



Course report 2022

Subject	Design and Manufacture
Level	Advanced Higher

This report provides information on candidates' performance. Teachers, lecturers and assessors may find it useful when preparing candidates for future assessment. The report is intended to be constructive and informative and to promote better understanding. It would be helpful to read this report in conjunction with the published assessment documents and marking instructions.

The statistics used in this report have been compiled before the completion of any appeals.

Grade boundary and statistical information

Statistical information: update on courses

Number of resulted entries in 2022	115
------------------------------------	-----

Statistical information: performance of candidates

Distribution of course awards including grade boundaries

A	Percentage	20.9	Cumulative percentage	20.9	Number of candidates	25	Minimum mark required	111
B	Percentage	14.8	Cumulative percentage	35.7	Number of candidates	15	Minimum mark required	90
C	Percentage	22.6	Cumulative percentage	58.3	Number of candidates	25	Minimum mark required	69
D	Percentage	25.2	Cumulative percentage	83.5	Number of candidates	30	Minimum mark required	48
No award	Percentage	16.5	Cumulative percentage	N/A	Number of candidates	20	Minimum mark required	N/A

You can read the general commentary on grade boundaries in appendix 1 of this report.

In this report:

- ◆ 'most' means greater than 70%
- ◆ 'many' means 50% to 69%
- ◆ 'some' means 25% to 49%
- ◆ 'a few' means less than 25%

You can find more statistical reports on the statistics page of [SQA's website](#).

Section 1: comments on the assessment

Question paper

The modifications to the question paper meant that candidates chose to respond to either question 1 or question 2. This reduced the marks available from 80 to 65.

Most questions performed as expected, however section 1 and question 5 were more demanding than intended and grade boundaries were adjusted accordingly.

Assignment

The modifications to the assignment removed the 'manufacture a presentation model' section. This reduced the marks available from 120 to 108. Removing this section resulted in the assignment being more demanding than expected, as candidates would normally perform well in this section and grade boundaries were adjusted accordingly.

All other sections of the assignment performed as expected.

Section 2: comments on candidate performance

Question paper

Some candidates demonstrated the required knowledge to answer questions across the whole paper. Many, however, were unable to answer the range of questions in the depth required at Advanced Higher.

Question 1

Most candidates identified a commercial product or products they had analysed. Some, however, were not specific about products, and this led to answers that were not at an appropriate level for Advanced Higher.

- ◆ Question 1(a) — Many candidates outlined features that enabled them to identify processes and explain their suitability. However, some candidates did not display the knowledge required at this level.
- ◆ Question 1(b) — Many candidates were able to describe methods used to evaluate the performance of the products at the appropriate level for Advanced Higher.
- ◆ Question 1(c) — Many candidates did not answer with enough depth to reach an appropriate level for Advanced Higher. However, some candidates were able to describe the influence of value for money on their product.

Question 2

Some candidates identified a commercial product or products they researched. Many, however, generalised about products and were not able to give answers at an appropriate level for Advanced Higher.

- ◆ Question 2(a) — Many candidates did not describe how the function and safety of products had changed in the product or products identified.
- ◆ Question 2(b) — Many candidates did not describe how the evolution was influenced by society, external factors, designers or technology.
- ◆ Question 2(c) — Few candidates were able to describe possible future developments. Many candidates gave a generic response that did not fully answer the question.

Question 3

- ◆ Question 3(a) — Most candidates were able to discuss the issues that influenced the selection of materials.
- ◆ Question 3(b) — Some candidates were able to discuss the issues that may have influenced the selection of processes for parts of the Snoweel. Many, however, were not specific with their answers and failed to relate their answers to the Snoweel.
- ◆ Question 3(c) — Some candidates were able to describe the benefits of using composite material for the wheels. Many, however, did not relate their answer to the wheels.
- ◆ Question 3(d) — Many candidates were able to clearly describe a range of ways modelling could have been used to develop the Snoweel. They clearly described different types of modelling and gave examples of how they could be used for the

Snoweel. Some, however, simply described different types of models. A few failed to describe any specific type of modelling or how it could be used.

Question 4

- ◆ Question 4(a) — Most candidates were able to name a suitable method of IPR. Many were able to give at least one key feature of the method but only a few were able to give a full outline of the key features.
- ◆ Question 4(b) — A few candidates were able to outline the features required for successful die casting. Most, however, did not give the level of detail required at Advanced Higher level.

Question 5

- ◆ Question 5(a)(i) — A few candidates were able to describe the challenges of achieving a balance between function and aesthetics. These candidates used the watch to exemplify their points or used other products they were familiar with. Most, however, were very vague in their answer and many did not gain any marks for this question.
- ◆ Question 5(a)(ii) — Few candidates were able to describe methods that could be used to achieve a balance between function and aesthetics. These candidates were able to provide specific examples in their answer. Most, however, were very vague in their answer and many did not gain any marks for this question.
- ◆ Question 5(b) — Some candidates were able to discuss how products or spaces have been designed to be more inclusive. Most, however, were unable to provide a range of examples or the detail required at this level.

Question 6

- ◆ Question 6(a) — Many candidates were able to describe how physiology and psychology may have influenced the design of the Pod. Only a few, however, gained full marks for the question. In many cases the answers were very vague and there was often repetition of the same points.
- ◆ Question 6(b) — Some candidates were able to outline other information that may have been obtained and explain why it was required. Many, however, only outlined the information and failed to explain why it was required.

Question 7

- ◆ Question 7(a) — Some candidates were able to describe a way in which design opportunities may be created. Few, however, were able to describe two other ways. Many were unable to describe one method.
- ◆ Question 7(b) — Some candidates were able to describe how a company can reduce the negative impact of a product recall. Many, however, did not display the level of knowledge required at Advanced Higher and few candidates gained full marks.
- ◆ Question 7(c) — Few candidates were able to describe how a company can successfully relaunch a product recall. Many did not display any knowledge of the subject area.

