Arkwright: ‘Hold, Store, Display’ Brief

Context

At the beginning of this year, myself and three others who had done well in higher Product Design arranged with our teacher, Mr Murray to see if we could complete an Arkwright scholarship despite being slightly over the age limit. We joined this years Higher Product Design class and began working only later finding out that it was not possible for us to take part in the program and now use the time in class to do personal folio or work for other subjects.

As part of the course work for Arkwright, we had to design a product for their brief which, when we found out that the course was not going ahead, I decided to take forward for my personal portfolio. The brief was as follows; to create a product to hold and/or store and/or display another product. The brief was very open with only a few guidelines suggesting optimal sizes and exemplar products from previous years.

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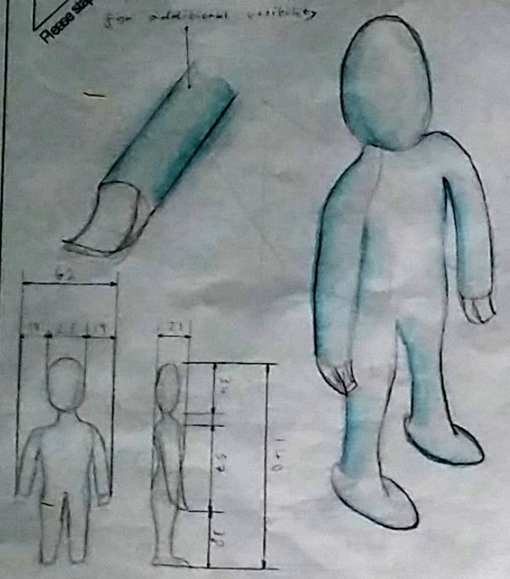
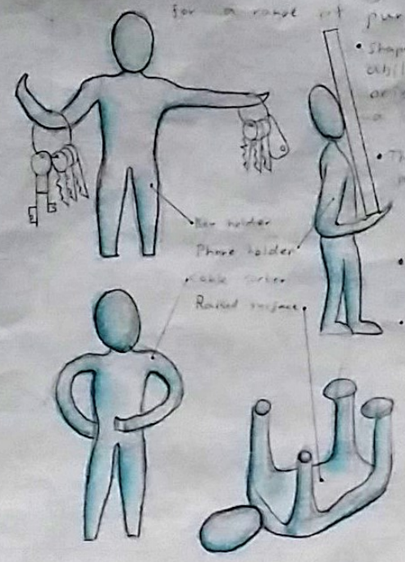
The mould once scooped out the end for additional versatility



- This design can be used to hold a variety of objects depending on user imagination and preference. It utilises a shape memory polymer to be customised for a range of purposes.
- Shape memory polymers have the ability to return to their original shape when exposed to a stimulus. In this case heat.
- This allows the user to mould the unit when heated and reset it to its original shape when reheated.
- These four diagrams show four potential uses.
- The unit is unpainted and available in a range of colours to appeal to a wide target market
- A uniform thickness to minimalise risk of weak points such as joints snapping.



- This unit comprises of two main components. The first is an arm of interlocking joints which can be seen to take a large range of positions and angles. The second components are sheets of suction cup plastic which would be manufactured to a variety of sizes and would clip in here.
- Suction cup plastic is a plastic sheet of tiny suction cups to create a high friction material without the use of adhesive.
- This allows the user to simply place their object on and it will stay in place.
- The variety of sizes and position allow for many user such as phone/tablet stand, jewellery storage, light holder ect.

Shown here is a lower pad, separate from the arm

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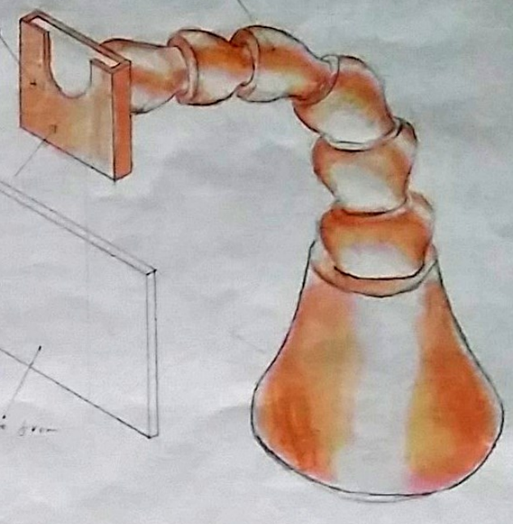

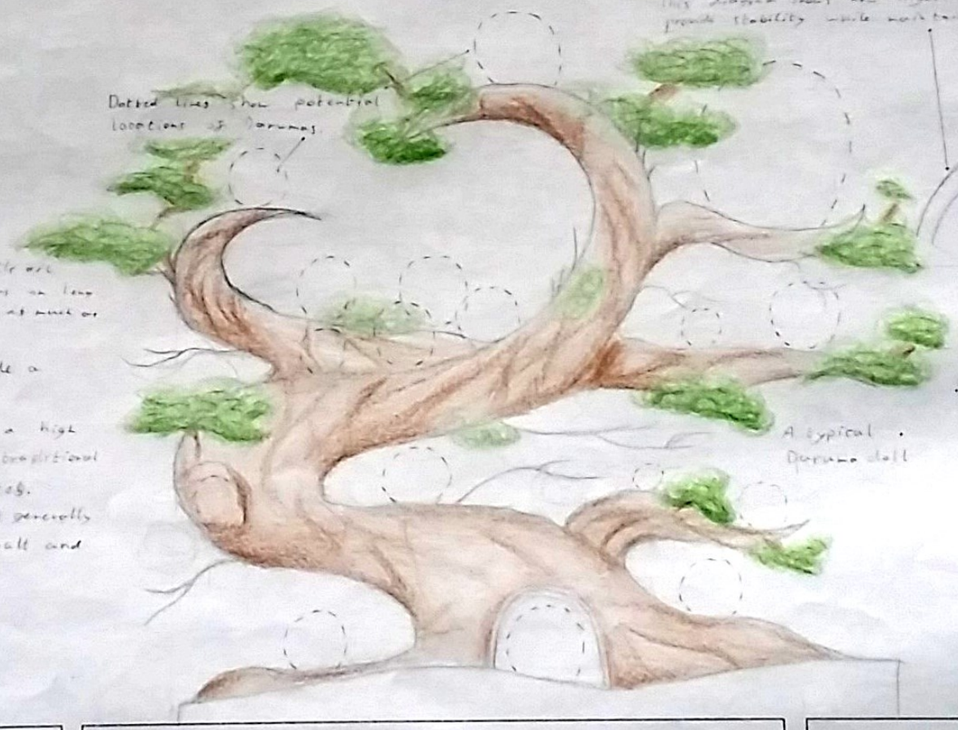

This diagram shows how layering is used to provide flexibility while maintaining aesthetics

A typical Daruma doll

- This unit addresses a niche market of Daruma dolls. Daruma dolls are traditional Japanese good luck charms to help the user focus on long term goals. Traditional usage entails having the doll visible as much as possible even after the task is complete.
- This hand crafted unit is designed to be displayed and to provide a 'special' place for the storage and display of Darumas.
- The unit is mostly two-dimensional, made up of to give a high quality feel and styled/painted to resemble a collection of traditional Japanese tree types, such as sakura and hinoki-type trees.
- As the dolls are also hand crafted, sizes vary alot but generally are small, medium and large. This unit caters for the small and smaller medium types.

