

Candidate 1 evidence

ENTER NUMBER OF QUESTION		DO NOT WRITE IN THIS MARGIN
1a)	<p>Tubular stainless steel frame is suitable as it is strong and able to hold the weight of a person, for digger 1. For digger 2 tubular mild steel frame is suitable as it is scratch resistant which means it will keep its aesthetic look. Tubular stainless steel frame for digger 1 is also suitable as it is chemical resistant which means it is easy to clean, this is good as the item is outdoors so will get dirty easily. Nylon bearings on digger one are self lubricating, this is suitable as the product will be able to move easily and stay durable. ABS for digger 1 is suitable as it is weather resistant which means it is suitable as an outdoor product as the seat will stay firm in any weather the conditions. ABS wheels is suitable for digger 2 as it is light weight so the product will be easy to move around. Rubber handles on digger 2 are suitable as they will be comfortable when the user is using the product. The mild steel scoop on digger 2 is very strong so will be able to lift heavy weights without being damaged.</p>	

ENTER NUMBER OF QUESTION		DO NOT WRITE IN THIS MARGIN
16)	<p>Extrusion of the mild steel frame as it will have uniform cross section. Injection moulding of the hollow ABS wheels as it is a repeated process and has very intricate detail that injection moulding can perform. Welding of the tubular stainless steel frame to join pieces together. Bending of the tubular on stainless steel frame to get the correct shape and make sure the product is strong. Dip coating of the mild steel scoop as it is painted black, this will add a finishing coat onto the product and will make it stronger and more durable as it has an extra protective layer. Jigs to ensure the holes are drilled in the correct places.</p>	
10)	<p>The length of the handles on digger 2 must be for the length of the ⁵⁵95th percentile hand. The width of the seat must fit the width of the 95th percentile bottom. The height of the seat from the floor must fit the 55th percentiles, length of body so it is suitable for every user. The diameter of the handles must fit the grip of the 55th percentile the hand so it fits every user comfortably. The force that is used</p>	

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
	<p>to push and pull the handles of the digger must be fairly easy so the product is suitable for every user. How the body will sit on the diggers comfortably and the posture that is used.</p>
1.d)	<p>Function^{Safety} for digger one is^{as} the digger is made from stainless steel which means it is chemical resistant and easy to clean. This means the digger is hygienic. Function for digger 2 is the scoop is large and able to pick up a large amount of dirt. The rubber handles on digger 2 is also for safety so so the users hands dont get sore ^{or damaged} ↑ when playing with the digger. The handles also provide comfort for when the user is playing with the digger. The digger 2 has large wheels which means that the product is able to move around on hard surfaces surfaces and move easily. The digger^{Scoop} on digger 2 has jagged edges which means the scoop will be able to pick things up easily. The wheels on digger 2 have grooves in them which means it will grip onto the ground easily and wont slip or slide, this will keep the user safe.</p>

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
e)	<p>JIT production could be used to speed up production time. This would also save money. Jigs could be used to ensure holes are being drilled in the correct places. Line production could be used to ensure accuracy. A Gantt chart could be used to ensure that all pieces are made at the same time. This also lets specialists know when needed. Batch production could also be used as regular checks can be done throughout the process to ensure efficiency.</p>
2a)	<p>Thermo-setting plastic is suitable for this product as it can be used at high or low temperatures and stay the exact same, it will keep its form and will be very strong. Thermo-setting plastic is moisture resistant which means it is waterproof waterproof and will be able to be cleaned easily. Thermo-setting plastic is scratch resistant which means it will be able to keep its aesthetic look.</p>

ENTER NUMBER OF QUESTION		DO NOT WRITE IN THIS MARGIN																
2b)	<p>Compression moulding is a suitable process as it ensures accuracy of the product. Compression moulding is also a quick process which will speed up production. Compression moulding also ensures intricate detail in products.</p>																	
2c)	<p>An idea generation technique that may be used would be a morphological analysis. This is where a table is made with 4-5 headings and below will be possible materials, colours etc that may be used as the final product. A random generator would be used so different ideas are chosen every time so many different ideas are made. This would let the designer see all the possible outcomes and help them choose their final product for example ↓</p>																	
	<table border="1" data-bbox="354 1419 1214 1682"> <thead> <tr> <th>Colour</th> <th>materials</th> <th>secondary function</th> <th>shape</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td>wood</td> <td>light</td> <td>Circle</td> </tr> <tr> <td>Blue</td> <td>Plastic</td> <td>speaker</td> <td>Square</td> </tr> <tr> <td>Green</td> <td>glass</td> <td>water dispenser</td> <td>Triangle</td> </tr> </tbody> </table>	Colour	materials	secondary function	shape	Red	wood	light	Circle	Blue	Plastic	speaker	Square	Green	glass	water dispenser	Triangle	
Colour	materials	secondary function	shape															
Red	wood	light	Circle															
Blue	Plastic	speaker	Square															
Green	glass	water dispenser	Triangle															

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
3a)	
3b)	

Another idea generation could be brain storming. This is when a group comes together to discuss a specific product. Members of the group are able to share their opinions and give ideas and other people can add on to these. They will all agree at the end and have a good idea on what they will be going forward with.

