



Advanced Higher Graphic Communication

Course code:	C835 77
Course assessment code:	X835 77
SCQF:	level 7 (32 SCQF credit points)
Valid from:	session 2019–20

This document provides detailed information about the course and course assessment to ensure consistent and transparent assessment year on year. It describes the structure of the course and the course assessment in terms of the skills, knowledge and understanding that are assessed.

This document is for teachers and lecturers and contains all the mandatory information required to deliver the course.

The information in this document may be reproduced in support of SQA qualifications only on a non-commercial basis. If it is reproduced, SQA must be clearly acknowledged as the source. If it is to be reproduced for any other purpose, written permission must be obtained from permissions@sqa.org.uk.

This edition: August 2019 (version 3.0)

© Scottish Qualifications Authority 2014, 2019

Contents

Course overview	1
Course rationale	2
Purpose and aims	2
Who is this course for?	2
Course content	3
Skills, knowledge and understanding	4
Skills for learning, skills for life and skills for work	10
Course assessment	11
Course assessment structure: question paper	11
Course assessment structure: project	12
Grading	15
Equality and inclusion	16
Further information	17
Appendix 1: course support notes	18
Introduction	18
Approaches to learning and teaching	18
Preparing for course assessment	27
Authenticity	27
Developing skills for learning, skills for life and skills for work	27
Appendix 2: standards and conventions — information and support for candidates	29

Course overview

This course consists of 32 SCQF credit points, which includes time for preparation for course assessment. The notional length of time for candidates to complete the course is 160 hours.

The course assessment has two components.

Component	Marks	Duration
Component 1: question paper	90	2 hours and 30 minutes
Component 2: project	90	see 'Course assessment' section

Recommended entry	Progression
<p>Entry to this course is at the discretion of the centre.</p> <p>Candidates should have achieved the Higher Graphic Communication course or equivalent qualifications and/or experience prior to starting this course.</p>	<ul style="list-style-type: none">◆ a range of graphic-related Higher National Diplomas (HNDs)◆ degrees in graphic design and related disciplines◆ careers in graphic design, engineering, architecture, digital media, creative arts, interior design, marketing, landscape architecture and design◆ further study, employment and/or training

Conditions of award

The grade awarded is based on the total marks achieved across both course assessment components.

Course rationale

National Courses reflect Curriculum for Excellence values, purposes and principles. They offer flexibility, provide time for learning, focus on skills and applying learning, and provide scope for personalisation and choice.

Every course provides opportunities for candidates to develop breadth, challenge and application. The focus and balance of assessment is tailored to each subject area.

Graphic communication brings together aspects of technology, engineering, design, creativity, language and communication. This course encourages candidates to exercise imagination, creativity and logical thinking as they explore graphic communication in realistic, contemporary, contexts.

Candidates develop a deeper understanding of the roles and responsibilities of those working in graphic disciplines. These roles include analysing, solving problems, presenting, innovating and creating visual solutions to technological, informational and commercial graphic needs.

Purpose and aims

The course develops candidates' skills in communicating using graphic media, and in interpreting, understanding and critically evaluating graphic media created by others.

The course enables candidates to:

- ◆ investigate, research and evaluate the commercial contexts of graphic communication
- ◆ understand the impact of advanced graphic communication technologies and activities on our environment and society
- ◆ apply graphic communication design principles and techniques in various commercial contexts
- ◆ use software applications to produce creative, meaningful and effective graphic items and solutions to contextualised problems and challenges
- ◆ creatively apply graphic presentation work and animation techniques in commercial activities
- ◆ learn and think independently

Who is this course for?

The course is sufficiently flexible to meet the needs of all candidates with an interest in this area. However, it is particularly designed for those considering further study or a career in graphic design, computer-aided design and draughting, publishing, marketing and electronic and moving graphic media-related disciplines.

Course content

Candidates develop and extend their knowledge and understanding of key graphic communication concepts and processes. They also develop an awareness of the impact of graphic communication on society and the environment.

As well as developing new knowledge, candidates creatively apply that knowledge in technical and commercial graphics contexts which might include:

- ◆ business
- ◆ industry and the built environment
- ◆ computer-aided work
- ◆ publishing
- ◆ moving graphic media

Candidates enhance the following skills in a graphic context:

- ◆ planning and organising
- ◆ working independently and in teams
- ◆ critical thinking
- ◆ decision making
- ◆ research
- ◆ communication
- ◆ self- and peer-evaluation

The course has two areas of study — technical graphics, and commercial and visual media graphics.

Technical graphics

Candidates develop creativity and evaluation skills in technical graphics through manual and electronic-based communication activities. They explore the purpose, application and audience requirements of technical graphics and apply graphic communication skills, knowledge and understanding to plan, produce and evaluate technical graphic techniques and technologies. They also explore the use of detailed 2D and 3D graphics in modelling, graphic visualisation and technical/mechanical animation.

Commercial and visual media graphics

Candidates develop skills and techniques to create effective commercial and visual media graphic communications and explore their application in publishing and promotion. Graphic design work is iterative. Candidates review, evaluate, amend and present their work, and develop a deep understanding of the needs of the intended audience.

Skills, knowledge and understanding

Skills, knowledge and understanding for the course

The following provides a broad overview of the subject skills, knowledge and understanding developed in the course:

- ◆ developing and presenting effective graphic communications which support and inform business, industrial and/or built environment sectors
- ◆ investigating, evaluating and skilfully applying common and contemporary technologies and techniques to produce graphic communications which support technical activities
- ◆ knowledge and understanding of the role of graphic communication activities in meeting audience requirements
- ◆ analysing often complex features of graphic communications which support and inform business activities
- ◆ ethical, social and environmental considerations in the development and production of graphic communications
- ◆ knowledge and understanding of the key concepts that support the planning, design and production of technical graphics, and commercial and visual media graphics
- ◆ a critical understanding of the impact of graphic communication activities on our environment and society
- ◆ planning, managing and undertaking a significant graphic communication project

Skills, knowledge and understanding for the course assessment

The following provides details of skills, knowledge and understanding sampled in the course assessment.

Elements common to technical graphics, and commercial and visual media graphics	
Graphic ownership	
Issues of ownership	Digital rights management and/intellectual property rights
Graphic project planning	
Planning	<p>Practical project planning in terms of:</p> <ul style="list-style-type: none"> ◆ use and allocation of time, resources and equipment requirements ◆ practical use of planning tools, for example Gantt charts ◆ start and finish dates of key activities ◆ review and update
Technical graphics	
Creators and users Knowledge and understanding of the roles and needs of those who may encounter, use, draw, read or explain any form of technical, engineering or production drawing	
Graphic types	<p>Skills, knowledge and understanding in:</p> <ul style="list-style-type: none"> ◆ interpreting audience requirements and producing effective graphic responses for preliminary, production and promotional graphics
Techniques	<p>Skills, knowledge and application of:</p> <ul style="list-style-type: none"> ◆ creative techniques when using graphic instruments or devices ◆ a range of graphics media
Drawing standards, protocols and conventions	<p>Knowledge and skills in applying:</p> <ul style="list-style-type: none"> ◆ recognised standards, protocols and conventions in engineering and construction drawings including line types ◆ symbols for sections, including stepped sections ◆ display variances in use of scale, detail, layout, measurement, layering functions, materials and symbols, tolerances (according to context)

