Revision Topics for 2025 June Yr10 Exam:

For this paper you must have:
• normal writing and drawing instruments • a calculator • a protractor.
https://senecalearning.com/en-GB/revision-notes/gcse/design-and-technology/aqa
designtechnologystudent.com
https://www.bbc.co.uk/bitesize/examspecs/zby2bdm
Youtube
Books:
Clear Revise PGonline AQA design Technology isbn 978-19110523247
Collins AQA GCSE 9-1 Design and Technology Complete Revision and Practice isbn 978-0-00-853501-8
CGP GCSE AQA Design and Technology Revision Guide. Isbn 978 1 78294 752 3

Metal types
https://www.bbc.co.uk/bitesize/guides/z6d48mn/revision/1
Plastic types
https://www.bbc.co.uk/bitesize/guides/zrstng8/revision/1
Properties of materials
https://www.bbc.co.uk/bitesize/guides/zjqyb82/revision/1
Stock form of materials
https://senecalearning.com/en-GB/revision-notes/gcse/design-and-technology/aqa/5-3-1-polymers-stock-forms
Composites
https://www.bbc.co.uk/bitesize/guides/zfq8jty/revision/1
Volume/ area/ percentages
Mechanical mechanisms
https://www.bbc.co.uk/bitesize/guides/zbt26yc/revision/1
Energy generation and storage
https://www.bbc.co.uk/bitesize/guides/zf8ck2p/revision/1
Systems and control
https://www.bbc.co.uk/bitesize/guides/z6kr97h/revision/1
Surface treatments
https://technologystudent.com/despro_flsh/mats_finish1.html
Ecological issues of extracting raw materials
https://technologystudent.com/mobapps/environmental_issues1.pdf
Ergonomics and anthropometrics
https://senecalearning.com/en-GB/revision-notes/gcse/design-and-technology/aqa/7-1-4-ergonomics
Nesting/ Tessellation
https://www.bbc.co.uk/bitesize/guides/zbstng8/revision/1
Safety of equipment when applying heat
https://www.bbc.co.uk/bitesize/articles/zq89qyc#zj89qyc
Drawing styles
https://www.youtube.com/watch?v=ELE8vO_HbG0

Quality control
https://studyrocket.co.uk/revision/gcse-design-and-technology-aqa/design-and-technology-aqa/scales-of-production-and-quality-control
Market research

See below:

3.2.8 3.3.8

QUALITY CONTROL AND TOLERANCE

In the mass production of any item, products should be consistent in size, quality and finish as well as being safe and effective for use. Quality Control (QC) is an essential stage in manufacture.

Accurate working

When working with papers and boards, accurate length and width measurements are important to check. The weight and thickness of the stock is also key, as it may affect the manufacturing process or final use. For instance, a greetings card should fit the appropriate envelope, or a poster must be the right size for its frame. Bank notes are printed to very specific dimensions and weight, as any variation helps detect fraudulent notes.

Tolerance

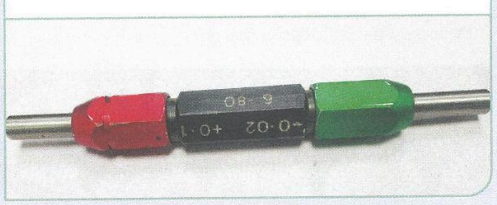
Tolerance is the amount of error allowed for a given task. It is applied to distance measurements and weights such as in fabric, paper or card. There will be a specified measurement range which is an acceptable difference in size between an upper limit and a lower limit.

Resistors and capacitors in electronic devices have tolerances which need to be considered when trying to calculate how a circuit or system may perform. Resistors have coloured stripes which denote their specific resistance value.

- During a making activity, it may not be possible to achieve 100% accuracy.
- An appropriate degree of tolerance needs to be considered for a given product or component.
- This could vary from a fraction of a millimetre to a few millimetres.
- A narrower tolerance is usually required for more technical elements e.g., metalwork, wood joints, 3D printed or laser-cut components, aligning fabrics or specific levels of voltage required in a circuit.

Go/no-go

A go/no-go gauge is used to check dimensions are within specified tolerances. The expected dimensions and tolerances will be pre-set. For instance, when checking a drill hole, if the go gauge fits but the no-go gauge does not, the hole is within tolerance.



Depth stop

A depth stop ensures a hole will be drilled to the correct depth. The limit is set to control how far the drill bit enters the workpiece. This is an integral part of a pillar drill or can be in the form of cap added to a power or hand drill.

Metal band saws can also be fitted with an adjustable stop to ensure a blade only cuts to a pre-set depth.

Laser settings

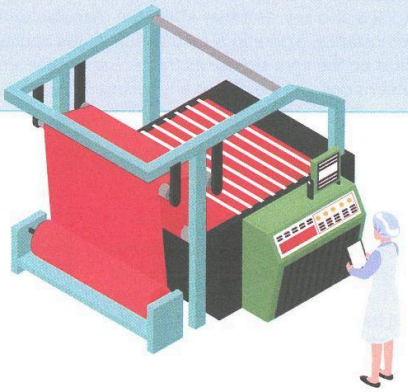
Laser cutters direct a powerful laser beam at a precise focal length to cut, etch or engrave the chosen material. This includes plastics such as acrylics and ABS, metals such as aluminium, wood, glass and stone. It is an accurate process as the laser beam does not blunt or wear out. The speed, power and dimension settings must be set according to the material. High power and slow speed is suitable for cutting, however laser cutting consumes a lot of power.

