for each is estimated.	All of the potential hazards of the process are identified and the risk of occurrence for each is estimated.
At least one control measure has been identified.	Appropriate control measures identified for some of the hazards.	Appropriate control measures identified for all of the hazards.

If your work does not meet any Mark Band 1 criteria, you will be awarded zero marks for this task.

Task 3 – Measuring and marking out

Topic Areas 2.1 and 2.2 are assessed in this task.

You need to measure and mark out the parts required for your clamp.

You **must**:

- select and safely use equipment to measure and mark out the parts of your clamp.
- take images of the marked out materials.
- use annotated photos or a video to show the measuring and marking out of the different parts.

Total marks for Task 3: 12 marks

Topic Areas 2.1 and 2.2: Measuring and marking out

MB1: 1–4 marks	MB2: 5-8 marks	MB3: 9-12 marks
<p>Use at least one item of measuring equipment.</p> <p>Safely use a few items of marking out equipment.</p> <p>Dependent upon assistance or help from other sources to measure and mark out accurately.</p>	<p>Select and use some appropriate items of measuring equipment.</p> <p>Select and safely use marking out equipment for some of the features.</p> <p>Accurate measuring and marking out is carried out with some assistance or help from other sources.</p>	<p>All measuring equipment is selected and used appropriately.</p> <p>Select and safely use appropriate marking out equipment for all of the features.</p> <p>Able to accurately measure and mark out independently.</p>

If your work does not meet any Mark Band 1 criteria, you will be awarded zero marks for this task.

Task 4 – Machining

Topic Area 3.1 is assessed in this task.

You need to manufacture the handle for your clamp.

You **must**:

- safely use a manually controlled machining process to manufacture the handle for your clamp.
- take images of the safe use of the machining process and the completed handle. You should add labels pointing out important features and practices.
- use annotated photos or a video to show step by step how the handle was produced safely.
- ask your teacher to complete a Teacher Observation Record for this task.

Total marks for Task 4: 14 marks

Advice

- Refer to your risk assessment when manufacturing the handle for your clamp to ensure that you work safely.

Topic Area 3.1: Manually controlled machining processes

MB1: 1–5 marks	MB2: 6-10 marks	MB3: 11-14 marks
<p>Dependent upon reminders of safety requirements in order to work safely.</p> <p>Basic application of understanding and skills to partly achieve the intended result, but it would not be useable without further input/work.</p> <p>Dependent upon assistance or help from other sources to use machinery to successfully manufacture the required part.</p>	<p>Worked safely with some reminders of safety requirements.</p> <p>Adequate application of understanding and skills to produce the intended result in a way that would be useable for its purpose.</p> <p>Machinery is used to successfully manufacture the required part with some assistance or help from other sources.</p>	<p>Worked safely at all times without additional instruction.</p> <p>Effectively applies understanding and skills to successfully produce the intended result in a way that would be fit-for-purpose.</p> <p>Able to use machinery to successfully manufacture the required part independently.</p>

If your work does not meet any Mark Band 1 criteria, you will be awarded zero marks for this task.

Task 5 – Use tools and equipment

Topic Areas 3.2 and 3.3 are assessed in this task.

You need to manufacture the other parts for your clamp and assemble the finished item.

You **must**:

- safely use tools and processes to manufacture the other parts for your clamp.
- assemble your finished product.
- take images of the safe use of the tools and the assembled clamp. You should add labels pointing out important practices and features.
- ask your teacher to complete a teacher observation record for this task.

Total marks for Task 5: 14 marks

Advice

- Refer to your risk assessment when manufacturing the other parts for your clamp to ensure that you work safely.
- Use annotated photos or a video to show step by step how the other parts for your clamp were produced safely.