Technical graphics

Computer-aided design (CAD)

Knowledge and skills in applying:

- ◆ recognised techniques, customs and practices across 3D modelling and 2D CAD software, including drawing and editing commands and terms
- ◆ standard 2D CAD commands, including import and export
- ◆ standard 3D modelling techniques including:
 - morphing (freeform modelling)
 - extrusion along a path (sweeps)
 - regular and irregular fillets and chamfers
 - lofting
 - blending
 - surface modelling
- ◆ techniques to produce orthographic and pictorial work using CAD

Computer-aided illustration

Knowledge and skills in applying:

- ◆ professional use of rendering technology to create scenes or illustrations with visual impact, including:
 - texture mapping
 - bump-mapping
 - lighting (ambient, spot, point, area, directional)
 - reflection
 - specularities
 - ambience
 - depth-of-field
 - image-based lighting/high dynamic range imaging (IBL/HDR)
 - volumetrics
- ◆ polygons in the production of 3D graphics, including Boolean functions of add, subtract and intersect, slice

Technical graphics	
Built environment	
<p>Creators and users</p> <p>For the question paper: knowledge and understanding of the roles and needs of designers, architects, landscape architects, conservation bodies, building surveyors, quantity surveyors, town planners, interior designers, construction trades, prospective purchasers and clients.</p> <p>For the project (as required): as above plus knowledge and understanding of the roles and needs of architectural technicians, consultant engineers, communities, model-makers, suppliers, production and planning, and the general public.</p>	
Planning drawing and surveys	<p>Knowledge of the standards, layout and use of:</p> <ul style="list-style-type: none"> ◆ location plans, site plans and floor plans (including electrical, plumbing and services layers) ◆ topographical survey (including contours, slope aspect and natural land features) ◆ underground survey (including previous land use, land composition and depth of substrate) ◆ drainage survey (including storm water and foul water) ◆ feature survey (including hard landscaping such as paving, seating and lighting)
Manufacturing and engineering	
<p>Creators and users</p> <p>For the question paper: knowledge and understanding of the roles and needs of manufacturing engineers, civil engineers, structural engineers, mechanical engineers, electronic and electrical engineers and model-makers, end users/clients and manufacturers.</p> <p>For the project (as required): as above plus knowledge and understanding of the roles and needs of designers, consultants and engineering trades (civil, structural, electrical, mechanical, structural, systems), manufacturers, fabricators, test labs, materials technologists, specification engineers, suppliers, production and planning.</p>	
Simulation	<p>Knowledge and skills in the use of:</p> <ul style="list-style-type: none"> ◆ digital testing methods, for example Finite Element Analysis (FEA) or Computational Fluid Dynamics (CFD), to simulate how parts of a 3D model would perform in reality ◆ mechanical animation

Technical graphics	
CAD/CAM (computer-aided design and computer-aided manufacturing) systems	<p>Knowledge and skills in the use of:</p> <ul style="list-style-type: none"> ◆ 3D model manipulation to prepare for CAM production ◆ communicating surface finish and datums ◆ gathering model information on volume, centre of mass and model mass
Technical graphic file formats and their use	<p>Knowledge and skills in the use of:</p> <ul style="list-style-type: none"> ◆ Standard Tessellation Language/stereo lithography file format (stl) ◆ Direct Exchange Format (dxf) ◆ Drawing Format (dwg) ◆ Virtual Reality Modelling Language (vrml) ◆ 3D Studio (3ds) files
Commercial and visual media graphics	
<p>Creators and users</p> <p>For the question paper: knowledge and understanding of the roles and needs of graphic designers, advertisers, interactive media designers, animators, sales and marketing, general public, clients, print technicians, web designers.</p> <p>For the project (as required): as above plus knowledge and understanding of the roles and needs of artists, creative industries, retailers, cinematic, television, electronic and interactive media.</p>	
Desktop publishing	<p>Knowledge and skills in the application of:</p> <ul style="list-style-type: none"> ◆ techniques, customs and practices across a range of packages ◆ generic terms and techniques in supporting contexts and audience requirements ◆ planning strategies
Graphic media file formats and their use	<p>Knowledge and understanding of:</p> <ul style="list-style-type: none"> ◆ Joint Photographic Experts Group (jpg) ◆ Portable Network Graphics (png) ◆ Bitmap Image file (bmp) ◆ Portable Document Format (pdf) ◆ Adobe Illustrator file (ai) ◆ Windows Media Video (wmv)

	<ul style="list-style-type: none"> ◆ Audio Video Interleave (avi) ◆ Third Generation Partnership (3gp) ◆ Apple QuickTime Movie (mov) ◆ Moving Picture Experts Group (mpeg) ◆ Encapsulated Postscript (eps)
Design elements and principles	<p>In addition to the design elements and principles from Higher Graphic Communication:</p> <ul style="list-style-type: none"> ◆ design elements: pace, focal point, silhouettes ◆ design principles: golden ratio, rule of thirds, dynamic effects, radial balance, negative space
Print and digital media	
Graphics technologies	<p>Knowledge and understanding of:</p> <ul style="list-style-type: none"> ◆ various printing technologies, including laser, ink-jet, wide-format, screen printing, offset lithography and solid ink systems ◆ quality and standards in print and digital media including: an understanding of RGB colour space, CMYK colour space, and Pantone® ◆ edge to edge, bleed, gutter, registration marks, colour calibration, dots per inch (dpi), pixels per inch (ppi) ◆ photo-reduction, duplexing, camera-ready copy, paper weight, paper opacity, use of calendaring for glossy print
Animation	<p>Skills, knowledge and understanding of:</p> <ul style="list-style-type: none"> ◆ creation of animated graphics making use of motion-capture, stop-frame, or motion tweening ◆ post-editing of video files and use of video graphic technologies, including blend or fade, zoom, transition and overlays

Skills, knowledge and understanding included in the course are appropriate to the SCQF level of the course. The SCQF level descriptors give further information on characteristics and expected performance at each SCQF level, and are available on the SCQF website.

Skills for learning, skills for life and skills for work

This course helps candidates to develop broad, generic skills. These skills are based on [SQA's Skills Framework: Skills for Learning, Skills for Life and Skills for Work](#) and draw from the following main skills areas:

2 Numeracy

2.2 Money, time and measurement

4 Employability, enterprise and citizenship

4.2 Information and communication technology (ICT)

5 Thinking skills

5.4 Analysing and evaluating

5.5 Creating

Teachers and lecturers must build these skills into the course at an appropriate level, where there are suitable opportunities.

Course assessment

Course assessment is based on the information in this course specification.

The course assessment meets the purposes and aims of the course by addressing:

- ◆ breadth — drawing on knowledge and skills from across the course
- ◆ challenge — requiring greater depth or extension of knowledge and/or skills
- ◆ application — requiring application of knowledge and/or skills in practical or theoretical contexts as appropriate

This enables candidates to:

- ◆ confirm their capabilities through challenge and application by producing a practical graphic solution to a realistic or actual technical or commercial and/or visual media situation
- ◆ demonstrate aspects of breadth and application in a graphic context, based on recognised graphic principles and those used in the graphic communication industries
- ◆ apply knowledge and understanding developed to describe and explain professional graphic communication techniques, methods and standards
- ◆ apply knowledge and understanding developed to interpret unfamiliar, potentially complex graphic communications and the needs of specific audiences
- ◆ apply skills and knowledge developed to produce graphic communication solutions in a response to potentially complex audience needs

Course assessment structure: question paper

Question paper

90 marks

The question paper has a total mark allocation of 90 marks. This is 50% of the overall marks for the course assessment.