One benefit to the consumer of using standard components is that if anything went wrong with the bike the consumer would be easily be able to get new parts to fix it*. The bike would also be easily recycled which is good for the consumer as they could use parts for different things. Another benefit could be the bike may not be as expensive as manufactures wouldn't of spent as much money of getting the standard components which means they could sell it for ~~cheaper~~ cheaper* as they are widely available.

Using CAD means that designers A benefit to using CAD would be it is an easy process and if something is wrong that the designer needs to fix it can be quickly and easily done.

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
3c)	

Another benefit is that the designer can easily send the design to different members of the team through email to get different opinions on the design. Another benefit is it doesn't take as long as making a full scale product so it will save the designer lots of time. Another benefit is designers can experiment a lot with CAD as things such as sizes and colours can be changed easily.

A fully automated production means that products will be made exactly the same every time which will improve accuracy. A fully automated production system means people don't have to pay staff wages which will save the company money. Automated production can work 24/7 and don't need holidays so products can be continually made all the time. If a machine had to breakdown this would make a stop in production and would require a skilled person to fix the problem which would cost money.

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
4a)	<p>4a) 3D printing is a fast process, much faster than some traditional manufacturing process which speeds up production times. 3D printing is good for the environment as it is not using harmful gasses that some ^{some} traditional manufacturing processes use. 3D printing is very accurate and can create fine details that is traditional manufacturing processes are not able to make.</p>
4b)	
4b)	<p>Questionnaires and surveys can be used as a method of research. They will collect useful information for the designer such as target market and preferences related to the product. Observation tests could be used where a person physically uses the product and designers can watch and take notes and if need be can change certain things of the product. User trip could be used. This is when the designer uses a finished product or a prototype and evaluates how the product works. Another method of research is User trial, this is when a member of the the public will use a prototype under an experiment environment and the designer</p>

ENTER NUMBER OF QUESTION		DO NOT WRITE IN THIS MARGIN
	<p>designers will watch and take notes of how the people physically use the product. They will then fill out a questionnaire and the designers will evaluate them. Test rig to test out things on the product such as crash tests and float tests. This will let the manufacturers change parts of the design if needed.</p>	
11/11		
1(i)	<p>Product design specification - The purpose of this is to let the designer know what is wanted from the product these are things such as ergonomics, target market, cost, functions.</p>	
c(ii)	<p>Technical specification - The purpose of this is to let the designer know ^{how} the product will work. This is things such as movement, size and size and sizes.</p>	

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
5a)	<p>The yellow colour of this kettle makes the kettle stand out as it is a very bold colour. The contrast between the yellow and the grey makes the kettle look aesthetically pleasing and eye catching. The texture of the kettle is very shiny which makes the kettle look clean and new. The style of the kettle is very modern as it is a very sleek design.</p>
5b)	<p>Confidentiality, this is used to protect secret formulas or ingredients so no one else can use them.</p>
6.	<p>Ergonomists test sizes of people and things to make sure the product will be accurate and correct to scale.</p> <p>Market researchers will use research methods such as interviews to know what exactly the public wants and needs.</p> <p>Project manager makes sure everyone knows what tasks they are doing and can go to them for help.</p>

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
7(ii)	
7(ii)	Phone - A float test could be used such as Aluminium and stainless steel steel as aluminium is much lighter than stainless steel. A flame test could be used by by looking at the colour of the flame to identify the material. A scratch test could be used to identify if the material is at strong. A force test could be use to test if the material is strong or not.
7(iii)	Jigs and templates are is used to ensure efficiency of the product. Slanted sides of materials are used so the mold can be easily ex extruded from the machines. This would be used for Vacuum forming. Location pins pins are used so the product can stay in place when being made.

ENTER NUMBER OF QUESTION	DO NOT WRITE IN THIS MARGIN
7)b)	<p>Manufacturers could use recyclable materials for their products. Manufacturers could label their materials to let the users know how to recycle them put properly. Manufacturers could reduce their carbon footprint by not bulk by buying so many materials are coming at the same time, reducing their carbon footprint. Batch production could be used as this is is a suitable process to help the environment. Manufacturers could use JIT production to make sure products are being delivered all together. Manufacturers could order from local places so to save fuel emissions and help carbon footprint.</p>
8.	<p>Sketch models can be used during the design ^{initial} ideas process This would let the designer have a rough idea of what the design may look like and can test things such as sizes. Block models could be used during the exploration. This could be to test things such as sizes of the body and how they will fit the product. They will also test ergonomics during this process. Scale models could be used during nearing the end of the</p>

ENTER NUMBER OF QUESTION		DO NOT WRITE IN THIS MARGIN
	design process to to see the exact sizes and parts	
	will be able to make changes if needed. Also at	
	during the exploration a prototype could be	
	made to let people see how the product physically	
	looks and how it works. This will let the	
	designers know if there is anything they need	
	to change or to fit in the product.	