For Examiner use only		
Section A	Flair and imagination of the 3 concepts	/30
	Functionality and reasoning	/10
	Technical knowledge	/10
	Total for Section A	**/50**
Section B	Functionality of Proposal	/20
	Materials	/10
	Construction Method	/20
	Total for Section B	**/50**
	Total	**/100**

Marker's Comments:

Name:

School:

Section A or B:

Question Number:

Page: _____ of _____

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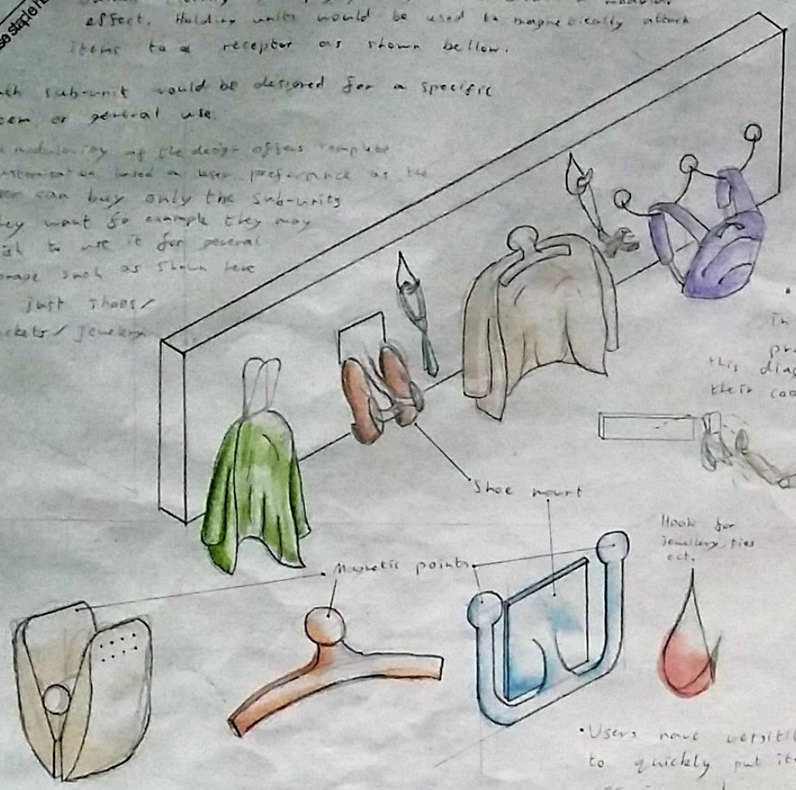
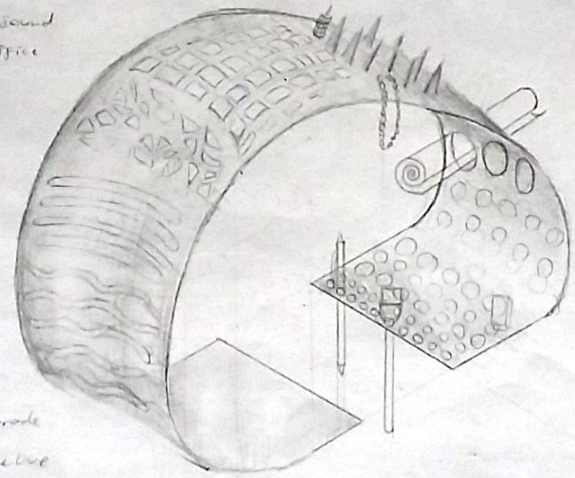
- This design is intended to alleviate some of the hassle of storing outdoor clothing by employing magnets to create a modular effect. Holding units would be used to magnetically attach items to a receptor as shown bellow.
- Each sub-unit would be designed for a specific item or general use.
- The modularity of the design offers complete customisation based on user preference as the user can buy only the sub-units they want for example they may wish to use it for general storage such as shown here or just shoes / jackets / jewelry.



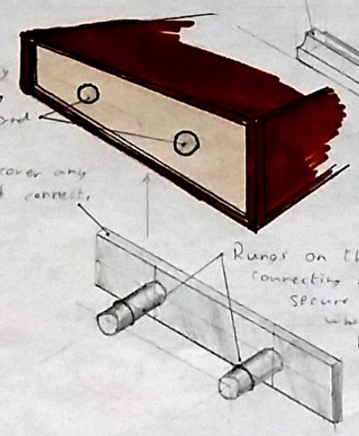
- The receiving pod can be any shape, size or colour the user desires.
- As well as space efficiency, this unit allows the user to easily dry clothes and have a persistent location for keys and such items.
- Users can also be creative in the way they use the product as demonstrated by this diagram of one throwing their coat hastily rather than having to carefully hang it up.

- Users have versitility of use, being able to quickly put items on and grab them off in a hurry.

- This design aims to organise stationary and other items found in the work environment of an artist, designer, office worker or other desk worker.
- Differently shaped holes and extrusions can be utilised to hold and store stationary, paper, craft items, tools and other resources with the user's requirements.
- The unit will be moulded by fused disposition molding (3D Printing) for accuracy of shape and to allow the manufacturer to sell it as a file which users can print if they have the facilitys as well as off the shelve.
- The unit would be available in PLA plastic due to it's ability to be used in comercially available 'Makerbot' printers and to allow it to bio-degrade after it's use. Additionally, the off-the-shelve version would be manufactured from PDLA, poly-D-lacitate for increased durability.



