

Live Assessment Material

Set Assignment

OCR Level 1/2 Cambridge National Certificate in Engineering Design

R108: 3D design realisation

Set A

Please note:

This OCR set assignment is to be used to provide evidence for the unit identified above. Alternatively, centres may 'tailor' or modify the assignment within permitted parameters (see Information for Teachers). It is the centre's responsibility to ensure that any modifications made to this assignment allow learners to show that they can meet all of the learning outcomes and provide sufficient opportunity for learners to demonstrate achievement across the full range of marks.

INSTRUCTIONS TO TEACHERS

The OCR administrative codes associated with this unit are:

- unit entry code R108
- certification codes Certificate J841

The qualification numbers associated with this unit are:

- unit reference number M/505/3537
- qualification numbers Certificate 601/1411/3

Duration: Approximately 10-12 hours

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Version 3 July 2020 - Set A added to Front Cover, unit reference number corrected, Sentence on witness statement added to teacher guidance for Task 2 (page 9).

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Set Assignment: Information for Learners

OCR Level 1/2 Cambridge National Certificate in Engineering Design

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Scenario for the Assignment

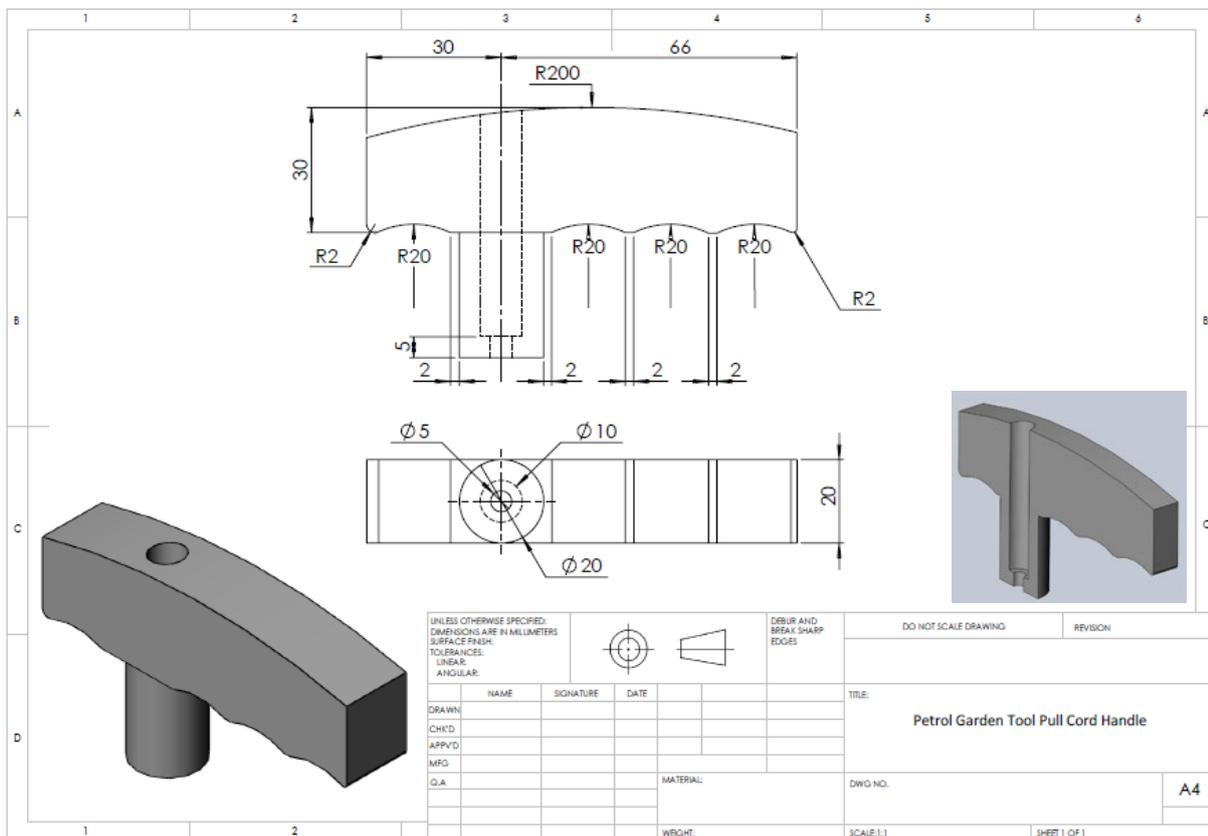
Following feedback from customers, OCR Garden Machines has designed a new pull cord handle for its range of petrol engineered garden tools. This handle allows users to grip the pull cord with their full hand resulting in increased grip and greater comfort for the user during use.