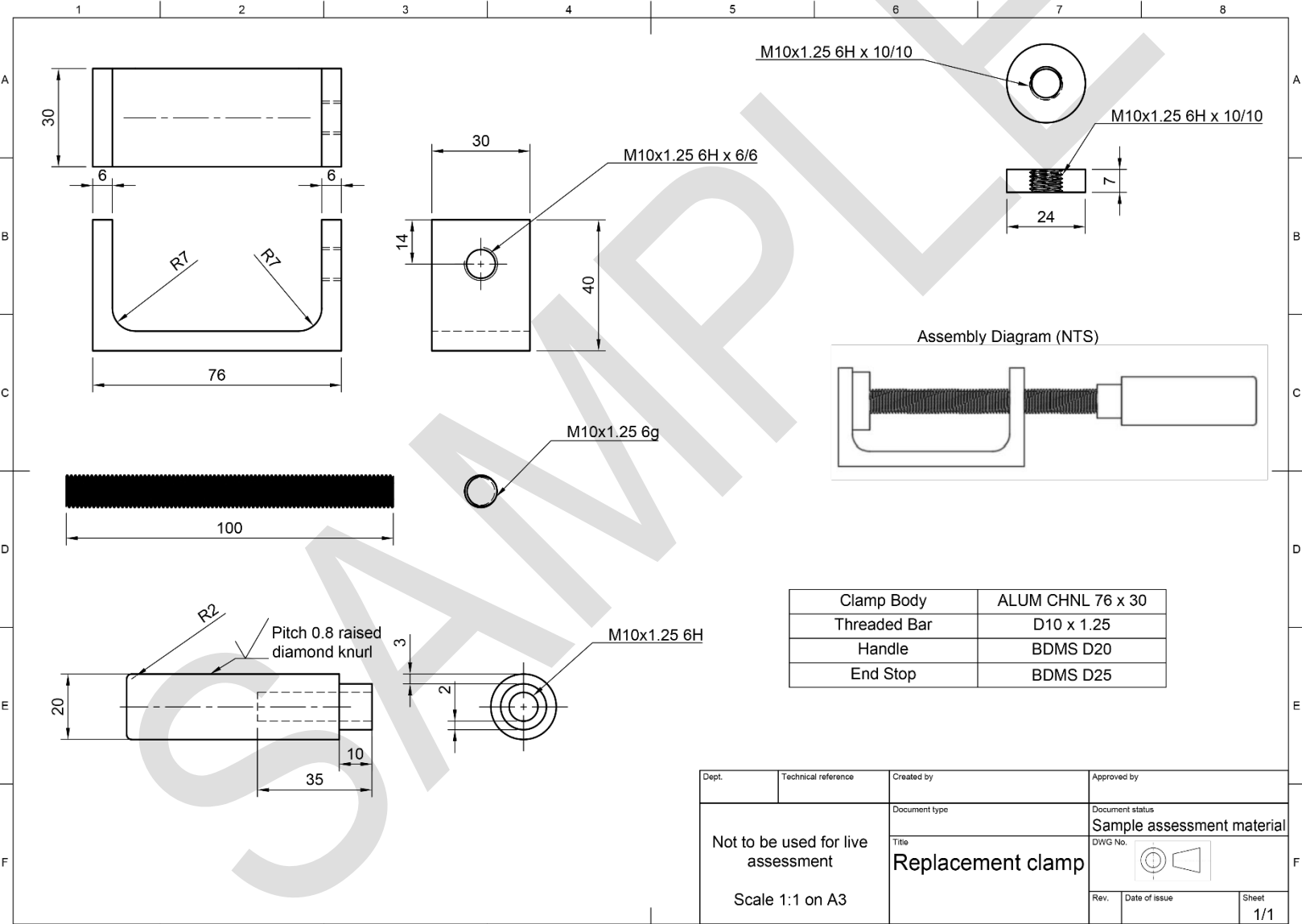
Topic Areas 3.2 and 3.3: Tools and equipment and joining techniques

MB1: 1–5 marks	MB2: 6-10 marks	MB3: 11-14 marks
<p>Dependent upon reminders of safety requirements in order to work safely.</p> <p>Basic application of understanding and skills to partly achieve the intended result, but it would not be useable without further input/work.</p> <p>Dependent upon assistance or help from other sources to use tools and equipment to successfully manufacture the part(s) and assemble the product.</p>	<p>Worked safely with some reminders of safety requirements.</p> <p>Adequate application of understanding and skills to produce the intended result in a way that would be useable for its purpose.</p> <p>Tools and equipment are used to successfully manufacture the part(s) and assemble the product with some assistance or help from other sources.</p>	<p>Worked safely at all times without additional instruction.</p> <p>Effectively applies understanding and skills to successfully produce the intended result in a way that would be fully fit-for-purpose.</p> <p>Able to use tools and equipment independently to successfully manufacture the part(s) and assemble the product.</p>

If your work does not meet any Mark Band 1 criteria, you will be awarded zero marks for this task.

Appendix 1

Working Drawing of the Clamp



Marking criteria words

The tables below show the descriptor words that will be used in the NEA Marking Criteria grids. They explain the type of evidence that you should expect to see to meet each descriptor word.