The question paper consists of a number of structured, context-based questions, some of which integrate content from across the course.

Proportion of 'A' and 'C' type questions:

- ◆ approximately 30% of marks are 'A' type
- ◆ approximately 50% of marks are 'C' type

The question paper has one section.

Candidates gain marks for demonstrating skills, knowledge and understanding relating to:

Area	Range of marks
Techniques and practices used in technical graphics, and commercial and visual media graphic communications	21–25
Interpreting and justifying graphic communication in terms of purpose and audience needs	35–43
The use and impact of graphic communication technology in the creation of technical graphics, and commercial and visual media graphics	18–23
Graphic communication as it impacts on our environment and society	9–14

Setting, conducting and marking the question paper

SQA sets and marks the question paper. It is conducted in centres under conditions specified for external examinations by SQA.

Candidates have 2 hours and 30 minutes to complete the question paper.

Specimen question papers for Advanced Higher courses are published on SQA's website. These illustrate the standard, structure and requirements of the question papers. The specimen papers also include marking instructions.

Course assessment structure: project

Project

90 marks

The project has a total mark allocation of 90 marks. This is 50% of the overall marks for the course assessment.

The project assesses candidates' practical application of knowledge and skills from across the course. It is based on a meaningful and appropriately challenging task and requires candidates to develop a solution to an appropriately complex graphic communication task.

It assesses candidates' skills in:

- ◆ identifying opportunities to present solutions to satisfy perceived graphic needs
- ◆ researching markets and audiences
- ◆ producing effective graphic solutions
- ◆ critically evaluating and reporting on the solution and the process

The project has seven areas covering both technical graphics, and commercial and visual media graphics.

The seven areas are:

- ◆ analysis
- ◆ research
- ◆ planning
- ◆ evaluation
- ◆ preliminary graphics
- ◆ production graphics
- ◆ promotional graphics

Candidates gain marks for:

Area	Marks available
Analysing the graphic brief and research	10
Producing graphic specifications (3 marks for technical graphics; 3 marks for commercial and visual media graphics)	6
Technical graphics preliminary planning (includes project planning and preliminary graphics)	7
Commercial and visual media graphics preliminary planning (includes project planning and preliminary graphics)	7
Graphic solution: technical graphics	25
Graphic solution: commercial and visual media graphics	25
Evaluating the solutions and the process	10

Setting, conducting and marking the project

The project is:

- ◆ an open brief: candidates choose the topic for their project in discussion with their teacher or lecturer
- ◆ conducted under some supervision and control
- ◆ submitted to SQA for external marking

Assessment conditions

Time

The project has no time limit and is carried out over a long period. Candidates should start their project when they have developed the necessary skills, knowledge and understanding.

Supervision, control and authentication

The project is conducted under some supervision and control. Teachers and lecturers should put in place processes to authenticate candidate evidence. For example:

- ◆ regular checkpoint or progress meetings with candidates
- ◆ short spot-check personal interviews
- ◆ checklists, which record activity and/or progress
- ◆ photographs, film or audio evidence

Teachers and lecturers must exercise their professional responsibility to ensure that evidence submitted by a candidate is their own work.

Once the candidate has completed their project and handed in all the evidence, teachers and lecturers **must not** return it to them for further work to improve their mark.

Resources

The project is carried out under open-book conditions, but supervised to ensure that the work presented is the candidate's own work.

There are no restrictions on the resources that candidates may access while producing their project.

Reasonable assistance

Candidates must carry out the assessment independently. However, they can receive reasonable assistance before the formal assessment process takes place.

Candidates are not assessed on choosing a suitable problem for their project. Teachers and lecturers should advise them on their choice of problem to ensure the chosen problem is achievable, and is suitably complex and challenging.

The reasonable assistance must be limited to constructive comment and/or questioning. Teachers and lecturers **must not** provide model answers, give directions or provide specific advice on how to re-phrase or improve responses. Candidates must work independently once they have started their project.

Evidence to be gathered

The following candidate evidence is required:

- ◆ a graphic communication project not exceeding 20 A3-sized pages (or equivalent for graphics work)

The project should include:

- ◆ analysis of the graphic brief and research — two pages maximum
- ◆ graphic specification for both technical graphics, and commercial and media visual graphics — one page maximum
- ◆ technical graphics planning and preliminary graphics — two pages maximum
- ◆ commercial and visual media graphics planning and preliminary graphics — two pages maximum
- ◆ technical graphics solution — six pages maximum
- ◆ commercial and visual media graphics solution — six pages maximum
- ◆ evaluation of the solutions and process — two pages maximum

Volume

Candidates should present their work on a maximum of 20 single-sided A3-sized pages.

If the page count exceeds the maximum by more than 10%, a penalty is applied.

Grading

Candidates' overall grades are determined by their performance across the course assessment. The course assessment is graded A–D on the basis of the total mark for both course assessment components.

Grade description for C

For the award of grade C, candidates will typically have demonstrated successful performance in relation to the skills, knowledge and understanding for the course.

Grade description for A

For the award of grade A, candidates will typically have demonstrated a consistently high level of performance in relation to the skills, knowledge and understanding for the course.

Equality and inclusion

This course is designed to be as fair and as accessible as possible with no unnecessary barriers to learning or assessment.

Guidance on assessment arrangements for disabled candidates and/or those with additional support needs is available on the assessment arrangements web page:

www.sqa.org.uk/assessmentarrangements.

Further information

- ◆ [Advanced Higher Graphic Communication subject page](#)
- ◆ [Assessment arrangements web page](#)
- ◆ [Building the Curriculum 3–5](#)
- ◆ [Guide to Assessment](#)
- ◆ [Guidance on conditions of assessment for coursework](#)
- ◆ [SQA Skills Framework: Skills for Learning, Skills for Life and Skills for Work](#)
- ◆ [Coursework Authenticity: A Guide for Teachers and Lecturers](#)
- ◆ [Educational Research Reports](#)
- ◆ [SQA Guidelines on e-assessment for Schools](#)
- ◆ [SQA e-assessment web page](#)
- ◆ [SCQF website: framework, level descriptors and SCQF Handbook](#)

Appendix 1: course support notes

Introduction

These support notes are not mandatory. They provide advice and guidance to teachers and lecturers on approaches to delivering the course. Please read these course support notes in conjunction with the course specification and the specimen question paper and coursework.

Approaches to learning and teaching

At Advanced Higher, much of the learning is self-directed. Candidates should be able to demonstrate initiative and work on their own. Some candidates may find this challenging, so it is important that you have strategies in place to support them, for example planning time for regular feedback sessions and/or one-to-one and group discussions.

You should encourage candidates to use an enquiring, critical and problem-solving approach to their learning. Candidates should have the opportunity to practise and develop research and investigation skills and higher-order evaluation and analytical skills.