The product specification is shown below:

The pull cord handle must:

- allow both adult male and female users to grip the handle comfortably
- not slip within the user's hand
- have a quality, 'solid' feel
- be a 'one piece' design that would allow large quantity production
- allow ease of installation/replacement to standard cord sizes
- not be damaged by petrol/oil
- not require any surface finishing
- be readily identifiable.

The component drawing (draft version – with doc production) is shown below:



Read through all of the tasks carefully, so that you know what you will need to do to complete this assignment.

Your Tasks

Task 1: Production planning

Learning Outcome 1: Know how to plan the making of a prototype; and

Learning Outcome 2: Understand safe working practices used when making a prototype, are assessed in this task.

The prototype pull cord handle is to be manufactured to allow its test and evaluation prior to being mass produced. You must produce a production plan prior to manufacture of the prototype.

You should:

- plan the manufacture of the prototype pull cord handle through the identification of key production considerations and the interpretation of the product specification
- consider risk assessment as part of the production planning process
- demonstrate knowledge of the safe use of tools during the manufacture of the prototype pull cord handle, responding to appropriate risk assessments.

Task 2: Prototype production

Learning Outcome 3: Be able to produce a prototype, is assessed in this task.

The prototype pull cord handle is now to be manufactured. You should follow your production plan to safely manufacture a prototype pull cord handle that can be evaluated prior to being manufactured in quantity.

You should demonstrate your ability to draw upon relevant skills/knowledge/understanding from other units you have studied in this task.

You should:

- use your production plan to manufacture the prototype pull cord handle
- select appropriate materials to produce the prototype pull cord handle
- record all of the key stages of making the prototype.

Task 3: Evaluation of a prototype

Learning Outcome 4: Be able to evaluate the success of a prototype, is assessed in this task.

Prior to starting quantity production it is important that a newly developed product is evaluated to identify any further improvement that could be made to the design.

You should:

- evaluate the production plan and final prototype, comparing the outcome against the product specification
- consider potential design improvements
- assess your own performance in realising the design.

Information for Teachers

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Guidance on using this assignment

1 General guidance

- 1.1 OCR assignments are available to download free of charge from our website: www.ocr.org.uk
- 1.2 OCR assignments are intended to be used for summative assessment of learners. The OCR specification gives more information on the arrangements for assessing internally assessed units.
- 1.3 This assignment has been designed to meet the full assessment requirements of the unit. Learners will need to take part in a planned learning programme that covers the underpinning knowledge, understanding and skills of the unit.

2 Before carrying out the assignment

- 2.1 Learners should be provided with a copy of the *Information for Learners* section of this assignment.
- 2.2 Learners will not need to carry out any preparations prior to undertaking the assessment tasks, such as collating resources to use in the assessment
- 2.3 We have estimated that it will take approximately 10-12 hours to complete all tasks. Learners would need approximately 2 hours to complete Task 1, approximately 5-8 hours to complete Task 2 and approximately 2 hours to complete Task 3. These timings are for guidance only but should be used by the teacher to give learners an indication of how long to spend on each task. Centres can decide how the time can be allocated between each part or individual task. Centres are also permitted to spread the tasks across several sessions and therefore it is permissible for evidence to be produced over several sessions.

3 When completing the assignment and producing evidence

- 3.1 Each learner must produce individual and authentic evidence for each task within the assignment.
- 3.2 Centre staff may give support and guidance to learners. This support and guidance should focus on checking that learners understand what is expected of them and giving general feedback that enables the learner to take the initiative in making improvements, rather than detailing what amendments should be made. It is not acceptable for teachers/deliverers to provide answers, to work through answers in detail or to detail specifically what amendments should be made.
- 3.3 Learners may use information from any relevant source to help them with producing evidence for the tasks.
- 3.4 Learners must be guided on the use of information from other sources to ensure that confidentiality is maintained at all times.