- This unit is also a modular design comprised of basic components which connect to create structures such as the four examples shown. This could be used to create objects like shelves, tables, desk sorters or any other application a user can imagine to suite individual requirements.
- Variations of the set shapes such as the radius of corner and rounded / filleted or chamfered edges would be available.
- The components would be made of mostly ABS for durability and load-bearing capabilitys with variations on colours and fake veneers available.
- Connection method shown would be used to join the panels.
- On the side of each panel / component are holes, indented slightly with allow connecting rods to 'snap' in and join components.
- Panels such as this cover any sides which do not connect.



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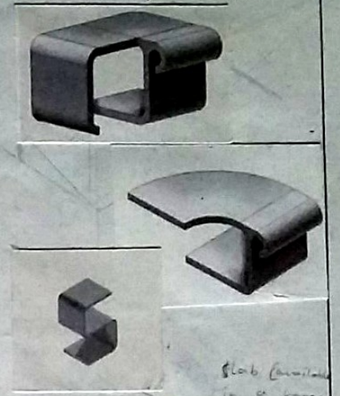

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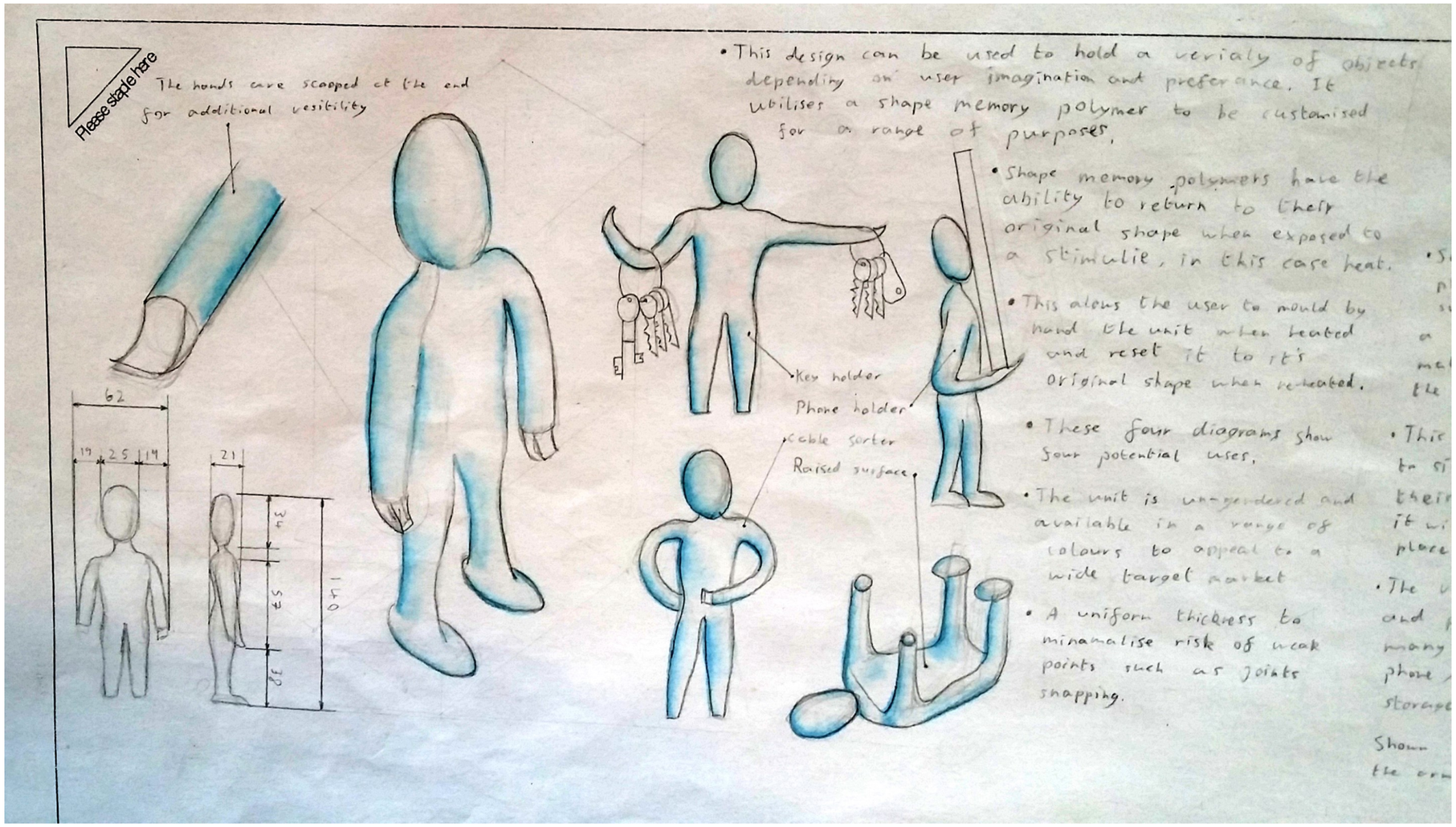
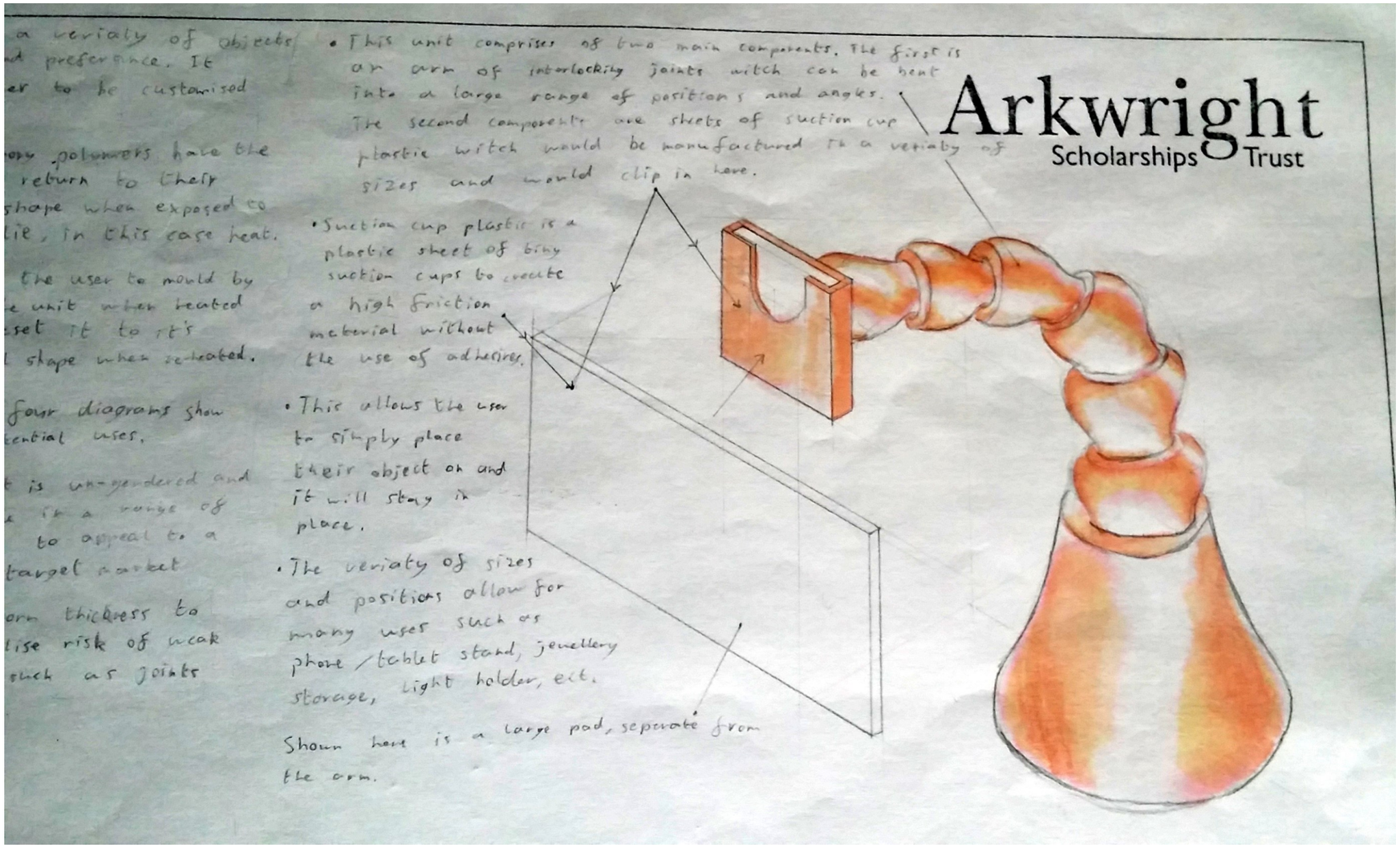


