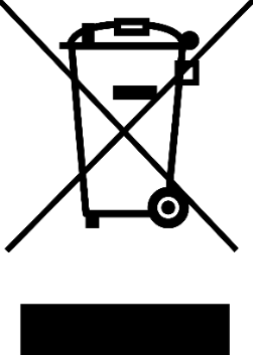


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Commercial Production methods				
1	Needs and wants	In design, needs represent fundamental requirements for a product or service to function as intended and fulfill a basic purpose, while wants are desires or preferences that enhance the user experience but are not strictly necessary. Needs are about functionality and usability, whereas wants focus on aesthetics, features, and emotional connections.		
2	Quantitative and qualitative criteria	Quantitative criteria rely on numerical data and statistical analysis to measure and quantify variables. Qualitative criteria, on the other hand, focus on descriptive, non-numerical data to understand experiences, perspectives.		
3	Scale of manufacture	One-off; One-off manufacturing, also known as job or bespoke production, involves creating a single, unique product tailored to a specific customer's requirements.	Batch; Batch manufacture, also known as batch production or process manufacturing, is a production method where goods are produced in discrete groups or sets, called batches.	Mass; Mass manufacture, also known as mass production, involves producing large quantities of standardized goods, often on assembly lines, using specialized machinery and a division of labour.
Types of manufacturing processes:				
4	Wasting	Wasting is a process that uses tools to remove material from a workpiece until the required component has been produced: wasting can be achieved by hand tools and machine tools. Examples, drilling, routing, chiselling, turning.		
5	Shaping	Shaping refers to the process that take raw materials and form them into final parts. Examples, casting, moulding, injection moulding and machining processes.		
6	Forming	Forming, pressing or press forming is where a pressing force is applied to a material to cause it to deform. Examples, die pressing, line bending, Vac forming, rolling.		
7	Joining	Joining processes are used to physically join two or more components. Examples, brazing, soldering, adhesives, bolts and rivets.		
8	Finishing	Finishing refers to the process of applying a decorative appearance, protective coating or other treatments to protect a surface material. Examples, painting, spraying, waxing, heat treating, dip coating.		
9	Assembly	Products with two or more components will have been designed to be assembled so they can function.		
Diagram				

10	Supply Chains-	THE SUPPLY CHAIN – is a network between a company and its suppliers to produce and distribute a specific product, and the supply chain represents the steps it takes to get the product or service to the customer. Left is an infographic to show the general supply chain of a product getting to market.
11	British Safety Institute	The British Standards Institution (BSI) is the UK's national standards body, dedicated to developing and publishing standards to improve the quality, safety, and reliability of products, services, and systems.
12	European safety symbol	The CE mark is a conformity marking required for many products traded in the European Economic Area (EEA). It indicates that the manufacturer has checked the product meets EU safety, health, and environmental requirements, and it allows the product to be sold freely within the EEA. The CE mark is not a quality mark or a guarantee of origin, but rather a declaration by the manufacturer that the product complies with applicable EU legislation.
13	British Safety Marks	The BSI Kitemark is a UK product and service quality certification mark, owned and operated by the British Standards Institution (BSI). It signifies that a product or service has been The UKCA (UK Conformity Assessed) marking is a product marking used for goods being placed on the GB (Great Britain) market, replacing the CE marking for many products.

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14	WEEE symbol	 The WEEE symbol is a crossed-out wheeled bin, indicating that electrical and electronic equipment should not be disposed of with regular household waste. This symbol, mandated by the Waste Electrical and Electronic Equipment (WEEE) Regulations, signifies that the product needs to be recycled separately. The WEEE regulations aim to reduce the amount of electrical waste going to landfills and promote recycling and reused.
15	Aluminium Recycling symbol	 The "ALU" symbol, in the context of recycling, represents recyclable aluminium. It typically appears as a circle of arrows with the letters "alu" inside, indicating that the product can be recycled and made into new aluminium items. This symbol is often found on aluminium cans, foil, and other packaging.

Keywords Vocabulary

16	Tooling	Manufacturing equipment needed to produce a component, such as cutting tools, dies, gauges, moulds or patterns.
17	Deburring	Process to remove sharp or raised edges on a material caused by other processes.
18	Labour Costs	Costs associated with employees in a business, including wages, taxes and additional benefits.
19	Overheads	Expenses that need to be paid by the business, not including labour or materials but rent and utilities.
20	Subtractive process	The removal of material from a solid block by a machining process, such as milling, turning or drilling.
21	Consumables	Resources that assist manufacture and are used up during the process- for example, oil and lubricant used in machines.
22	Standard Forms	Made available in large quantities to the same specification- sheet metal, paper, timber sheeting.
23	Geometry	Shape of the object.
24	Automation	Using computer technology to operate equipment, rather than humans.
25	Turning	A machine operation that generates cylindrical and rounded forms with a stationary tool.

6 R's- Sustainable Approaches

26	Rethink	Can the designer rethink the way it is manufactured. Is the material being used the only option?
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27	Reuse	Is about reusing what you’ve already got rather than buying new items straightaway.
28	Recycle	From batteries to bubble wrap, you might be surprised by how much can be recycled.
29	Repair	Taking the time to repair broken items can extend their lifetime and avoid introducing new materials into the cycle.
30	Reduce	Consider how you can reduce your meat and dairy consumption, and buy new clothes only when you really need them by making do with what you’ve got before replacing them.
31	Refuse	Say no to single-use bags, packaging, cups, straws and so on, and get into the habit of bringing along your own reusable replacement