Candidates take part in a variety of subject-appropriate learning activities, for example:

- ◆ researching information for themselves rather than receiving it from their teacher or lecturer
- ◆ using active and open-ended learning activities, for example research, case studies and presentation tasks
- ◆ using information they research online to draw conclusions about specific issues
- ◆ presenting findings and/or conclusions of research and investigation activities
- ◆ group work with peers and using collaborative learning opportunities to develop teamwork
- ◆ drawing conclusions from complex information
- ◆ using appropriate technological resources, including digital media resources
- ◆ demonstrating development, improvement and refinement of techniques and practices
- ◆ using real-life contexts and experiences familiar and relevant to candidates to meaningfully hone and exemplify skills, knowledge and understanding
- ◆ field trips and visits

Where possible, you should provide opportunities to personalise learning and allow candidates to experience a range of learning and teaching approaches. The flexibility in Advanced Higher courses and the independence with which candidates carry out the work lend themselves to this. You should use inclusive approaches to learning and teaching. You can do this by using a variety of learning and teaching strategies which suit the needs of all candidates. Using technology innovatively can be valuable in creating inclusive learning and teaching approaches.

Candidate autonomy

You should encourage candidates to be flexible in their approach to tasks. This flexibility reflects the independence in learning that candidates need to demonstrate in their future study and careers. Candidates benefit from exploring creative solutions to graphic problems, and by gaining experience of adapting various graphic techniques and technologies to present their graphical work.

Planning for learning

You should explain the standards required to achieve success in the course, and consider giving candidates a detailed timeline or Gantt chart to follow. Candidates need to manage their time well in order to meet the level of challenge at Advanced Higher. Critical self- and peer-evaluation techniques can help them to develop confidence and understanding in critiquing graphical products.

Using a thematic or mini-project approach

Exploring preliminary, production and promotional graphics through themes or mini-project approaches can help candidates to deepen their understanding of graphic production and graphic technologies, and can lead into their project activity. Some candidates may find smaller, individual or discrete learning activities more beneficial. Whichever method is used, you should help candidates to explore various aspects of sketching, drawing, graphic design skills, illustration and CAD (computer-aided design) to develop their skills in preparation for the project. You can approach sketching, drawing, design skills and illustration from either a manual or electronic perspective or, more likely, a combination of both.

Using realistic graphic design situations and briefs

The graphics and creative industries rely heavily on graphic design briefs from clients. This practice can be replicated by using problem-based learning (PBL). Candidates and their teacher or lecturer should discuss potential graphic design topics before setting the graphic design briefs. The teacher or lecturer, the candidate, or — more likely — a combination of both, can set the graphic design briefs. Graphic design briefs allow candidates to investigate different graphical solutions before developing a final response to a scenario. Research, development and planning are critical to success with PBL. You should encourage candidates to take responsibility for, and ownership of, this process. Graphic design briefs enable you to challenge candidates to apply graphic techniques in a range of unfamiliar, relevant and exciting contexts. PBL allows learning to be topical and relevant from year to year, and to cover important issues in society.

You might invite charities, school groups or local businesses to provide a context for learning. This graphical creator/graphical user approach enables candidates to interact with their 'client' and create a range of graphical products that support their specific context. If the candidate has an interest in other areas, you can use this as a basis for contextual learning that personalises the course to the skills, experience and needs of the candidate. Managing relationships with industrial and business partners so that these links are sustainable could be mutually beneficial to the centre, future candidates and local businesses.

Design approach

Design is integral to the course. You should encourage candidates to explore different techniques used to solve problems. Design may not necessarily be limited to presentational graphics. Candidates can also use design skills when producing 3D CAD models, drawings or sketches for elements of their project. You should encourage creativity, divergent thinking

and ‘challenging the norm’ wherever possible. When used as part of learning and teaching, any elements of design may be undertaken individually or in groups. Candidates may work collaboratively on a PBL context and individually, taking responsibility for an area of design to include preliminary, production and promotional graphics. They can then report back to a group, showing, telling, or discussing their work for evaluation and further development.

Graphics life cycle

It is helpful for candidates to experience the life cycle of graphics in a real context. For example, they may prepare some concept sketches for a point-of-sale product — perhaps for a cinema, sports centre or tourist attraction — and present these concept sketches for evaluation. This evaluation can be undertaken by their peers, or perhaps by representatives of the chosen attraction. Candidates may then use this feedback to further inform graphic design work before creating production graphics for the point-of-sale product. Centres may have their own CAD/CAM equipment, or have a business or industrial link that allows candidates to produce the product. Promotional graphics could be used in digital format (cinema, TV or internet) or printed media.

Information on graphic types

Drawing standards and production drawings

Drawing standards and production drawings are key elements of graphical literacy. You could encourage candidates to deepen their understanding by experiencing the relationship between creating a production drawing and the ways that items or products are made from them. This can involve candidates deepening their understanding of how 3D models and 2D drawings are used in conjunction with CAM (computer-aided manufacturing) equipment, either in school or in business and industry. Using additive or subtractive manufacturing technologies, 3D models can be used to produce a prototype. Experience of these technologies, and of using production graphics in context, deepens candidates’ understanding, encouraging them to broaden their awareness of how skills, knowledge and understanding of graphic communication contributes to the world of work.

Preliminary graphics

The production of preliminary graphics should reflect how they are created and used professionally. Candidates do not need to spend significant time presenting them. Preliminary graphics should communicate clearly the graphic designs, ideas and thoughts from one graphic creator to another, or to a graphic user. Technology may be used to ensure preliminary graphics communicate effectively. For example, manual sketches may be digitally captured and manipulated through illustration and animation software. These could show the working relationships between sketched components, or perhaps the development of a graphical idea. Photographs may be altered to contain a preliminary graphic element and communicate a design intention. The aim is to share details or features in graphic products, and demonstrate analytical skills and creativity to communicate relevant information or data.

3D modelling

Candidates should be familiar with 3D modelling software and understand how it can be used to produce a range of technical and production drawings. Although candidates can use 3D models to produce drawings, they must understand how these drawings are read and interpreted and be able to identify any errors caused by software or templates.

Presentation and promotional graphics

Presentation and promotional graphics are an opportunity to use new and emerging developments, techniques and technologies. For example, candidates can use augmented and mediated reality to present graphical ideas, or overlay illustration graphics on to video and photographs to look photo-realistic. Where appropriate, you should provide opportunities for candidates to experience a range of manual and electronic methods of presentation and illustration.

Presentation and promotional graphics have a large impact on the environment and society. You should encourage candidates to consider issues such as the economic use of materials to reduce waste produced from printing or vinyl cut signage, or the impact that images and text can have on individuals, community and society. Presentation, promotional and illustrated graphics are used in a range of scales, sizes and formats (not only A5, A4 or A3). Candidates could explore non-standard dimensions to add depth and challenge to the application of skills developed through the course.

Resources

Technological resources

A wide range of technologies support engineers, architects, graphic designers and illustrators to use preliminary sketches and drawings more effectively. For example, ink pens that also record a computer vector graphic of what is drawn have many exciting possibilities — they can lead to 2D drawings and 3D CAD models being directly created from freehand sketches. Sketches can also be made by using a stylus to ‘draw’ on to a graphics tablet touchscreen or a tablet computer.