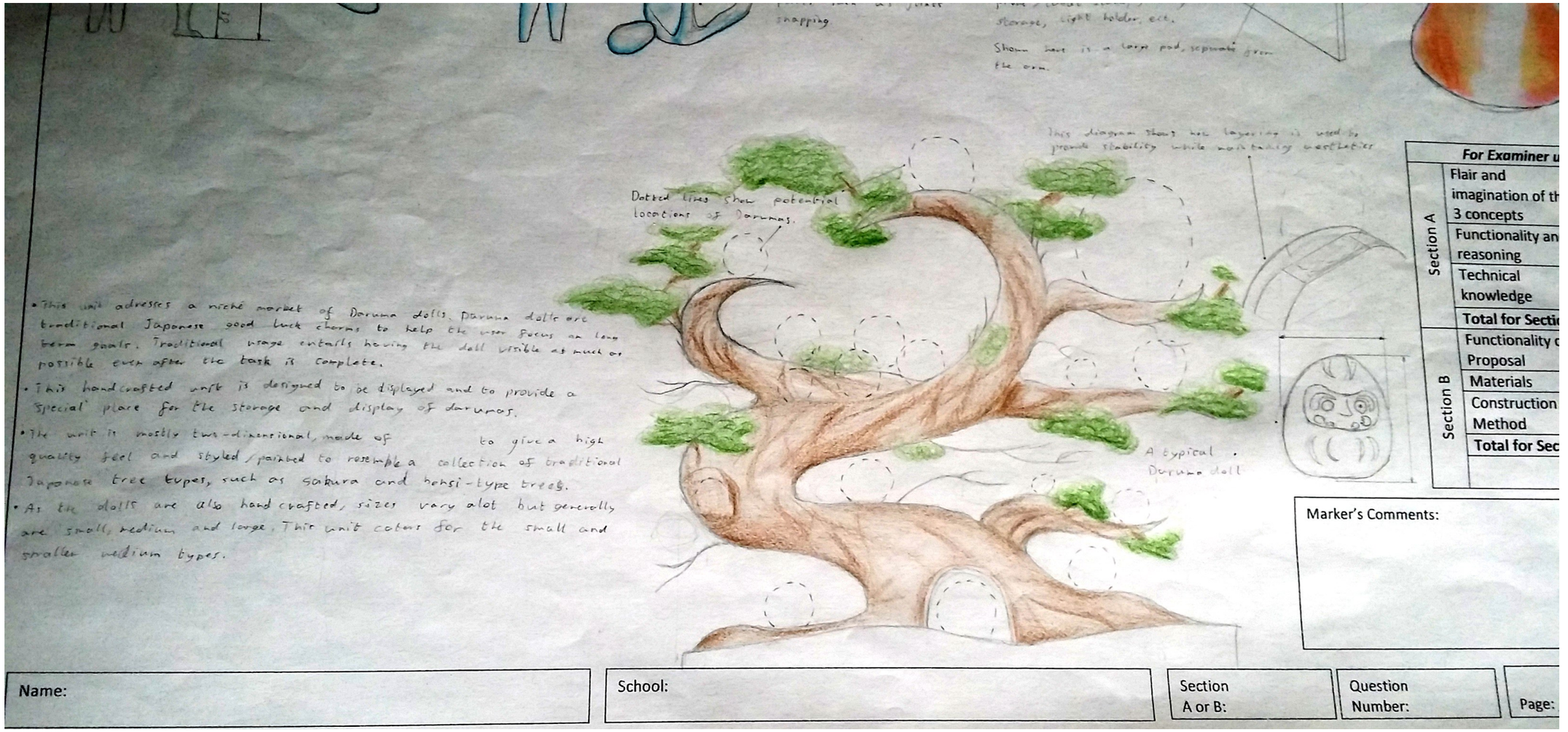
Design idea one uses a shape memory polymer to suite a wide variety of situations based on user preference and imagination. The design is a small figure 140mm tall made from a shape memory polymer meaning that it can be heated by conventional means, for example, in an oven and moulded into any shape the user desires where it will set when cooled. Upon reheating, it will re-turn to it’s original shape to be moulded again, four examples are shown here.

