

Candidate 3

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
1a.	
ABS. is a Scratch resistant material	
meaning it will be more durable	
towards scuff + scratches that may	
occur when shoes are placed on/removed	
from the footrests <small>its also chemically resistant allowing the footrest to be cleared hygienically.</small>	
Mild steel has a good strength to	
weight ratio meaning that it	
is light enough so not to make	
the chair hard to push, but strong	
enough to not warp under the	
users weight, so makes a great frame.	
Nylon is chemically resistant, this	
means the material can undergo a	
hygienic clean with chemicals and	
not lose any durability/strength, so	
is perfect for a seat which may get dirty.	

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	◦ Carbon fiber is extremely light for its strength this means the wheels will be easy for user to push, while not warping or bending.
	◦ Stainless steel is corrosion resistant meaning if its exposed to water whilst cleaning or from weather ^{weather} it will not rust damaging its strength.
	◦ Nylon is self-lubricating, this makes it excellent for wheels as they won't need oiled as regularly as will naturally spin smoothly + not lock up due to nylon's properties.
	◦ Aluminium is incredibly light ensuring the chair will be easy to push for users.

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1b	◦ Extrusion could be used for
	the tubular aluminum frame as
	it has a constant cross section,
	the tube could then undergo
	bending using Jigs and templates
	to make sure shape is accurate /
	able to be repeated replicated
	exactly on another chair.
	◦ Injection molding could be used for
	the ABS foot rest as it suitable
	for the material, and will be able
	to provide a good surface finish
	as well as the eg complex shape
	of the grip.
	◦ Aluminium wheels could be die casted
	as this would achieve ^{achieve} the solid /
	complex shape required easily.

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	<ul style="list-style-type: none"> o Press forming of the bumper + wheels, would achieve their shape accurately and be suitable as they are made of sheet metal
	<ul style="list-style-type: none"> o Welding has been used to join the metal wings + bumpers together it is suitable as it is a strong, permanent joint which would snap or break when experiencing an impact.
	<ul style="list-style-type: none"> o mesh for the nylon seat could be centered to give large sheets of the material.
	<ul style="list-style-type: none"> o Nuts + bolts have been used to attach standard components / Join two bits on the frame -
	<ul style="list-style-type: none"> o Piercing + blanking used to accurately produce holes needed for nuts + bolts.

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k.	the collapsible wheel chair has
	been made to collapse ^{collapse} so that
	when travelling in a car / storing
	it can be folded down to a
	smaller size to make storage
	easier, and also could ^{could} make
	carrying easier as well.
	° The handles on the back of
	the collapsible chair are there so
	if someone with not great strenght /
	Stamina is in the chair and they
	opt hired someone else can easily
	help them move.
	° the second metal bar attached
	to the wheel to act as a
	railing for the person to hold whilst
	pushing is there so that they can

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	find a good grip to make movement easier and also to stop them catching their hands in the wheel.
	◦ Both chairs have been designed to be light so that user can manoeuvre + move with less effort in them / no injuries.
	◦ The arm cushions on the collapsible chair are to make the chair more comfortable for someone spending a lot of time in it.
	◦ The bumper + wings on the paralympic chair are to provide better protection whilst doing the sport, to stop both the person being injured and the chair's internal structure being hit (also stops other chairs getting trapped)
	*underneath of each state foot rest

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1d.	Drawbacks.
	◦ reliability of sub-contractor - If
	your source of standard components
	shuts down or is late in delivering
	it will cost you money as you have
	to delay the process/find a alternative.
	◦ It limits the designing of the chair
	as it has to be built in such a way the
	standard components work/fit into design.
	Benefits:
	◦ It is cheaper to use them than
	custom designing/manufacturing pieces
	◦ It is also quicker speeds up the
	design process as they are from an
	external source ^{source} so don't need specialist
	team/equipment to spend time making them.

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	<p>◦ The height of the back of the chair will be influenced by the height of people upper body (hips to shoulders) so the comfortable + secure backrest gives the support they need.</p>
	<p>◦ The Anthropometrics for the height from someone's knee to foot will have been considered so foot rests aren't too close / far from main seat allowing more comfortable use.</p>
	<p>◦ The depth length of the footrest will have been design to fit a longer larger foot so that be all foot sizes fit not just small giving support needed.</p>

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2a	
◦ Vacuum forming is a process	
which uses plastics, which are	
chemically resistant so can be	
hygienically cleaned before food is	
put in them.	
◦ because it is done with thin	
plastic sheets it can produce light	
packaging meaning than with the	
combined weight of product it is	
easy/comfortable to lift.	
◦ Uses templates/moulds that allow	
accurate replication/accurate sizes of	
the product, so many can be	
produced identically so machines in	
food factory can work with them	
and as the process is accurate	
allow ensure if two pieces will fit together.	

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	<ul style="list-style-type: none"> allows more complex shapes like all the grated textures seen to be incorporated to the design, which will improve its durability, by being engineered to take weight better.
2b.	<p>polypropylene:-</p> <ul style="list-style-type: none"> It comes in a variety of colors so clear packaging for fruit and black packaging for meat can both be produced both fibres benefiting market as ^{recyclable} packaging. It is a strong material so even in thin sheets it will be able to hold items of food ^{without breaking under weight.} It is scratch resistant so if dropped with / bumped will not be more resistant to damage so that food items remain unharmed.