Mark Band (MB1) Words:

Word	Meaning
Basic	<ul style="list-style-type: none"> • Work includes the minimum required. It is a starting point but is simplistic and not developed. • Understanding and skills are applied in a way that partly achieves the wanted or intended result, but it would not be useable without further input or work.
Brief/Briefly	<ul style="list-style-type: none"> • Work includes a small number of relevant facts or concepts but lacks detail, contextualisation or examples.
Dependent	<ul style="list-style-type: none"> • The student can perform a task when given regular assistance or help
Few	<ul style="list-style-type: none"> • Work produced is restricted or narrow. It includes less than half of the information or examples expected for a full response.
Inefficient	<ul style="list-style-type: none"> • Outputs are produced but with great expense or effort because of poor organisation or design and not making the best use of available resources.
Limited	<ul style="list-style-type: none"> • Work produced is restricted in range or scope and includes only some of the information required. It evidences partial rather than full understanding. • Work produced is a starting point rather than a developed process, concept or output.
Minimal	<ul style="list-style-type: none"> • Includes very little in amount or quantity required.
Simple	<ul style="list-style-type: none"> • Includes a small number of relevant parts, which are not related to each other.
Superficial	<ul style="list-style-type: none"> • Work completed lacks depth and detail.

Mark Band (MB2) Words:

Word	Meaning
Adequate(ly)	<ul style="list-style-type: none"> • Work includes the appropriate number of relevant facts or concepts but does not include the full detail, contextualisation or examples.
Assisted	<ul style="list-style-type: none"> • The student can perform a task with occasional assistance or help.
Part(ly)/Partial	<ul style="list-style-type: none"> • To some extent but not completely. • Work produced is inclusive in range and scope. It evidences a mainly developed application of understanding, performance or output needed. • Work produced results in a process, concept or output that would be useable for its purpose.
Some	<ul style="list-style-type: none"> • Work produced is inclusive but not fully comprehensive. It includes over half the information or examples expected for a full response.
Sound	<ul style="list-style-type: none"> • Valid, logical, shows the student has secured most of the relevant understanding, but points or performance are not fully developed. • Applies understanding and skills to produce the wanted or intended result in a way that would be useable.

Mark Band (MB3) Words:

Word	Meaning
Accurate(ly)	<ul style="list-style-type: none"> Acting or performing with care and precision. Correct in all details.
All	<ul style="list-style-type: none"> Work produced is fully comprehensive and wide-ranging. It includes almost all, or all the information or examples expected for a full response.
Clear(ly)	<ul style="list-style-type: none"> Focused and accurately expressed, without ambiguity.
Complex	<ul style="list-style-type: none"> Includes many relevant parts, all of which relate to each other logically.
Comprehensive(ly)	<ul style="list-style-type: none"> The work produced is complete and includes everything required to show depth and breadth of understanding. Applies the understanding and skills needed to successfully produce the wanted or intended result in a way that would be fully fit-for-purpose.
Consistent(ly)	<ul style="list-style-type: none"> A level of performance which does not vary in quality over time.
Critical	<ul style="list-style-type: none"> Objective analysis and evaluation in order to form: a judgement, evaluation of the evidence or effective trouble shooting/fault finding.
Detailed	<ul style="list-style-type: none"> Gives point by point consideration of all the key information.
Effective	<ul style="list-style-type: none"> Applies the skills required to the task and is successful in producing the desired or intended result. The work produced is effective in relation to a brief.
Efficient	<ul style="list-style-type: none"> Able to produce results or outputs with the minimum expense or effort, because of good organisation or design and making the best use of available resources.
Full(y)	<ul style="list-style-type: none"> Work produced is comprehensive in range and scope. It evidences a fully developed application of understanding, performance or output needed. Work produced results in a process, concept or output that would be fully fit-for-purpose.
Independent(ly)	<ul style="list-style-type: none"> The student can perform a task without assistance or reliance on others
Justify/Justified	<ul style="list-style-type: none"> The reasons for doing something are explained in full.
Most(ly)	<ul style="list-style-type: none"> Includes nearly all of what is expected to be included.
Wide (ranging)	<ul style="list-style-type: none"> Includes many relevant details, examples or contexts; all of which are fully detailed, contextualised or exemplified.

Teacher Observation Record

Please read the **guidance notes** on page 17 before completing this form.

Student name:	
Qualification:	Cambridge OCR Level 1/Level 2 Cambridge National in Engineering Manufacture
Unit number and title:	Unit number: R015
	Unit title: Manufacturing a one-off product
Activity observed:	Task title: Machining
	Task number: 4
Date activity completed:	
Additional evidence attached:	

TEACHER SECTION:	
How did the student complete the activity? Your response must provide details of what the student did and how this relates to the relevant marking criteria.	
STUDENT SECTION:	
I agree with my teacher's description of how I completed this activity.	Yes <input type="checkbox"/>
Additional student comments:	
Student signature	Date: (DD/MM/YYYY)
Teacher name:	
Teacher signature:	Date: (DD/MM/YYYY)

Teacher Observation Record

Please read the **guidance notes** on the following page before completing this form.