Design Idea 1



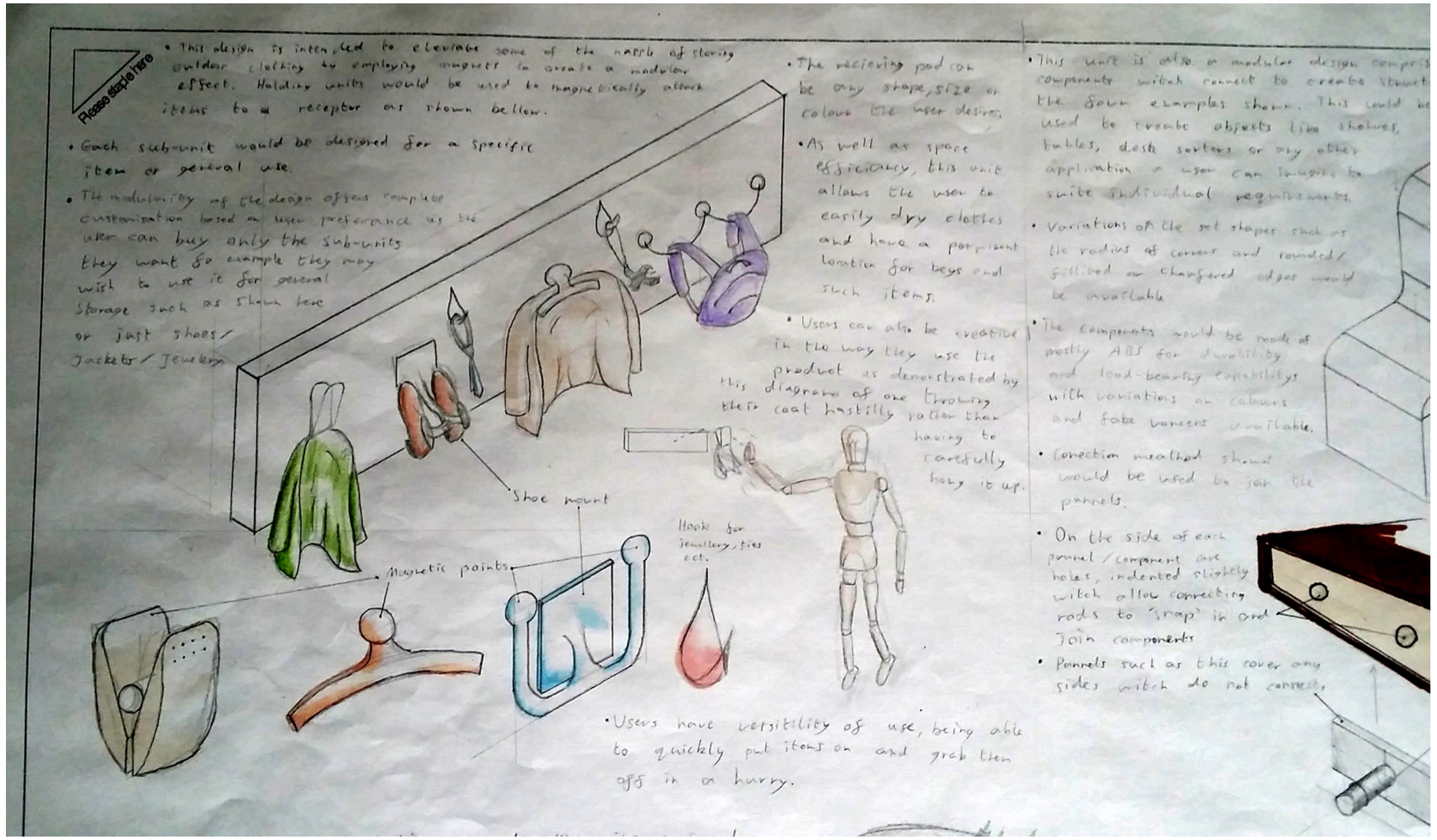
Design idea two is comprised of two main components, the first is an arm of interlocking joins which can be bent to face any direction at multiple heights and angles, and the second is a series of boards which attach on the end. The boards are ABS with a layer of suction cup plastic, a thin plastic the surface of which is made of tiny cup shapes which create enough friction to hold a variety of objects in place without the need for adhesives. The boards would be manufactured in a large range of sizes, all of which would clip onto the same frame allowing it to be used to hold any number of products such as smartphones or tablets for multimedia purposes, important notices or reminders, or other miscellaneous loose objects the user wants to secure.

Design Idea 2



Design idea three addresses a niche market in the form Daruma dolls, a traditional Japanese good luck charm to help the user focus on long terms goals. Traditional usage entails having the doll visible as much as possible, even after the task is complete; this unit is a hand crafted and designed to be displayed as a 'special place' for the storage and display of Darumas. The unit is mostly two-dimensional, made of layers of oak to give a high quality feel, styled and painted to resemble a collection of traditional Japanese tree types such as sakura and bonsai-type trees.