Using the internet

You could encourage candidates to create a digital presence and share their graphical work online. Candidates could share images, blogs and videos and encourage public commenting and feedback. These online portfolios can help candidates to present their work to potential employers, colleges or universities. Web-based services can also be a useful platform for delivering learning and teaching materials.

Support from industry

Scotland has many professional design and print companies that may be willing to work closely with candidates to enrich their experience. For example, candidates could help to produce promotional graphics using wide-format solvent printers, or experience the production of offset-lithography leaflets, magazines or books. They could also see how graphic items are installed in a venue and how these graphics are used in wider society.

Graphic communication technologies

Using CAD and ICT

The Advanced Higher Graphic Communication course uses a range of technology. The open and flexible nature of the project allows centres to make the most of new developments. The course makes extensive use of CAD and ICT, which are integral to the graphics industry. You may wish to use a range of software packages to achieve the best results in sharing files between platforms — understanding common file formats is part of the mandatory course content (see the course specification). This helps candidates to understand how different

software tools can be used to process graphics. In the graphics industry, photo editing or 2D illustration applications are frequently used to 'post-process' 3D illustrations to refine, enhance or prepare the image for print or desktop publishing (DTP).

Numerous input process and output devices can support the teaching and learning of graphic communication and improve the learning experience. Interactive boards, tablet computers, drawing tablets, scanners, visualisers and digital pens are just a few of the devices that allow candidates to input their sketches, drawings and ideas. Clever use of this technology can bridge the perceived gap between the worlds of sketching and CAD. For example, designers can use digital pens, tablets, scanners and visualisers to capture sketches, then import the data to CAD applications and manipulate it as a vector graphic.

ICT and image processing management

As candidates become more proficient in creating complex, high-impact computer illustrations, the demand on centres' computing technology grows. To overcome this, centres could use computers in the evening, when they are otherwise not being used, to process images, using one of the inexpensive and free software programs that support this function. Or centres could upload the files to an online processing centre that renders images and animations, then download the results. This could also provide an opportunity to work with a local business or industry that has more powerful processing technology.

File sharing, stock models and images

As communication and collaboration technologies become more common, powerful and efficient, you may wish to use social media, file sharing and digital portfolios to share, promote and evaluate graphic tasks. Centres should adhere to local education authority guidelines and policies regarding communication technologies. Several websites allow graphic artists, illustrators, CAD technicians, architects and engineers to share computer graphics, photographs and CAD files. These digital archives are an excellent resource. Candidates can download materials, textures, images and models free of charge and use them in 3D scenes, DTP work or illustrations. However, candidates will not receive marks for creating work they have only downloaded. Most 3D CAD software has a comprehensive library of standard components that can be used in a CAD model — many meeting ANSI, ISO and BSI standards. While candidates can use these components and other stock models, they can only be assessed on the use of the component or model, not on the creation of the component or model itself.

Realisation

People interested in design, engineering, architecture and illustration are motivated by being able to realise their ideas. You could encourage candidates to use technology that helps realise their designs, for example wide-format and solvent printers, laser cutters, 3D printers, CNC routers and millers, vinyl cutters and stereo projection technology (3D projectors and VDUs). Such technology is widespread in business and industry, and having an awareness of it helps candidates prepare for their future careers. In particular, CAD technicians, architects and engineers use 3D printing technology to help in the visualisation of 3D models and the interaction of various components. As 3D printing technology develops and costs decrease, it becomes more realistic for centres to acquire, maintain and operate such equipment. Alternatively, many industries, businesses and individuals are investing in prototyping solutions; again, centres with sustainable relationships with outside partners could benefit from this.

Manual and traditional approaches

As well as electronic technology, you should use existing resources for graphics work and tasks. Graphic industries still use resources such as pencils, markers, masks, inks, application vinyl, texture boards, cutting mats, templates, curves, stencils, highlighting pens, compasses, light boxes, drawing boards, straight edges, and squares, so candidates should learn how to use them.

Areas of study for candidates

Technical graphics

These skills support graphic activities in graphic design, engineering, architecture, digital media, creative arts, interior design, marketing, landscape architecture and design. People who construct, make or manufacture physical items produce or read technical graphics. Candidates should communicate complex designs, data and plans in a clear and concise manner.

Commercial and visual media graphics

These skills support the production of professional promotional graphics. Promotional graphics are used extensively in a range of industries, from traditional printed media to interactive displays, mobile devices, television and the internet. The creative industries play an important role in supporting economic activity and the global economy. The core aspects of work in technical graphics and commercial and visual media graphics are:

- ◆ graphic audiences and their requirements
- ◆ graphic techniques and technologies
- ◆ graphic planning and production

Technical graphic audiences

Technical graphics audiences include: designers, architects, architectural technicians, landscape architects, construction trades, building surveyors, quantity surveyors, town planners, conservation bodies, communities, model-makers, interior designers, suppliers, prospective purchasers, consultants and engineering trades (civil, structural, electrical, mechanical, structural, systems), manufacturers, fabricators, test labs, materials technologists, specification engineers, and production and planning personnel.

Where required, candidates should establish the requirements of the audience by conducting appropriate research, for example desk research, using surveys, site visits or interviews.

Communication of technical graphics data

- ◆ the nature, presentation and layout of technical graphics
- ◆ the inclusion of key dimensions and/or scale
- ◆ critical technical features of a product, building or item
- ◆ surface finish, datum (or data), levels, tolerances, fixings
- ◆ topographical orientations (N,S,E,W)
- ◆ types of views
- ◆ communication method, whether digital or hard copy
- ◆ relevant BS formats, standards and conventions

- ◆ materials
- ◆ assemblies
- ◆ construction methods
- ◆ use of layering
- ◆ simulations including CFD, FEA

Evaluation of technical graphic techniques

This includes comparisons of manual and/or electronic methods, technical sketches, 2D and 3D CAD, technical animations, or any other technical graphic techniques used to support specific audience requirements.

Evaluation of technical graphic technologies

This includes comparisons of 3D scanning to create graphic models for production purposes, modelling (CAD and physical), creating technical animations, and other appropriate technologies.

Technical graphics responses

These could take the form of completed sketch modelling, outline technical production drawings, use of 3D and/or 2D CAD models, CNC tool path generation, CAD/CAM simulation and/or 3D physical models.

Commercial and visual media graphics audiences

Commercial and visual media graphics audiences could include: graphic designers; artists; sales, marketing and advertising professionals; the general public; creative industries; retailers; electronic and interactive media; animation; and web designers.

Where required, candidates should establish audience requirements by conducting appropriate research, for example desk research; surveys; site visits or interviews; field research; and reviewing trends, styles, graphic designers or design movements.

Communication of commercial and visual media graphics information

Candidates could consider how information, a message or an idea has been communicated, for example:

- ◆ the target market or audience
- ◆ the clarity of the information, message or idea — identifying any ambiguity
- ◆ graphic format
- ◆ accessibility of formats to target audience
- ◆ trends
- ◆ genres

Evaluation of commercial and visual media graphics techniques

Comparing the ways in which professional commercial and visual media graphics use graphic design elements and principles to create effect and relevant impact, attract the audience, communicate an idea or message, and provide audience focus.

