

## Candidate 8 evidence

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1.a	ABS is a suitable material <del>#</del> as it has good impact resistance.	
	Nylon is a suitable material as it is self lubricating.	
	The Rubber <del>#</del> for the handles is a suitable material as it will be comfortable to hold.	
	Polypropylene is a suitable material <del>#</del> as it is scratch resistant and is a thermoset plastic so it will not melt or warp in heat.	
	Mild steel is a suitable material <del>#</del> as it has a good strength to weight ratio.	
	Stainless steel is a suitable material as it is durable.	
1.b	The nylon bearings could be manufactured using injection moulding <del>#</del> as it is highly accurate.	
	The tubular mild steel frame could be manufactured using	

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	<p>extrusion as it provides long continuous cross sections</p> <p>The ABS seat could be manufactured using die casting as it is highly repeatable.</p>
1.c	Anthropometrics
	<p>Anthropometrics would of influenced the distance between the handles of the diggers.</p>
	<p>It also would of influenced the height of the seat.</p>
	Physiology
	<p>Physiology <del>will</del> would of influenced the design by how difficult it is to use the handles.</p>
	<p>It also would have influence by how difficult it is to roll and use the wheels on the garden digger.</p>

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1d	<p>Safety would be a big aspect in the design of the diggers as they are targeted for children. If the product doesn't look safe the parent won't <del>buy</del> <del>buy</del> buy or let the child use the product.</p>
	<p>The main function of the product is to dig and entertain children. Designers must ensure their final design fulfills the primary function of the product.</p>
	<p>The digger must be able to dig designers would have this in mind and design the product to fulfill the function.</p>

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1.e	c. 1
<p>Mass production is when many of the product is made at once. This ensures there is enough to fulfill orders and sell more products. Just in time production produces the exact amount of the product needed. This saves warehouse space and means the product only has to be made when orders have been placed which could save the company money.</p>	

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2.a	Thermosetting plastics do not melt or warp with heat making them ideal for cooking with.
	They are also durable and <del>hard</del> scratch resistant.
2.b	Compression moulding is suitable as it is highly repeatable and cost effective.
2.c	One idea generation technique they could be used is
	Brainstorming. This is when a group of people come together and put different ideas into a list. This means everyone can build off each other's ideas.
	Another idea generation technique is <del>brainstorming</del>
	Mood Boards: You gather many images relating to your brief and put them

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3.a	<p>together. This helps stimulate new ideas.</p> <p>One benefit to the consumer is that they are not premanent meaning they can take it apart if they want to. Another benefit is that it will be less expensive to buy as they can be flat packed meaning the company won't have to spend time and pay staff for building it.</p>
3.b	<p>One benefit to using CAD is that there is less room for human error. Another benefit is very detailed models/designs can be acheived. Another benefit is their is a library of parts which the design can use. This could save time.</p>

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3.c	<p>A fully Automated production methods <del>mean</del> meaning there is no need for as many staff meaning people could lose their jobs and there wouldn't be as many companies hiring.</p>
	<p>Another impact is that there is a change in the skills needed from the workforce meaning staff may require more training.</p>
4.a	<p>The aesthetics of the leg look better using 3D printing rather than traditional manufacturing processes. 3D printing is more accurate than traditional manufacturing processes. 3D printing requires less staff than traditional manufacturing processes which saves the company money.</p>

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4.b	<p>One method of gathering research is surveys. These are given to groups of people and used to gather general information about the product and user. Another method is user trials. This is when members of the public are given the product to use and test. It used to gather feedback on how the product works and their opinion on the product.</p>
4.c.i	<p><u>Product Design Specification</u> The purpose of the product design specification is to outline what the product needs to fulfill. On the product design specification you would see the purpose of the product, materials, the desired aesthetics and budgets.</p>



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6.c-ii	Technical Specification
	The technical specification puts the marketing specification into precise detail. On a technical specification you would find sizes of the product.
5.a	The colour of the kettle is bright and eye catching. The shape of the handle makes the kettle easier to hold. The texture of the handle is smooth making it easier to slip out your hand. There is a contrast between the bright yellow and the darker grey.
5.b	Another method of protecting intellectual property rights is <del>being granted a</del> being granted a copyright. A copyright protects name, logos and

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6	
• Ergonomists	
Ergonomists research and bring information on anthropometrics, physiology and psychology to help aid the design of the product.	
• Market Researchs	
Market Researchs carry out research on the target market to find out what products consumers would like and pricing of products. They could do this by surveys and questionnaires.	
• Project managers	
Project managers ensure everyone completes their tasks on time and to a high quality. They also ensure	

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	everyone sticks to the budget.	
7.a.i	Methods that could be used to identify a material are looking at any symbols on that material. They could carry out scratch tests, flame test and test to see how magnetic the <del>material</del> material is.	
7.a.ii	Features like location pins ensure everything is in the right place and add strength to the overall structure. Bosses add strength to threads. this makes the product easier to assemble.	
7.b	Manufacturers should ensure the product can be easily recycled. Different materials labelled. They should make products easier to repair or reuse. The <del>product</del> product	

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	<p>should be designed with a long life span. The manufactures should use as little manufacturing processes as they can.</p>
8	<p>Models are used to gain information such as <del>materials</del> aesthetics, strength, ergonomics during different stages of the design process. Different types of models include:</p> <ul style="list-style-type: none"><li>- Sketch models</li><li>- Block models</li><li>- Scale models</li><li>- Test rig</li><li>- Prototypes</li></ul> <p>Sketch models are quick models used to look at the aesthetics of a product/design</p> <p>Block models can be CAD/CAM used to look at the aesthetics of a product/design</p>

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Scale models are used to test the ergonomic aspects of a design.

Test rigs are used to test the strength of a product/design.

Prototypes are used to test many aspects of a product such as strength, ergonomics. ~~etc~~ They are usually made at the end of the design process and used to give feedback on the final design.