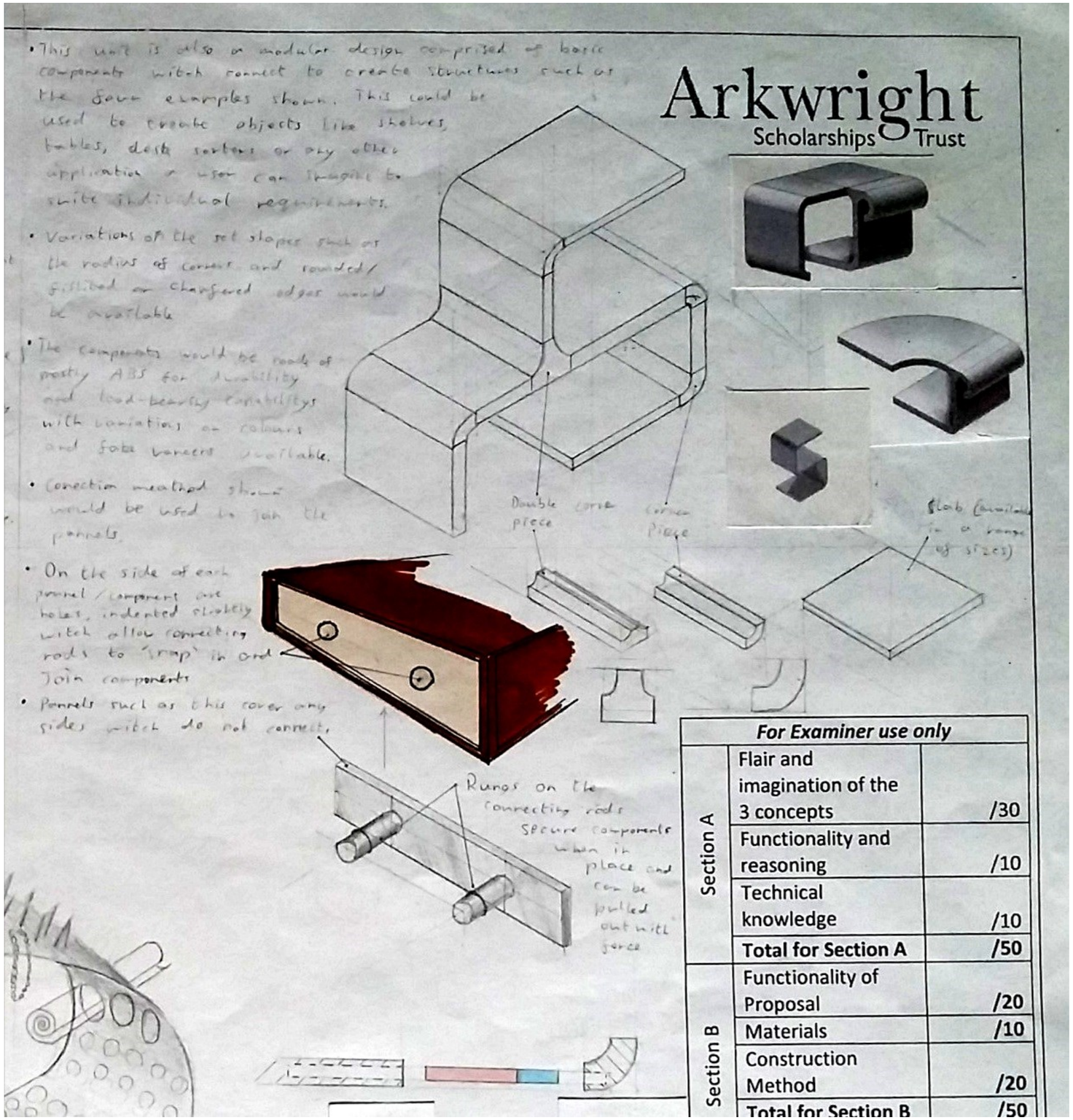
Design Idea 3



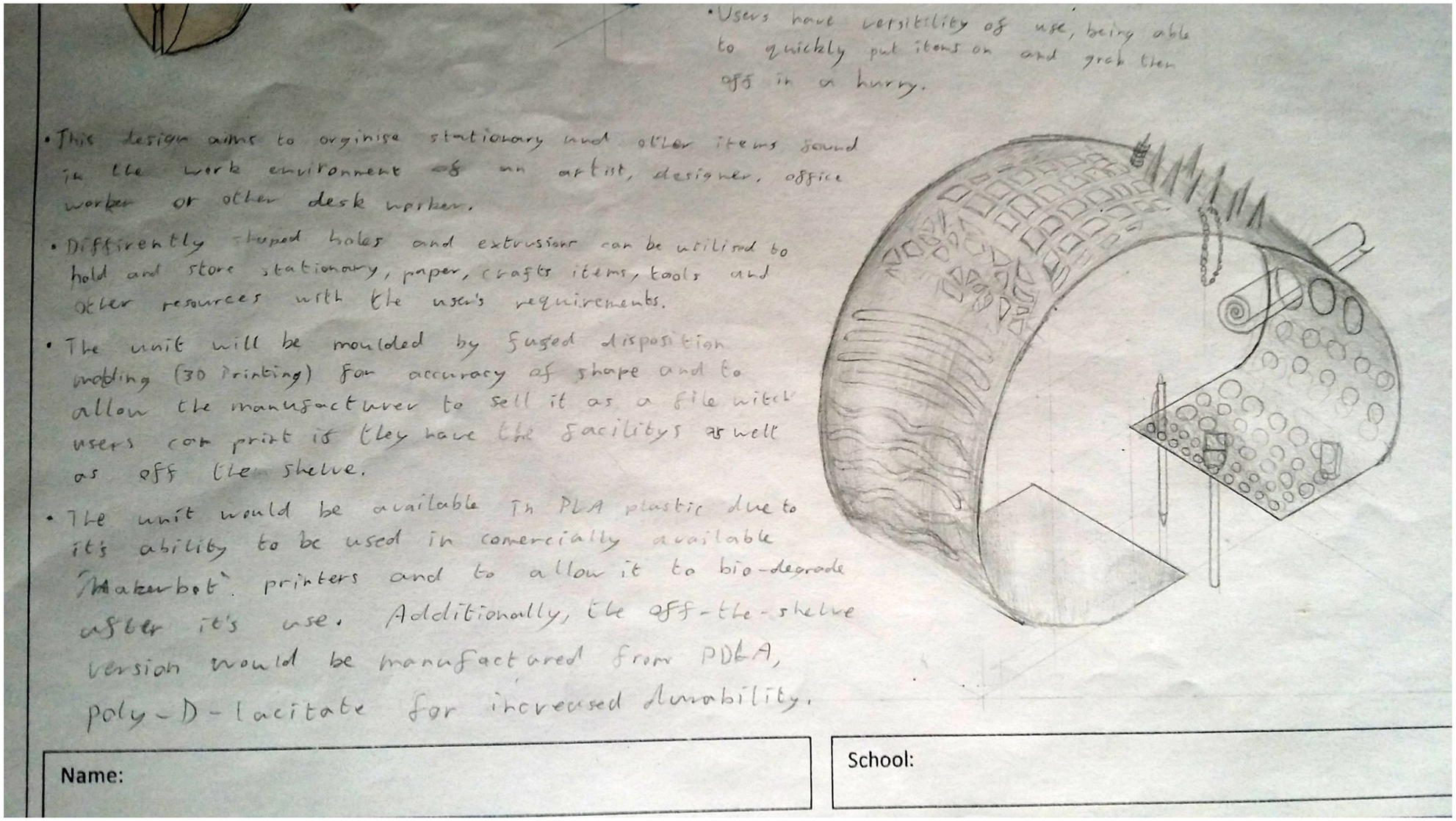
Design idea four uses electromagnetism to create a modular storage system for outdoor clothing and equipment. The base plate would be a sheet of highly magnetic steel mounted to a wall while a series of small, connecting components would provide a way to attach items such as coats, bags and shoes using powerful magnets. Shown here are five examples of types of holders, the idea is to provide a very quick way of hanging up and taking down items, for example, if you were in a rush you could simply grab whatever you need off the wall without rummaging about in a closet. This also has the somewhat novelty value of being able to toss objects onto the wall without much care or effort as the diagram of an ergonomic-doll is demonstrating.