Graphic production techniques

- ◆ 3D prints
- ◆ 2D, 2.5D and 3D
- ◆ CAD/CAM
- ◆ animation
- ◆ visuals
- ◆ manual or electronic methods
- ◆ physical models
- ◆ printed hard-copy media
- ◆ visual electronic stills
- ◆ sketching (manual or electronic)
- ◆ 2D and/or 3D scanning.

Commercial and visual media graphics communication technologies

This includes technologies used in the contexts of interactive electronic display (user interface), physical or digital points of sale display, printed media, or animation.

Planning activities

- ◆ planning charts
- ◆ storyboards
- ◆ thumbnails
- ◆ visuals or mock-ups — manual, electronic, or a combination of both

Commercial and visual media graphics responses

This includes production of responses for print, physical display or multimedia.

Where printed graphics would require commercial equipment, the graphics should be printed using the level of equipment available in centres. Candidates must show, by annotation, which commercial processes would be used to create the final response.

You must ensure that candidates are prepared to answer possible examination questions in both commercial and visual media graphics contexts. Please refer to the course specification for more information on mandatory content.

Suggested activities for candidates

During the course, candidates should develop the skills, knowledge and understanding required to complete the course assessments. You should cover the following activities:

- ◆ explain the requirements of a commercial and visual media graphics audience, and evaluate the suitability of a professional commercial and visual media graphic that has been created for that audience by:
 - explaining the requirements of a selected commercial and visual media graphics audience
 - evaluating the suitability of a professional commercial and visual media graphic that has been created to meet the needs of a commercial and visual media graphics audience
- ◆ evaluate the use of commercial and visual media graphic techniques and technologies to meet the requirements of a commercial and visual media graphics audience by evaluating the:
 - graphic design elements and principles used in a range of commercial and visual media graphics
 - graphic production techniques in a range of commercial and visual media graphics
 - technologies used to create commercial and visual media graphics
- ◆ plan and produce commercial and visual media graphic communications to support a promotional activity and the requirements of its specific audience by:
 - planning commercial and visual media graphic communications to support a promotional activity and its specific audience
 - producing a range of commercial and visual media graphic communications using recognised skills and techniques to support a promotional activity and its specific audience
- ◆ explain the requirements of a technical graphics audience and evaluate the suitability of a professional technical graphic that has been created for that audience by:
 - explaining the requirements of a selected technical graphics audience
 - evaluating the suitability of a professional technical graphic that has been created to meet the requirements of a technical graphics audience
- ◆ evaluate the use of technical graphic techniques and technologies to meet the requirements of a technical graphics audience by:
 - evaluating the use of a range of technical graphic techniques
 - evaluating the use of a range of technical graphic technologies
- ◆ plan and produce technical graphic communications that communicate relevant technical data to meet the requirements of a specific audience by:
 - planning technical graphic communications that communicate relevant technical data to a specific audience
 - producing technical graphic communications using recognised skills and techniques that communicate relevant technical data to a specific audience

Preparing for course assessment

The course assessment has two components: a question paper and a project.

Please refer to the Advanced Higher Graphic Communication coursework assessment task (available at www.sqa.org.uk/sqasecure).

The course has additional time that you can use at your discretion to help candidates prepare for course assessment. You can use this time at various points throughout the course for consolidation and support.

You should:

- ◆ give candidates opportunities to practise activities similar to those in the course assessment, for example practising question paper techniques and using questions similar to those in the specimen and past papers
- ◆ explain the requirements of the project to candidates, including the amount and nature of the support they can expect

Authenticity

You should put mechanisms in place to authenticate candidates' evidence. For more information, please refer to SQA's [Guide to Assessment](#).

Developing skills for learning, skills for life and skills for work

You should identify opportunities throughout the course for candidates to develop skills for learning, skills for life and skills for work.

Candidates should be aware of the skills they are developing and you can provide advice on opportunities to practise and improve them.

SQA does not formally assess skills for learning, skills for life and skills for work.

There may also be opportunities to develop additional skills depending on the approach centres use to deliver the course. This is for individual teachers and lecturers to manage.

Some examples of potential opportunities to practise or improve these skills are provided in the following table.

Skill	How to develop
2 Numeracy 2.2 Money, time and measurement	<ul style="list-style-type: none"> ◆ using measurement, dimension and tolerance
4 Employability, enterprise and citizenship 4.2 Information and communication technology (ICT)	<ul style="list-style-type: none"> ◆ using graphics packages ◆ using digital input and graphic devices
5 Thinking skills 5.3 Applying 5.4 Analysing and evaluating 5.5 Creating	<ul style="list-style-type: none"> ◆ applying design knowledge to complex problems, modelling and conceptual thinking in communicating ideas ◆ carrying out situational analysis, graphic evaluation, thinking and analysing through sketching and drawing ◆ creating ideas, innovation and solutions to problems and briefs

Appendix 2: standards and conventions — information and support for candidates











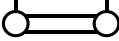


















This appendix provides information on the expected use of standards and conventions for the SQA Graphic Communication Advanced Higher Course only. It is not an exhaustive list of terms used in the graphics industry and does not cover every single term referred to in the course specifications. It is guidance and you should read it in conjunction with the rest of the course specification.

Note: this appendix **must not** be taken into the examination or displayed in any room where an examination is taking place.

Building drawing symbols





These symbols are from the British Standard (BSI). You may be required to use these symbols in your assignment or project or asked about them in the question paper.


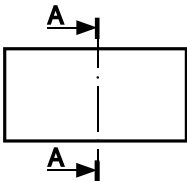
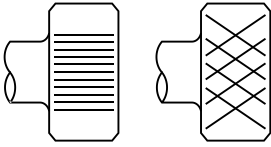
You **must** use the symbols and terms specified below:

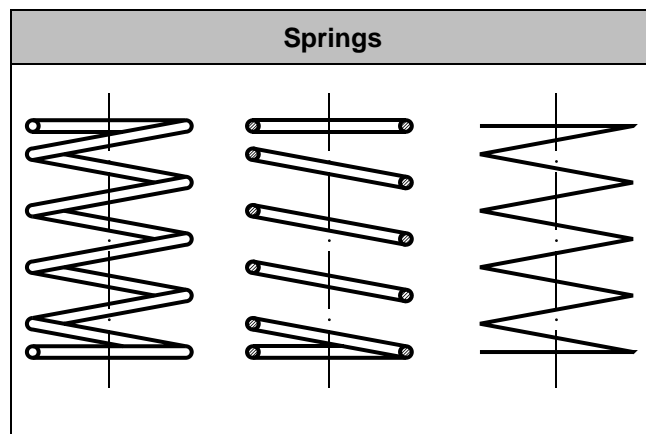
Lamp	Switch	Socket	Radiator	
				
Shower tray	Bath	Wash basin	Sink	WC
				
Sinktop	Heated towel rail	Concrete	Brickwork	
				
Door	Wood sawn, any type	Insulation board	Block work	
				
Fixed window	Window — hinged at side	Window — hinged at top	Window — hinged at bottom	
				
Window — pivoted, horizontal axis	Window — sliding horizontally	Drainage	North point	
				
Existing tree	Existing tree — to be removed	Proposed tree	Contours	
				

Technical graphic line types

You must use the following technical graphic line types in your work.

