

Y8 Desk Tidy Project

This work can either be completed on paper, using computer software of your choice, or both.

This project contains 6 tasks that should be completed over remaining 7 weeks of term (You should spend the equivalent of 2 lessons on section 5- the development section).

The project consists of investigating, designing, developing and evaluating a desk tidy.

Read all information and instructions carefully.

Design Brief

You have been asked to design and develop a desk tidy for a Y11 student. The product must:

- Hold 12 colouring pencils
- 2 pencils
- 2 pens
- 2 rubbers
- 1 sharpener
- 1 ruler
- Be joined together (assembled) using wooden joints and glue (not screws or nails). You must also say what joints you will use and explain why.
- Be made out of a wood of your choice.



Task 1- Product Analysis

Before you start designing your ideas, you must analyse some existing desk tidies. Analyse **TWO** of the desk tidies shown below. Remember, we analyse products to find out how the product works, if it works well and look for ways to improve it. To help you analyse the products in detail, try to answer the following questions:

- What colours are used? Why is this?
- What shape is it? Why is it this shape?
- What materials do you think are used? Why is this?
- What is the function? What does it do, and do you think it does it well?
- Who do you think the product is aimed at?
- Is the product good for the environment? Why is this?
- What size do you think the product is? Why is it this size?
- What safety features does the product have? Why Does it have these?



Material Investigation

Before you start designing the desk tidy, you must know what material you are going to use. You have to use a wood, but you must decide which specific wood to use. There are three main groups of wood:

- ▶ Hardwood
- ▶ Soft wood
- ▶ Manufactured boards

Hardwoods

- ▶ **Oak** is light brown and is tough durable and strong and is attractive so it is used for flooring and furniture but it corrodes steel and screws.
- ▶ **Mahogany** is red/brown and it is durable and easy to work with but is expensive so it is used for good quality furniture. Beech is hard enough to resist being dented and can be bent using steam and is used for chairs and toys.
- ▶ **Balsa** has a very low density and is quite soft so it is easy to shape and cut and then is combined with a high density wood for modelling. Ash is tough and absorbs shock well so it is used for tool handles and wooden sports equipment it is also used for furniture because it is attractive.

Soft Wood

- ▶ **Pine** is cheap and strong but it has knots so it is used for cheap furniture and telegraph poles and fences.
- ▶ **Larch** is an attractive colour wood it is hard tough and durable and is resistant to rotting so it is good for decking and fences.
- ▶ **Spruce** has a appealing colour but is not very durable and has lots of knots so it is only really used for structural purposes for crates and aircrafts and even ship masts.

Manufactured Boards

- **Medium Density Fireboard (MDF)** is made from tiny fibres of soft wood held together by glue it has no natural grain it is cheap dense, it is normal smooth and takes paint and finishes well but is porous so water and moisture can damage it is used a lot for furniture flat packs.
- **Plywood** is made of lots of layers of hard or softwoods with there grain going at a right angle to one another and that makes it very strong for its weight compared to solid wood, it s used for buildings and furniture.
- **Chipboard** is made by compressing chips of wood, wood shavings and sawdust glued together it is usually used with a veneered surface, its cheap but not strong and is porous like MDF so it can be damaged by moisture and it is used for cheap self assembly furniture.

Task 2- Material Investigation

Read the information on the previous slide and make a table showing the different types of wood, specific wood, their properties and uses. See the example below.

Category	Wood	Properties	Uses
Softwood	Pine	Cheap and strong	Furniture

Joining Wood Investigation

Housing joints

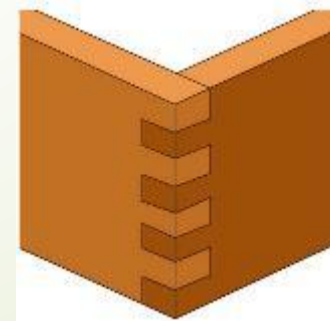
Housing joints are a strong type of joint because a gap is chiselled out of the wood that fits in another piece, there is a larger surface to glue and there is three sides to support the wood instead of one. They are commonly used in shelve and products where there is a partition.

Lap / rebate joints

Lap joints are made by cutting the half of the material thickness from one side and then gluing the other piece in. It is strong, as there are two sides for the wood to secure to and its got a large surface to stick. These are commonly used in all types of boxes.

Finger joint

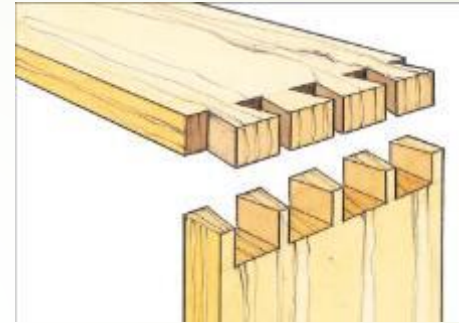
The finger joint consists of interlocking fingers and can be made with a jig. With the extra amount of gluing area in them, finger joints are a very strong joint. They are used where a strong joint is required, although they are quite complex to cut.