Design Idea 4

Design idea five is also modular consisting of different panels and joins which allow the user to create any number of configurations, primarily types of shelves and tables. Shown here are four possible configurations using only five types of parts. The components would fit together using rods which would snap into place, colour coded to indicate which is required for the two parts the user wishes to join together. The nature of this product means that it is extremely expandable, new shapes and sizes can be added easily as well as variants on existing shapes such as chamfered or rounded corners or multi-coloured/ illuminated components.

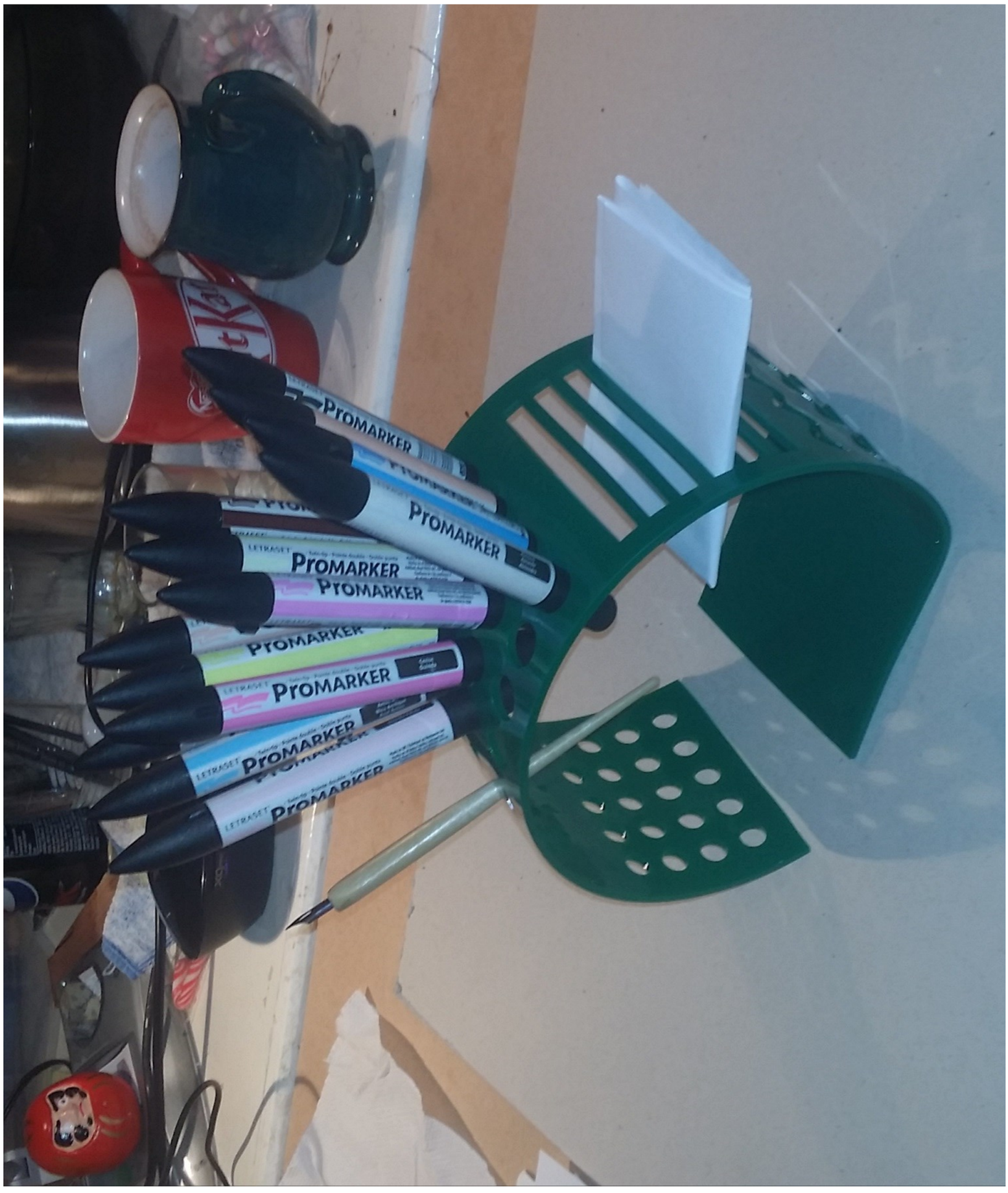


Design Idea 5



Design idea six is designed to be an all-in-one desk tidy and document holder, a range of different shaped cut-outs and extrusions mean most stationary products and items which a designer, artist or desk worker might have can be held efficiently with ease of access. I designed this unit with 3D printing in mind; it is made of PDLA, a biopolymer which can be used on the widely recognised fused disposition modeller range by Makerbot as well as poly-D-lactate for increased durability.

Design Idea 6


ProMARKER
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On surface

support

resist

Block

On wall

Prevent

Block

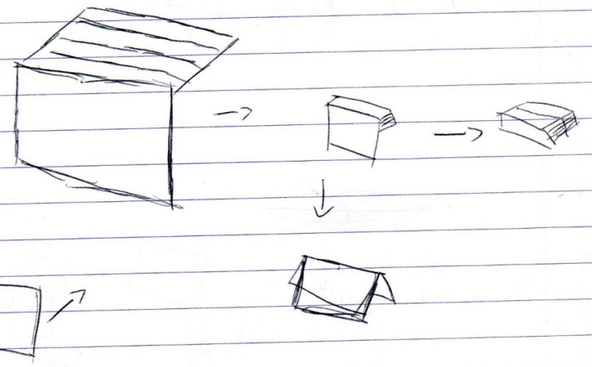
Attach

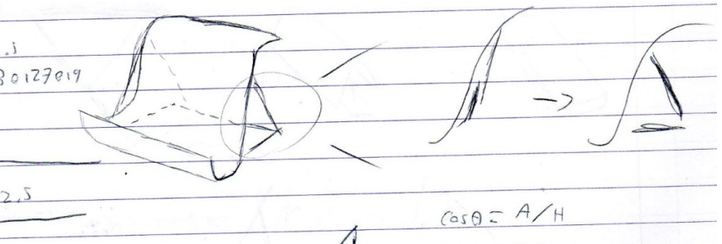
Prevent

Hanging

Block

④

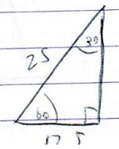




$\tan\theta = O/A$

$\tan 60 = O/2.5$

$O = 4.330127019$



$\cos\theta = A/H$

$\cos 30 = A/25$

$A = 21.65$

Figure with moving limbs to be adjusted

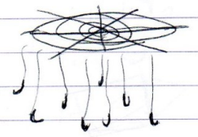
Sets after time?