Outline solid	Projection line	Hidden detail line	Centre line
 <p>Continuous thick line for visible edges and outlines.</p>	 <p>Continuous thin line for projecting between views.</p>	 <p>Dashed thin line for hidden detail.</p>	 <p>Long dash, dot, chain line for centres of symmetry.</p> <p>Note: BS 7308 (long dash, short dash chain) is also acceptable.</p>

Fold line	Cutting plane	Knurling
 <p>Thin long dash, double dot, chain line to indicate folds on surface developments.</p> <p>Note: BS 7308 (long dash, short double dash chain) is also acceptable.</p>	 <p>Long dash dotted thin line, thick at ends.</p> <p>Note: BS 7308 (long dash, short dash chain line, thick at ends) is also acceptable.</p>	 <p>Straight Diamond</p>

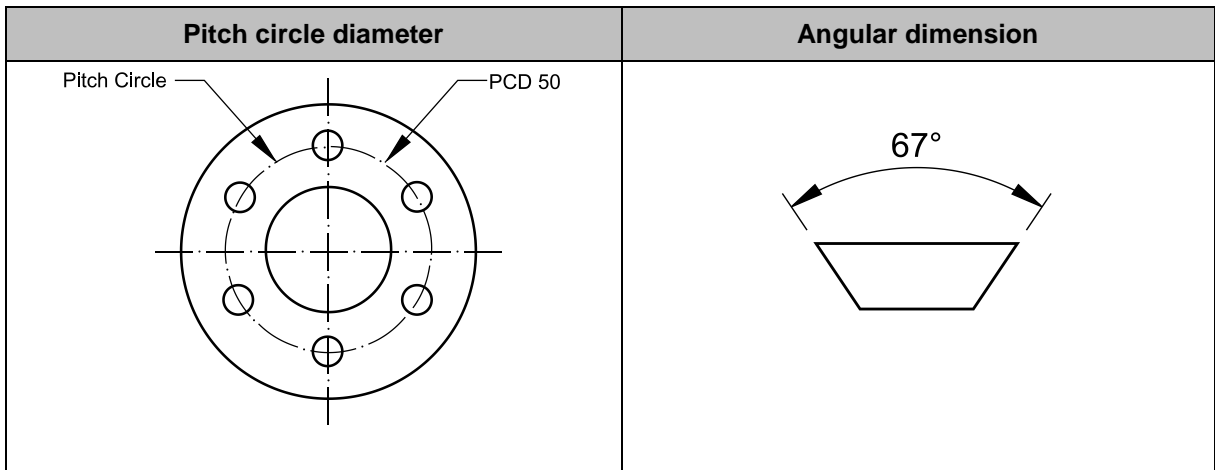
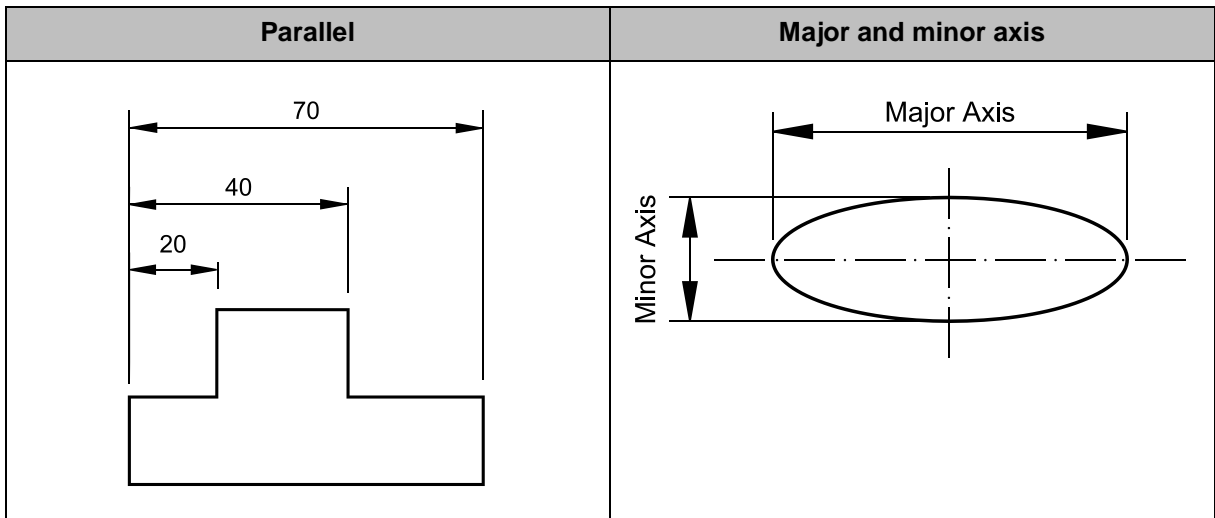
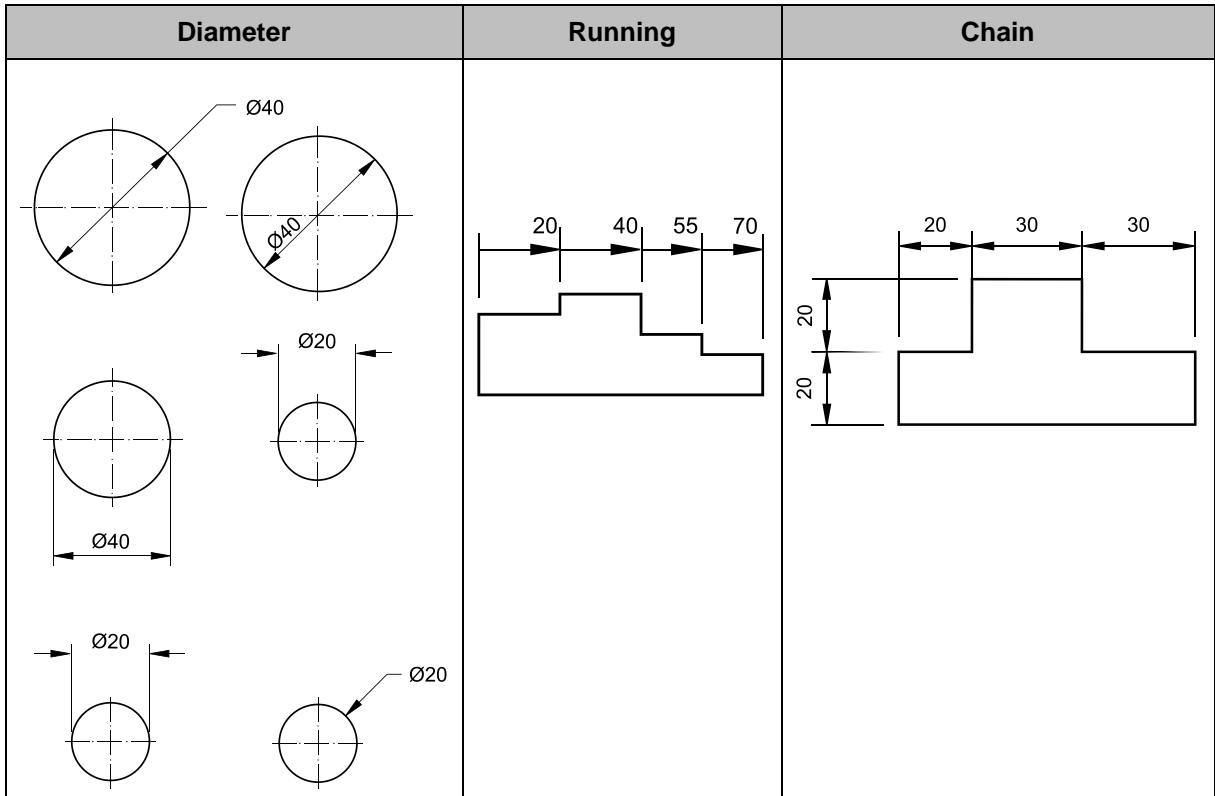