- 3.5 Usually, the type of evidence required may be modified, with the exception of certain types of evidence listed below under '*Permitted changes*'. It is important to note that it is possible to generate the evidence in a variety of formats. Centres must advise learners as to the most appropriate format of evidence. The nature of this assessment means that learners are free to use the format that they feel is most appropriate for the purpose and target audience for each individual task (see Section 6).

4 Presentation of work for marking and moderation

- 4.1 Centres wishing to produce digital evidence in the form of an e-portfolio should refer to the appendix in the specification on guidance for the production of electronic assessment.
- 4.2 Centres may wish to discourage learners from excessive use of plastic wallets for presentation of their evidence as this may hinder the assessment process. Instead centres may wish to encourage learners to present their work so that it is easily accessible, e.g. spiral bound, stapled booklet, treasury tag.
- 4.3 All work must be marked against the marking criteria for the unit. Marks are allocated to learning outcomes rather than tasks. Please see Appendix B Marking criteria for centre assessment and Section 4 The centre assessed units in the specification for this qualification for more information on marking, moderation and submission of work.

5 Scope of permitted set assignment modification

The set assignment is self-contained in its present form. The set of tasks form a coherent whole addressing all the learning outcomes and allowing access to the full range of marks.

You must not change the following:

- the learning outcomes
- the marking criteria
- the requirements for supervision and authentication as described in the specification (Section 4 *The centre assessed units*)
- the maximum duration for completion of the assignment.

Permitted changes:

The set assignment can be modified in terms of the areas described below but centres must be sure that learners still have the opportunity to cover all of the learning outcomes and to access the full range of marks:

- the scenario, which can be contextualised or amended to suit local needs
- each specific task may be appropriately contextualised to match with any permitted changes you have made to the scenario.

Should the centre change the context of the assignment they must make sure that the product to be designed and prototyped is of equal complexity to that given in this set assignment.

OCR has ensured that in the language used and the tasks and scenario provided we have avoided discrimination, bias and stereotyping and support equality and diversity. In the development of qualifications and assessments we use the guidance given in the Ofqual publication *Fair access by design*, notably this includes:

- using language and layout in assessment materials that does not present barriers to learners
- using stimulus and source materials in assessment materials (where appropriate) that do not present barriers to learners.

If centres wish to modify the set assignment we strongly advise that staff responsible for modifying the set assignment and the quality assurance of it refer to the publication *Fair access by design*.

If modifications are made to the set assignment, whether to just the scenario or to both the scenario and individual tasks, it is up to the centre to ensure that all learning outcomes can still be met and that learners can access the full range of marks.

6 Specific guidance on the task

Task 1

Learners are required to produce a detailed production plan that considers both the product specification and risk assessment.

Task 2

Learners will require access to workshop tools and equipment along with appropriate materials resources. Learners will require access to digital photography in order to record the key stages of manufacture of their prototype product. Learners must provide evidence of the manufacturing in the form of text, photographs or video and screenshots. Learners can manufacture their prototype solutions using hand production techniques, appropriate materials or CAD/CAM methods. A witness statement should be used to corroborate the level of independence with which learners used tools, machines and safe working practices to make a prototype.

Learners could use knowledge gained in unit R105 to influence the manufacturing processes used in the production of their model/prototype.

Task 3

Learners are required to evaluate both their own performance and that of their prototype product.

Total marks for assignment: 60

Witness Statement – Task 2

LEARNER NAME	
Date	
Unit	R108 – 3D design realisation
LO2	Understand safe working practices used when making a prototype

Independent working to manufacture, whilst following appropriate safety precautions

Witness observations	
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Name of witness: _____

Relationship to learner: _____

Assessor comments: How the observations demonstrate achievement against the marking criteria

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RECORD OF QUESTIONS/ANSWERS (if applicable)

ASSESSOR QUESTION 1	
LEARNER RESPONSE 1	
ASSESSOR QUESTION 2	
LEARNER RESPONSE 2	
ASSESSOR QUESTION 3	
LEARNER RESPONSE 3	

ASSESSOR SIGNATURE:		DATE:	
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LEARNER SIGNATURE:		DATE:	
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