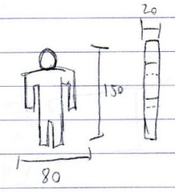
1.

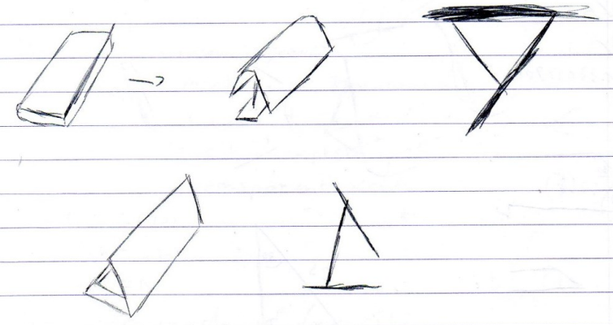
2.

3.

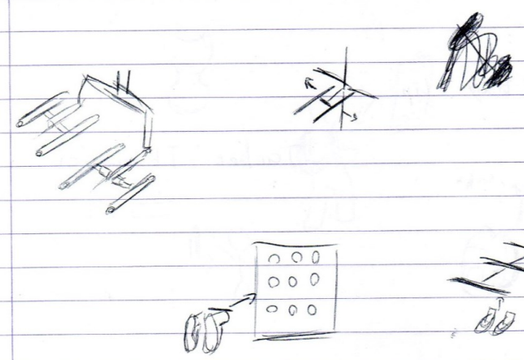
millipwt





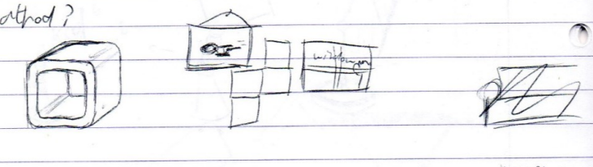


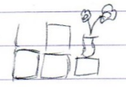
Universal shoe holder



Modulan - Books, tables, drinks

covection method?



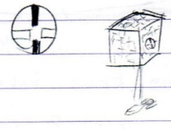


Twist lock? - No F/n

■ = F

□ = m

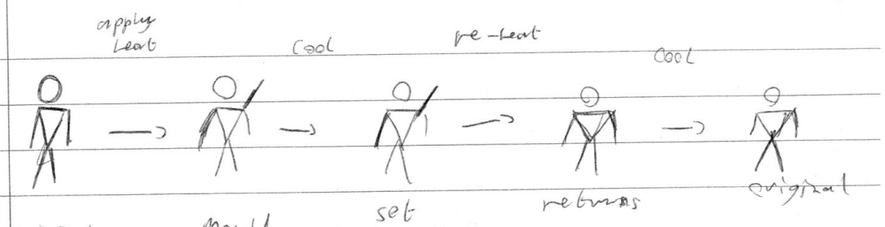
"we are PD, your / tech...



- armadgard. ~~Etc~~

Bangs -

Do you dance_ origami



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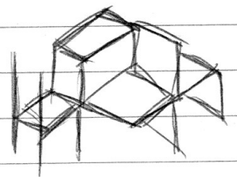
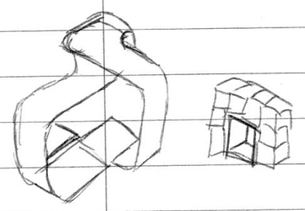
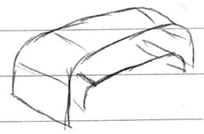


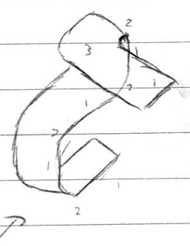
- Modular storage via boards

Modular storage via cubes

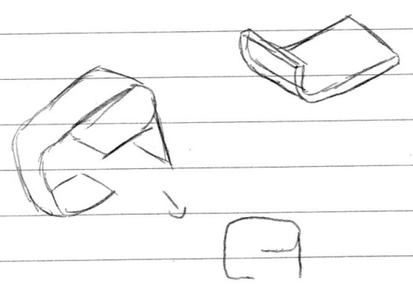


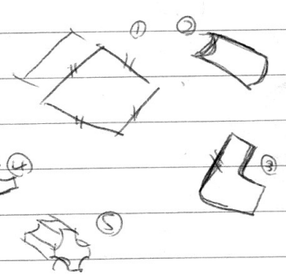
Modular storage via ~~lego~~



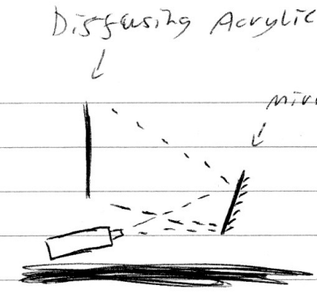


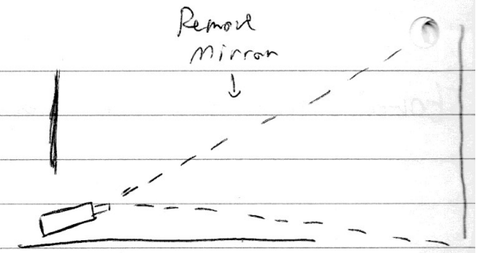
Utilize same correct method



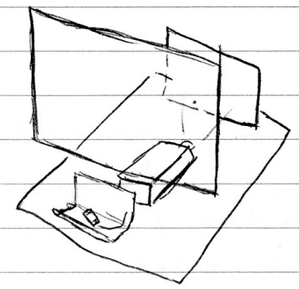


Diffusing Acrylic



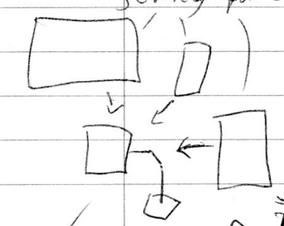


Modular



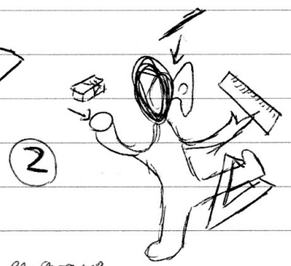
- Tree branches (5)

sticky pads

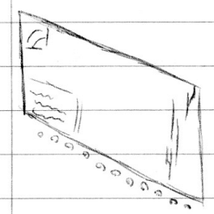


holder (1)

- Universal holder / stand
- Characature figure FS style

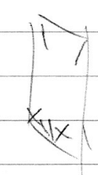


(2)



- laser engrave markings on transparent acrylic + shine light - gives impression of transparent screen.

(3)



Art holder made of pencils