

Model Assignment

Assessment Material

OCR Level 1/2 Cambridge National Award in Engineering Design
OCR Level 1/2 Cambridge National Certificate in Engineering Design

Unit R106: Product analysis and research

Please note:

This OCR model 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 R106
- certification codes Award J831 / Certificate J841

The accreditation numbers associated with this unit are:

- unit reference number K/505/3536
- qualification references Award [601/1410/1] / Certificate [601/1411/3]

Duration: Approximately 10-12 hours

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Model Assignment: Information for Learners

OCR Level 1/2 Cambridge National Award in Engineering Design

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Unit R106: Product analysis and research

Scenario for the Assignment



OCR Power Tools Ltd has manufactured its current range of power tools of hand held drills, circular saws, and electric sanders successfully using the same designs for the last 5 years.

Last year OCR Power Tools' sales were much lower than expected, and it was observed that some competitors' sales have increased.

You have been asked to conduct a product analysis of the strengths and weaknesses, design features and production methods used in a competitor's hand held drill.

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: How commercial production methods, legislation and standards impact on design.

Learning Outcome 1, Know how commercial production methods, quality and legislation impact on the design of products and components, is assessed in this task.

You will need to produce a report detailing how the following impact on the design of similar types of products:

- production methods and manufacturing processes used
- disposal of products of at the end of their life
- relevant legislation and product standards.

You will need to produce:

- a report detailing how production methods and manufacturing processes impact on the manufacture of a competitor's hand held drill.

(OCR Power Tools will use your report to develop new or modified versions of their existing range of hand held drills.)

Task 2: Research existing products

Learning Outcome 2, Be able to research existing products, is assessed in this task.

The management team at OCR Power Tools has reviewed your initial findings about production methods, legislation and standards and has asked you to undertake some research into existing products to help inform new product development.

Your task is to research the strengths and weaknesses of similar types of existing product design and present your findings in a format that is appropriate for the management team.

You will need to produce:

- a report to include a summary of your research sources, and a description of the strengths and weaknesses identified in an existing product. Charts, tables, photographs, videos and annotated sketches may be used to support your report.

Task 3: Product Analysis - analyse an existing product through disassembly

Learning Outcome 3, Be able to analyse an existing product through disassembly, is assessed in this task.

You will need to disassemble the existing product and produce a product analysis with consideration of:

- components and their functions
- assembly methods
- materials
- production methods
- maintenance.

You will need to produce:

- a detailed product analysis of the existing product based on the disassembly of the product

Your findings will be used by OCR Power Tools to develop new or modified versions of their existing range of hand held drills.



Information for Teachers

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Unit R106: Product analysis and research

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 4-5 hours to complete Tasks 2 and 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 provided 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 model assignment modification

The model 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 model assignment is self-contained in its present form. The set of tasks form a coherent whole addressing all the Assessment Criteria.

No changes can be made to the following:

- the assessment criteria
- the level of control for task taking

The model assignment can be changed in terms of:

- the learner's brief, which can be contextualised or amended to suit local needs. However, the scenario must still be set within a sector relevant context and be engaging and motivating for the learners. The scenario can be amended to give a range of power tools such as hand held saws and sanders. Alternative products can also be selected, but these **must** be of comparable complexity and include a range of components, assembly methods, materials and production methods which allow access to the full range of marks
- who the end user/client is and what their requirements are
- each specific task may be appropriately contextualised
- links to other unit assignments.

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

If modifications are made to the model 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

A suggested list of potential products for this assignment are on the OCR website.

Total marks for assignment: 60

Witness Statement – Task 3

LEARNER NAME	
Date	
Unit	R106 – Product analysis and research
LO3	Be able to analyse an existing product through disassembly

Working independently/competently, using tools effectively during disassembly	
Witness observations	

Name of witness: _____

Relationship to learner: _____

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

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:****LEARNER SIGNATURE:****DATE:**