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3a.	It is much easier to change
	a CAD model design on a computer
	than to redraw many detailed sketches
	so its quicker + easier to make changes
	° Allows fully rendered versions to
	be produced quicker + in greater
	detail, so can be better for presenting
	to clients/marketing.
	° Means than the software can
	run some tests like stress/strain
	test to determine if products stronger
	with out actually making models +
	doing test rigs.
	° Can be easier shared with people
	across the world and better for a
	team of people to make changes to.

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3b.	

◦ Orthographics / dimensions of products can be easier worked out off of a CAD model / can also produce animations of movement.

◦ Allows a 360° view of product giving better idea of Aesthetics.
◦ allows Rapid prototyping

3b. ◦ by having a strong brand it helps to market a product as when people see that logo on it they know who it is / quality of product, so company / product are more trustworthy to consumers

◦ ~~People who~~ Big companies / brands often have more contacts / recognition so will make it easier to run a celebrity endorsement marketing scheme boosting sales.

◦ Means aesthetics of the product are

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	Instantly recognisable to consumers when on the shelf, drawing attention and getting more sales.
	• allows for brand to charge more for products due to being under their Brand (like beats headphones) producing more profits.
	3bc Trade mark which protects the logo of Bose meaning that other companies cannot copy/steal their logo to use on their products.
	Registered design - allows you to protect products particularly Aesthetic such as colour schemes, Sign etc.

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3d.	◦ Introduction is stage A, this is the most expensive stage as a lot of manufacturing is done without many sales and lots is invested in marketing, this is the first stage where people start to see/react to product, here is where they assess if product is realistically going to sell, is financially viable.
	◦ Stage B is growth - there is little competition in this stage so cost product reaps in lots of profit which is normally reinvested into coming up with the next design.
	◦ Stage C is the mature stage, where sales start to drop due to competition market saturation (everyone already has one)

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4a	

◦ Stage d is decline where the sale drop dramatically, and company thinks of withdrawing product from market.

◦ The use of the colour blue in the second raiser, gives it an ~~attractive~~ ^{aesthetic} that particularly appeals to men due to the colour choice, so is targeting, target market.

◦ The contrast between the blue + black of the second raiser makes it stand out more and have a more bold feel about it so it will catch consumers eyes ~~off~~ on the shelves.

◦ The shiny finish of the ~~Gimidsedin~~ of the Gillette blade gives it a lot sleeker, expensive and morder look as the

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1b.	<p>Sketch models are quick and inexpensive models used in early stages of design to better communicate a idea to allow production to move forward, or to inspired create initial ideas, by playing around with materials, this will allow one design to be chosen quicker due to better/clearer communication so process can move on.</p>
	<p>ergonomic models are per models of specific parts of a design, so that they can be tested to see best ergonomics for product (normally Anthropometrics), they are cheaper than producing the whole product and if At the suitable Anthropometrics/can be ergonomics can be chosen it</p>

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allows for final dimensions of	
design to be confirmed so	
manufacturing can begin.	
° Prototypes - are fully functioning	
models of a design which can	
be presented to the market / undergo	
user trials & test rigs, they are used	
to check product for any changes	
right before production.	
• This specification give information	
on the overall look of the product	
including its shape, logo's, colour	
schemes and general aesthetics.	

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iv	blis contain information on functional
	parts of the design such, as specific
	technology that should be included.
	or specific components (gears etc).
b.	◦ do a user trial of an existing
	product in the market to find its flaws/
	Strengths.
	◦ do a user trip of an existing product
	in the market to find its flaws/Strength.
	◦ Send out a Survey to gather information
	on what target market would want in
	product
	◦ carry out market research to find
	the popular aesthetic trends / price
	range of products aimed at target market.

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6a.	◦ look for symbols on the product that	
	could indicate what materials are in it.	
	◦ carry out tests on the material to find out	
	its str properties so it can be identified	
	◦ compare it to another piece of material which	
	is known, to see if they are similar enough to be the	
	same.	
	◦ look at the aesthetic of the material	
	its colour, texture, finish, to see if it looks	
	like a specific known material.	
6b.	◦ ribs + webs allow for greater strength of	
	product as they can reinforce certain areas of	
	product to stop warping.	
	◦ bosses are used to help locate internal parts so	
	that they are placed in right place & held firm.	
	◦ ribs can be used to reinforce bosses so they	
	don't snap/warp.	

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	<p>ways parts ribs could be used Aesthically to round off Joins between 2 surfaces like the handle of a mug and mugs surface, whicle also also giving support</p>
6c.	<p>• Allows them to know, if it is suitable for particoel purpose, will it melt if exposed to heat / be damaged by cleaning products (this is mostly symbols)</p> <p>• labels allow specific parts of Items to be Identified each, either so they can be replaced easily, or assembled correctly if not pre-assemble. If able to Identify replac correct replacement parts can be sourced saving time + money.</p>
7.	<p>• Presentation drawings - can be used at the end of the design process / to pitch ^{sell} design to consumers or clients, they are detailed rendered sketches which accurately depict the Aesthetics and overall shape + form of design.</p>

