

AQA A-Level Design & Technology: Product Design (7552)

Designing & Making Principles: Exam: June 2019

<u>Paper 1</u>	<u>Paper 2</u>
<u>What's Assessed:</u> <ul style="list-style-type: none">• Technical Principles• Designing & Making Principles• Specialist Knowledge	<u>What's Assessed:</u> <ul style="list-style-type: none">• Technical Principles• Designing & Making Principles• Specialist Knowledge
<u>How it's assessed:</u> <ul style="list-style-type: none">• Written exam: 2.5 hours• 120marks• 30% of A-Level	<u>How it's assessed:</u> <ul style="list-style-type: none">• Written exam: 1.5 hours• 80 marks• 20% of A-Level
<u>Questions:</u> <ul style="list-style-type: none">• Mixture of short answer, multiple choice and extended response questions.	<u>Questions:</u> <p>Section A: Product Analysis</p> <ul style="list-style-type: none">• 30 marks• up to 6 short answer questions based on visual stimulus of products <p>Section B: Commercial Manufacture</p> <ul style="list-style-type: none">• 50 marks• Mixture of short and extended response questions.

AQA A-Level Design & Technology: Product Design (7552)

Designing & Making Principles: Exam: June 2019

3.2.1 Design Methods & Processes		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
Iterative Design Process					
1	Can you explain the different approaches to user centred design?				
2	Can you use data to inform your design decisions and help to evaluate outcomes?				
3	Can you use ergonomics and anthropometric data when designing products for humans and specific applications?				
	<ul style="list-style-type: none"> designing to meet needs, wants or values 				
	<ul style="list-style-type: none"> investigations to inform the use of primary and secondary data: market research, interviews, human factors, focus groups, product analysis and evaluation, the use of anthropometric data and percentiles, the use of ergonomic data 				
	<ul style="list-style-type: none"> the development of a design proposal 				
	<ul style="list-style-type: none"> the planning and manufacture of a prototype solution 				
	<ul style="list-style-type: none"> the evaluation of a prototype solution to inform further development 				

3.2.2 Design Theory		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
Design Influences					
1	Can you discuss how key historical design styles, design movements and influential designers have helped to shape product design and manufacture?				
Design Style and Movements					
2	Can you discuss key design styles and movements and their principle of design?				
	<ul style="list-style-type: none"> arts and craft movement 				
	<ul style="list-style-type: none"> Art Deco 				
	<ul style="list-style-type: none"> Modernism, e.g. Bauhaus 				
	<ul style="list-style-type: none"> Post modernism, e.g. Memphis 				
3	Can you discuss the work of influential designers and how their work represents the principles of different design movements?				
	<ul style="list-style-type: none"> Phillipe Starck 				
	<ul style="list-style-type: none"> James Dyson 				
	<ul style="list-style-type: none"> Margaret Calvert 				
	<ul style="list-style-type: none"> Dieter Rams 				
	<ul style="list-style-type: none"> Charles and Ray Eames 				
	<ul style="list-style-type: none"> Marianne Brandt 				