Seam allowance

A **seam allowance** is the area between the line of stitching and the edge of the fabric. Commercially, a seam allowance may only be 10 mm to save on fabric (15 mm with home sewing). The tolerance is very small, so accurate stitching is needed otherwise pieces will not fit as intended.

Dimensional accuracy

Textiles with a repeated pattern such as florals, stripes or checks need constant **quality control** checks to ensure the pattern repeats accurately vertically and horizontally. Although many checks are made by eye, machine vision systems are being introduced to scan and detect physical or pattern defects. This automated process is extremely fast, but the computer equipment is costly, so it is only used by large scale factories at present.



Timings with printed circuit boards

Printed circuit boards (PCBs) can be made using the photo etching process. This process corrosively etches away selected areas of sheet metal. It is a precise process which can produce complex circuits with fine detail.

The steps of cleaning, UV exposure, developing, washing and etching need specific timing to ensure the exact results are met. If the exposure times or etching times are too long, it will remove all of the copper causing broken tracks; too short and unwanted copper may remain on the board causing short circuits.

Commercially finished etched boards are inspected both visually and by machine.

Explain the purpose of 'quality control'. [2]

Quality control checks or tests a product to ensure that it meets pre-set standards, tolerances or specification criteria.[1] It guarantees the accuracy of a part or component[1] and that it is fit for purpose, and of an acceptable standard for sale[1].

3.3–3.3.1

INVESTIGATION, PRIMARY AND SECONDARY DATA

Designing to meet needs, wants and values can improve people's lives in many ways. Poor design can achieve the opposite effect.

A wide range of information and decisions need to be covered as part of the process.

Investigation

Before and during the design of a product, designers and manufacturers need to understand the needs and wants of the consumer.

Market research

Before a product is made, market research helps a designer understand whether there is a target market. They will gather opinions and comments from consumers about their interest in the new product.

Primary market research collects research data first-hand for a specific purpose. It is created by those needing the data.

Secondary market research gives access to information created by others. There are vast amounts of secondary market research data available to access.

Primary data sources

- Interviews
- Questionnaires
- Surveys
- Focus groups
- Case studies
- User observations
- Product testing and trials

Advantages

- Data is up to date and relevant.
- Questions and surveys can be tailored to specific needs.

Disadvantages

- A large number of people are needed.
- Data gathering is time consuming.

Secondary data sources

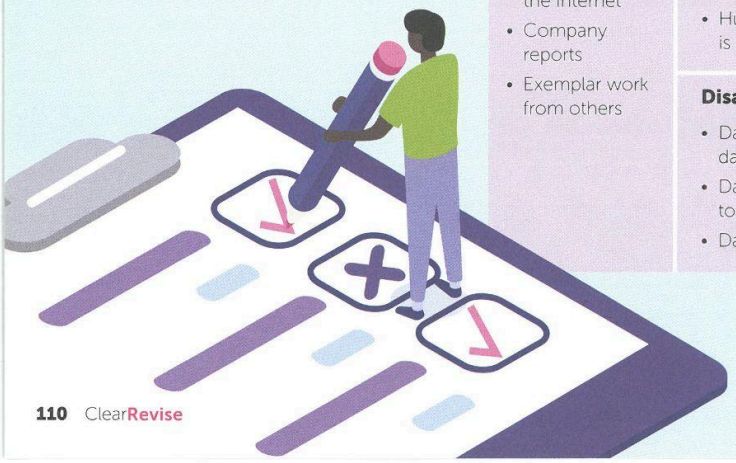
- Government data
- Articles from books, magazines and the Internet
- Company reports
- Exemplar work from others

Advantages

- Data is already collated and available.
- Data may be free or low cost.
- Huge amount of research is available and accessible.

Disadvantages

- Data may not be up to date.
- Data may not be specific to company needs.
- Data is available for all.



3.3.1

DESIGN AND MANUFACTURING

Designers work through a series of steps during the design process to ensure a new product satisfies the consumers' needs or wants.

Design brief

A designer needs a **design brief** to begin work on a new idea. This is often provided by a client and they will outline their expectations:

- The product and its purpose
- The target market, who will use it
- Budget and timescale
- Where it would be sold
- How and where it would be used

Once an idea or design has been developed it will go through further analysis and **market research** to help develop the design and identify any problems.

The findings and conclusions are presented to the client. This stage of the process is crucial as the investigation and research may suggest that the design concept needs rethinking or may not be worth producing at all.

Design specification

Once the brief is agreed, a design specification can be drawn up which includes more product detail.

Design specification content

What	A clear description of the product and its function or purpose.
Who	The target market, age range, gender.
Why	Need in the market has been identified and how it will meet this.
How much	Estimated costs.
How long	Timescale to manufacture.
Materials and aesthetics	Choice of materials, colour, texture, finish.
Environment	Selection of materials for recycle and reuse, sustainability.
Safety	International standards and safety requirements met.
Measurables	Dimensions and weights.

Modifying a design brief

Specification checks, research and analysis continue throughout the design process, in order to identify any unexpected issues or problems and resolve them as soon as possible.

During testing of a prototype, designers may discover errors in dimensions, that a material isn't strong enough or a selected finish isn't hard wearing enough. Adjustments or changes in methods will need to be made and the earlier this is done, the less impact it will have on time and cost.