Assignment

Performance across the assignment was varied, with some candidates demonstrating a high level of skill in parts or across the whole assignment. Some, however, did not demonstrate the skills required at Advanced Higher level.

Defining a design opportunity

Most candidates defined a design opportunity effectively. Many candidates, however, either did not identify an appropriate opportunity or carried out limited research that resulted in a limited definition.

Generating initial ideas

Most candidates generated appropriate initial ideas and were able to access the full range of marks.

Exploring ideas

Some candidates demonstrated the ability to explore ideas towards a design proposal effectively. Many, however, carried out limited exploration and had limited consideration of alternatives

Refining ideas

A few candidates demonstrated the ability to explore ideas towards a design proposal effectively. Many, however, demonstrated limited refinement of ideas and showed limited detail to inform their plan for manufacture.

Applying graphic techniques

Most candidates demonstrated effective application of graphic techniques and were able to access the full range of marks.

Applying modelling techniques

Many candidates demonstrated effective application of modelling techniques. Few, however, applied the range of techniques or used the model to inform decisions at the level required to access the full range of marks.

Applying knowledge and understanding of design

Some candidates applied knowledge and understanding of design effectively. Few, however, applied the knowledge and understanding at the level required to access the full range of marks.

Applying knowledge and understanding of materials, manufacturing, and assembly methods

A few candidates applied knowledge and understanding of materials, manufacturing, and assembly methods effectively. Many, however, had limited knowledge or applied it in a limited way.

Producing a plan for commercial manufacture

Most candidates produced a highly effective plan, allowing them to access the full range of marks.

Section 3: preparing the candidates for future assessment

Question paper

Candidates will again respond to either question 1 or question 2 in the 2023 question paper. For question 1, candidates must be able to apply the knowledge they gained in analysing the performance, production and impact of a product or products. For question 2, candidates must be able to apply the knowledge they gained from researching the factors that influenced the evolution of the product's design and manufacture and investigating the impact of new and emerging technologies on the product or products. To respond to these questions effectively, it is important that candidates carry out a product analysis or study the evolution of a product. You can find more information on product analysis and product evolution in the course specification.

Candidates must be able to describe the features of the manufacturing processes in the course specification in detail. Many candidates were vague with their descriptions of the features, meaning they could not access the full range of marks available.

Many candidates did not display the depth of knowledge required at Advanced Higher level across several topics and relied on their general knowledge. You should give candidates the skills, knowledge and understanding content table from the course specification to help them prepare for the question paper.

Assignment

Many candidates had difficulty generating appropriate evidence for the assignment as they chose a design opportunity that was limited. You should have a discussion with candidates to discuss the suitability of their choice.

Many candidates produced limited evidence in the exploring and refining sections of the assignments. You should give candidates smaller tasks to help build skills in these areas before they carry out the coursework assessment task.

Appendix 1: general commentary on grade boundaries

SQA's main aim when setting grade boundaries is to be fair to candidates across all subjects and levels and maintain comparable standards across the years, even as arrangements evolve and change.

For most National Courses, SQA aims to set examinations and other external assessments and create marking instructions that allow:

- ◆ a competent candidate to score a minimum of 50% of the available marks (the notional grade C boundary)
- ◆ a well-prepared, very competent candidate to score at least 70% of the available marks (the notional grade A boundary)

It is very challenging to get the standard on target every year, in every subject at every level. Therefore, SQA holds a grade boundary meeting for each course to bring together all the information available (statistical and qualitative) and to make final decisions on grade boundaries based on this information. Members of SQA's Executive Management Team normally chair these meetings.

Principal assessors utilise their subject expertise to evaluate the performance of the assessment and propose suitable grade boundaries based on the full range of evidence. SQA can adjust the grade boundaries as a result of the discussion at these meetings. This allows the pass rate to be unaffected in circumstances where there is evidence that the question paper or other assessment has been more, or less, difficult than usual.

- ◆ The grade boundaries can be adjusted downwards if there is evidence that the question paper or other assessment has been more difficult than usual.
- ◆ The grade boundaries can be adjusted upwards if there is evidence that the question paper or other assessment has been less difficult than usual.
- ◆ Where levels of difficulty are comparable to previous years, similar grade boundaries are maintained.

Grade boundaries from question papers in the same subject at the same level tend to be marginally different year on year. This is because the specific questions, and the mix of questions, are different and this has an impact on candidate performance.

This year, a package of support measures including assessment modifications and revision support, was introduced to support candidates as they returned to formal national exams and other forms of external assessment. This was designed to address the ongoing disruption to learning and teaching that young people have experienced as a result of the COVID-19 pandemic. In addition, SQA adopted a more generous approach to grading for National 5, Higher and Advanced Higher courses than it would do in a normal exam year, to help ensure fairness for candidates while maintaining standards. This is in recognition of the fact that those preparing for and sitting exams have done so in very different circumstances from those who sat exams in 2019.

The key difference this year is that decisions about where the grade boundaries have been set have also been influenced, where necessary and where appropriate, by the unique circumstances in 2022. On a course-by-course basis, SQA has determined grade boundaries in a way that is fair to candidates, taking into account how the assessment (exams and coursework) has functioned and the impact of assessment modifications and revision support.

The grade boundaries used in 2022 relate to the specific experience of this year's cohort and should not be used by centres if these assessments are used in the future for exam preparation.

For full details of the approach please refer to the [National Qualifications 2022 Awarding—Methodology Report](#).