3.2.3 How Technology and cultural changes can impact on the work of designers		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
Socio-economic Influences					
1	Can you discuss how socio-economic influences have helped to shape product design and manufacture?				
	<ul style="list-style-type: none"> post WW1: the Bauhaus and development of furniture for mass production 				
	<ul style="list-style-type: none"> WW2: rationing, the development of 'utility' products 				
	<ul style="list-style-type: none"> contemporary times: fashion and demand for mass produced furniture, decorative design 				
Social, moral and ethical issues					
2	Can you discuss how major developments in technology are shaping product design and manufacture?				
	<ul style="list-style-type: none"> micro electronics 				
	<ul style="list-style-type: none"> new materials 				
	<ul style="list-style-type: none"> new methods of manufacture 				
	<ul style="list-style-type: none"> advancements in CAD/CAM 				
3	Can you discuss scientific advancements/ discoveries and their potential development?				
Social, Moral and ethical issues					
4	Can you discuss the responsibilities of designers and manufacturers?				
	<ul style="list-style-type: none"> products are made using sustainable materials and ethical production methods 				
	<ul style="list-style-type: none"> the development of products that are: culturally acceptable, not offensive to people of different race, gender or religious belief 				
	<ul style="list-style-type: none"> the development of products that are inclusive 				
	<ul style="list-style-type: none"> the design and manufacture of products that could assist with social problems, eg poverty, health and wellbeing, migration and housing 				
	<ul style="list-style-type: none"> the impact of Fairtrade on design and consumer demand 				
	<ul style="list-style-type: none"> designing products to consider the six Rs of sustainability 				
Product Life Cycle					
5	Can you describe the product life cycle?				
	<ul style="list-style-type: none"> Design introduction 				
	<ul style="list-style-type: none"> Evolution 				
	<ul style="list-style-type: none"> Growth 				
	<ul style="list-style-type: none"> Maturity 				
	<ul style="list-style-type: none"> Decline 				
	<ul style="list-style-type: none"> Replacement 				
6	Can you describe, with examples, how designers refine and re-develop products in the lifecycle of specific products?				

AQA A-Level Design & Technology: Product Design (7552)

Designing & Making Principles: Exam: June 2019

3.2.4 Design Process		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
The Use of a Design Process					
1	Can you discuss and implement the stages of a range of design processes in order to apply personal judgement and relevant criteria in the appraisal of products and systems?				
	<ul style="list-style-type: none"> those used in the NEA 				
	<ul style="list-style-type: none"> investigations and analysis 				
	<ul style="list-style-type: none"> use of inspiration materials, e.g. mood boards 				
	<ul style="list-style-type: none"> ideas generation 				
	<ul style="list-style-type: none"> illustration 				
	<ul style="list-style-type: none"> development of a design specification 				
	<ul style="list-style-type: none"> Modelling 				
	<ul style="list-style-type: none"> planning 				
	<ul style="list-style-type: none"> evaluating and testing 				
Prototype Development					
2	Can you discuss and demonstrate the development of a prototype from design proposals?				
3	Can you show how the above influences your ideas for your NEA so that the quality of your final product is improved and meets the needs of your identified users?				
The Iterative Design Process in Industrial/ Commercial Contexts					
4	Can you describe how different design methodologies are used by designers in the corporate world, when designing products, including:				
	<ul style="list-style-type: none"> Collaborative working 				
	<ul style="list-style-type: none"> cyclic nature of commercial design and manufacture 				

3.2.5 Critical Analysis and Evaluation		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
1	Can you discuss your own NEA product and commercial products?				
2	Can you suggest possible improvements/modifications for your own NEA and commercial products?				
Testing and Evaluating Commercial products					
3	Can you explain how products are required to undergo rigorous testing and the testing methods used – before products become commercially available?				
Use of 3rd Party Feedback					
4	Can you explain how 3 rd party feedback and testing is used to inform the evaluation process?				
	<ul style="list-style-type: none"> informing future modification and development 				
	<ul style="list-style-type: none"> the importance of ensuring the views of other interested parties in order to have objective and unbiased feedback 				

3.2.6 Selecting Appropriate Tools, Equipment and Processes		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
1	Can you discuss and demonstrate good and safe working practices?				
	<ul style="list-style-type: none"> the importance of using the correct tools and equipment for specific tasks 				
	<ul style="list-style-type: none"> the importance of ensuring their own safety and that of others when in a workshop situation 				
	<ul style="list-style-type: none"> how designs are developed from a single prototype into mass produced products 				
	<ul style="list-style-type: none"> the effect on the manufacturing process that is brought about by the need for batch and mass manufacture 				
	<ul style="list-style-type: none"> how to select the most appropriate manufacturing process to be able to realise their, or others', design proposals 				
	<ul style="list-style-type: none"> the importance of health and safety in a commercial setting including workforce training and national safety standards 				

3.2.7 Accuracy in Design & Manufacture		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
1	Can you discuss and demonstrate the importance of accuracy in manufacture?				
	<ul style="list-style-type: none"> how testing can eliminate errors 				
	<ul style="list-style-type: none"> the value in the use of measuring aids, e.g. templates, jigs and fixtures in ensuring consistency of accuracy and the reduction of possible human error. 				
2	Can you determine quantities of materials?				
3	Can you calculate the sides and angles of products?				
4	Can you use datum points and geometry when setting out design drawings?				
5	Can you use geometry to create templates for designs?				