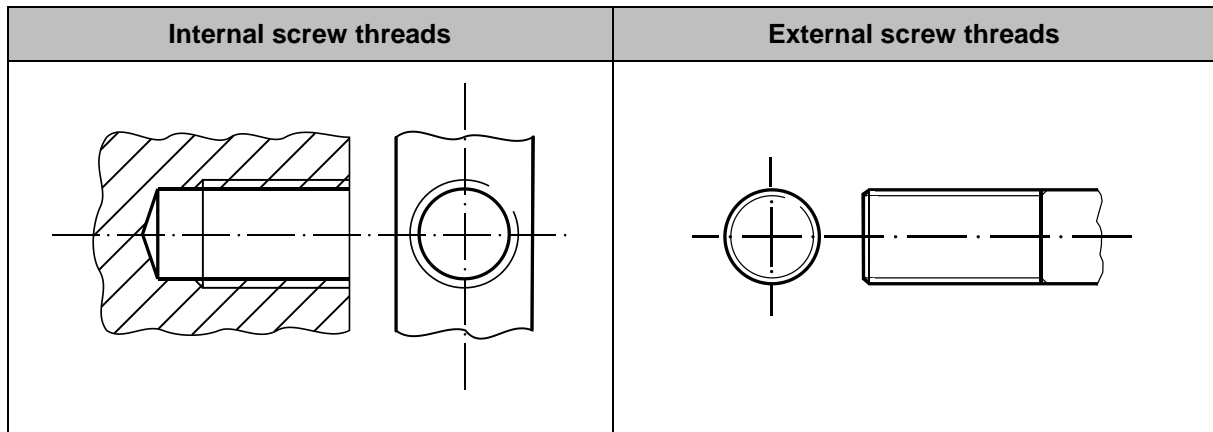
Dimensioning conventions

These are the conventions for technical graphic dimensioning that you must use in your work.

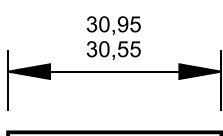
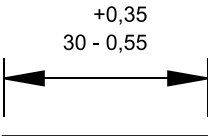
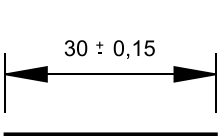
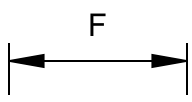
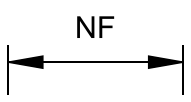
Leader line	Across corners	Across flats	Square

Linear	Radial	Projection symbol
		<p>Third angle projection</p>





Tolerances

Common tolerance	Asymmetrical tolerance	Symmetrical tolerance	Functional tolerance	Non-functional tolerance
				
<p>The common method shows the upper limit of the size placed above the lower limit.</p>	<p>The asymmetrical method shows the nominal size plus the upper and lower limits of the tolerance.</p>	<p>The symmetrical method shows the nominal size and the symmetrical tolerance expressed as a plus and minus.</p>	<p>A dimension that is essential to the function of a component or space.</p>	<p>A dimension that is not essential to the function of a component or space.</p>

Surface finish conventions

These surface texture symbols are from the British Standard (BSI). You may be required to use these symbols in your project or asked about them in the question paper.

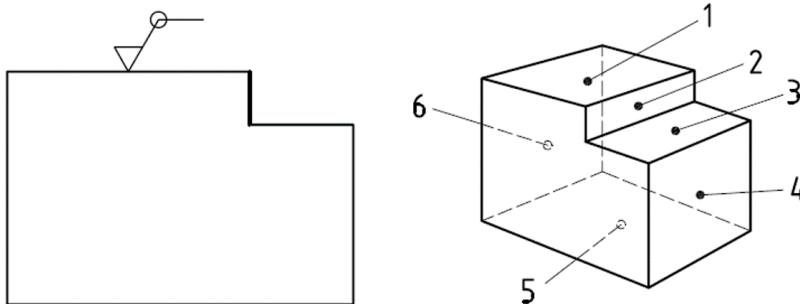
Basic symbol for surface texture	Removal of material required	Removal of material not permitted

When complementary requirements for surface texture characteristics have to be indicated, a line shall be added to the longer arm of any of the graphical symbols as illustrated below.

Complete symbol for surface texture	Complete symbol for material will be removed	Complete symbol for material will not be removed
Any manufacturing process permitted		

All surfaces around a workpiece outline

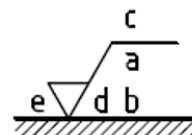
When the same surface texture is required on all surfaces around a workpiece outline – represented on the drawing by a closed outline of the workpiece – a circle will be added to the complete graphical symbol as shown below.









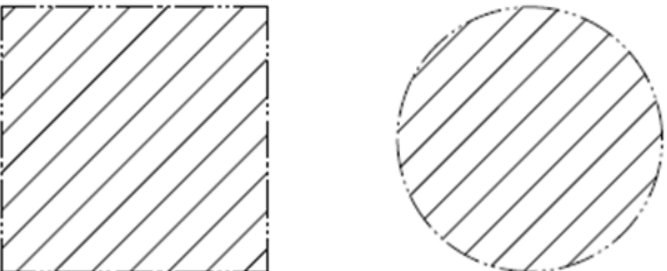
Note: The outline on the drawing represents the six surfaces shown on the 3D-representation of the workpiece (the front and rear surfaces are not included)

Position of complementary surface texture requirements

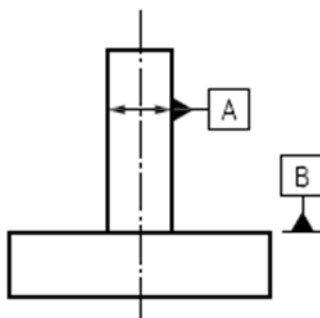
Positions a and b – surface texture requirements
 Position c — manufacturing method
 Position d — surface lay and orientation
 Position e — machining allowance



Datum features and symbols

Description of datum feature	Symbol	
Datum feature indicator		
Datum feature letter	Capital letter (A, B, C, AA, etc.)	
Single datum target frame		
Movable datum target frame		
Datum target point		
Closed datum target line		
Non-closed datum target line		
Datum target area		

Indication of a datum feature



Administrative information

Published: August 2019 (version 3.0)

History of changes

Version	Description of change	Date
2.0	Course support notes added as appendix 1. Standards and conventions — information and support for candidates added as appendix 2.	August 2019
3.0	Amendments made to 'Skills, knowledge and understanding for the course assessment' section (page 7): 'conservation bodies' moved from project to question paper list of SKU under technical graphics: built environment heading. Page 8 'web designers' moved from project to question paper list of SKU under 'commercial and visual media graphics' heading.	August 2019

Note: please check SQA's website to ensure you are using the most up-to-date version of this document.

© Scottish Qualifications Authority 2014, 2019