Student name:	
Qualification:	Cambridge OCR Level 1/Level 2 Cambridge National in Engineering Manufacture
Unit number and title:	Unit number: R015
	Unit title: Manufacturing a one-off product
Activity observed:	Task title: Use tools and equipment
	Task number: 5
Date activity completed:	
Additional evidence attached:	

TEACHER SECTION:	
<p>How did the student complete the activity? Your response must provide details of what the student did and how this relates to the relevant marking criteria.</p>	
STUDENT SECTION:	
I agree with my teacher's description of how I completed this activity.	Yes <input type="checkbox"/>
Additional student comments:	
Student signature	Date: (DD/MM/YYYY)
Teacher name:	
Teacher signature:	Date: (DD/MM/YYYY)

Teacher observation record guidance notes

The class teacher and student being observed are responsible for completing this form.

The Teacher Observation Record is used by the teacher to detail their observation of a student completing an activity. In order to provide sufficient evidence, the completed form must give contextualised details of what the student did and how this relates to the marking criteria. Simply providing statements from the marking criteria is not acceptable. The evidence provided must be individual to the student.

The Teacher Observation Record is also used to show that the student agrees with the teacher's assessment of this activity.

The information given by the teacher must be shared with the student for the student to agree, or otherwise. If the student does not agree with the teacher's comments and links to the marking criteria, they must have the chance to talk about these further with the teacher to reach an agreed outcome **before** the work is submitted for moderation.

Both the teacher and student must sign and date the form to provide evidence of this agreement.

Additional evidence of the student completing the activity must also be provided with the form. The types of additional evidence that are acceptable are detailed in Tasks 4 and 5.

Teacher observation records must:

- describe what the teacher observed the student doing
- include how well the activity was completed and the reasons for this evaluation
- include confirmation from the student that they agree with the comments and reasons
- be accompanied by additional evidence as required in Tasks 4 and 5

Teacher observation records must not:

- be a simple repeat of the grading criteria
- be completed by anyone but the teacher observing the activity and the student completing the activity
- be written by the student for the teacher to sign
- contain just a list of skills
- be used to evidence the achievement of a whole unit or task in isolation

Risk Assessment Template

Risk assessment for _____

The Potential Hazards
Risks
Control Measures

Tell us what you think

Your feedback plays an important role in how we develop, market, support and resource qualifications now and into the future. We want you and your students to enjoy and get the best out of our qualifications and resources, but to do that we need your honest opinions to tell us whether we're on the right track or not.

You can email your thoughts to support@ocr.org.uk or visit our [feedback page](#) to learn more about how you can help us improve our qualifications.



Designing and testing in [collaboration with teachers](#) and students



Helping young people develop an [ethical view of the world](#)



Equality, diversity, inclusion and belonging (EDIB) are [part of everything we do](#)

Contact the team at:

 **01223 553998**

 **ocr.org.uk**

To stay up to date with all the relevant news about our qualifications, register for email updates at ocr.org.uk/updates

Visit our Online Support Centre at support.ocr.org.uk

Sign up for [Teach Cambridge](#) to access your planning, teaching and assessment support material.



Cambridge OCR is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

Cambridge OCR is a Company Limited by Guarantee and an exempt charity. Registered in England.

Registered office: The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA. Registered company number: 3484466.

We operate academic and vocational qualifications regulated by Ofqual, Qualifications Wales and CCEA as listed in their qualifications registers.

We are committed to providing a fully accessible experience across all our products, platforms, and websites. Find out more about our [accessibility standards](#).

© Cambridge OCR 2026. All rights reserved. We retain the copyright on all our publications. However, our registered centres are permitted to copy and distribute our material for their own internal use, in line with any specific restrictions detailed in the publication. Find out more about our [copyright policies](#).

We update our publications regularly so please check you have the most up-to-date version.

We cannot be held responsible for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and do not guarantee that any content on such websites is, or will remain, accurate or appropriate.

When we update our specifications, you'll see a new version number and a summary of the changes. While we do our best to reflect these changes in all associated resources on [Teach Cambridge](#), if you notice any discrepancies, please refer to the latest specification on our website and [let us know](#).

Our resources do not represent any teaching method we expect you to use. We cannot be held responsible for any errors or omissions in our resources.