3.2.8 Responsible Design		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
1	Can you discuss the important environmental issues in design and manufacture?				
	<ul style="list-style-type: none"> the responsibilities of designers and manufacturers in ensuring products are made from sustainable materials and components 				
	<ul style="list-style-type: none"> the environmental impact of packaging of products, e.g. the use of excessive packaging and plastics 				
Conservation of Energy & Resources					
2	Can you discuss the concept of a circular economy?				
	<ul style="list-style-type: none"> how products are designed to conserve energy, materials and components 				
	<ul style="list-style-type: none"> the design of products for minimum impact on the environment including raw material extraction, consumption, ease of repair, maintenance and end of life 				
	<ul style="list-style-type: none"> sustainable manufacturing including the use of alternative energy and methods to minimise waste 				
	<ul style="list-style-type: none"> the impact of waste, surplus and by-products created in the process of manufacture including reuse of material off-cuts, chemicals, heat and water 				
	<ul style="list-style-type: none"> cost implications of dealing with waste 				
	<ul style="list-style-type: none"> the impact of global manufacturing on product miles 				

Designing & Making Principles: Exam: June 2019

3.2.9 Design for Manufacture and Project Management		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
Planning for Accuracy and Efficiency					
1	Can you discuss and demonstrate the importance of planning for accuracy when making prototypes and making recommendations for small, medium and large scale production.				
Quality Assurance					
2	Can you discuss and demonstrate the procedures and policies put in place to reduce waste and ensure manufactured products are produced accurately and within acceptable tolerances?				
	<ul style="list-style-type: none"> Total Quality Management (TQM) 				
	<ul style="list-style-type: none"> scrum 				
	<ul style="list-style-type: none"> Six Sigma 				
	<ul style="list-style-type: none"> critical path analysis 				
3	Can you discuss and demonstrate their application?				
Quality Control					
4	Can you discuss and demonstrate quality control?				
	<ul style="list-style-type: none"> the monitoring, checking and testing of materials, components, equipment and products throughout production to ensure they conform to acceptable tolerances 				
	<ul style="list-style-type: none"> specific quality control methods including the use of 'go-no go' gauges, laser or probe scanning and measuring 				
	<ul style="list-style-type: none"> use of digital measuring devices such as vernier callipers and micrometres 				
	<ul style="list-style-type: none"> non-destructive testing such as x-rays and ultrasound 				

AQA A-Level Design & Technology: Product Design (7552)

Designing & Making Principles: Exam: June 2019

3.2.10 National and International Standards in Product Design		Power Point (Student Notes)	Notes & Independent Research	Q&A	Exam Revision
1	Can you discuss the importance of national and international standards in product design?				
	<ul style="list-style-type: none"> British Standards Institute (BSI) 				
	<ul style="list-style-type: none"> International Organisation for Standardisation (ISO) 				
	<ul style="list-style-type: none"> Restriction of Hazardous Substances (ROHS) directive 				
	<ul style="list-style-type: none"> battery directive 				
	<ul style="list-style-type: none"> polymer codes for identification and recycling 				
	<ul style="list-style-type: none"> packaging directives 				
	<ul style="list-style-type: none"> WEEE directives 				
	<ul style="list-style-type: none"> energy ratings of products 				
	<ul style="list-style-type: none"> eco-labelling: the Mobius Loop, the European Eco-label, NAPM recycled mark, the EC energy label, the Energy Efficient label and logo, Forest Stewardship Council (FSA), EPA energy star 				