Joining Wood Investigation

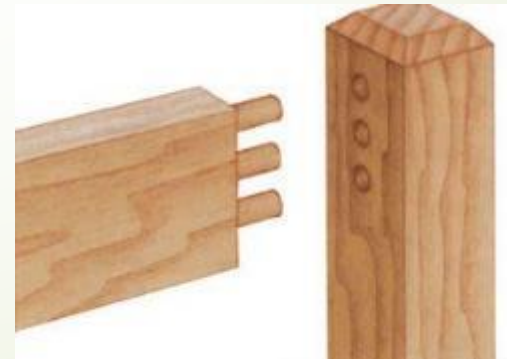
Dovetail

A Dovetail joint is very strong because of the way the 'tails' and 'pins' are shaped. This makes it difficult to pull the joint apart and virtually impossible when glue is added. This type of joint is used in box constructions such as draws, jewellery boxes, cabinets and other pieces of furniture where strength is required. It is a difficult joint which requires practice. There are different types of dovetail joint and when cut accurately they are very impressive and attractive



Dowel Joints

Modern pieces of furniture are often jointed using a dowel connecting both pieces. It is a permanent method but it is not the strongest joint as the parts can eventually pull apart, especially as the joint becomes old. However, it is a quick to do and saves precious time. Modern glues that are very strong have meant that this joint is often used to quickly fix parts together.

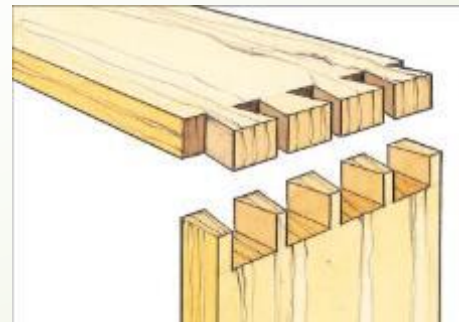
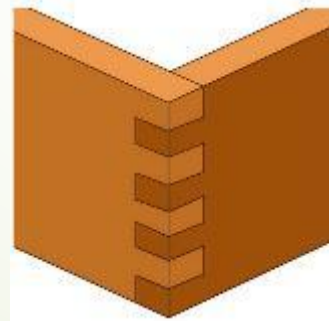


Task 3- Joining Wood Investigation

Before you start designing the desk tidy, you must know different methods used to join wooden pieces together.

Produce a slide (or page) of investigation into **five** different types of wooden joints. Here are a few things to do / to consider:

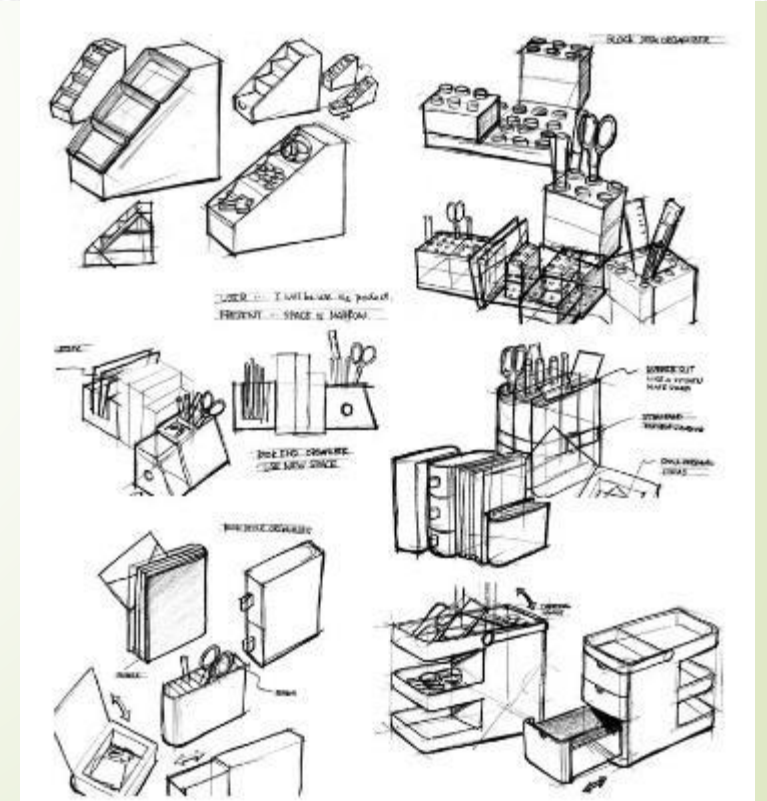
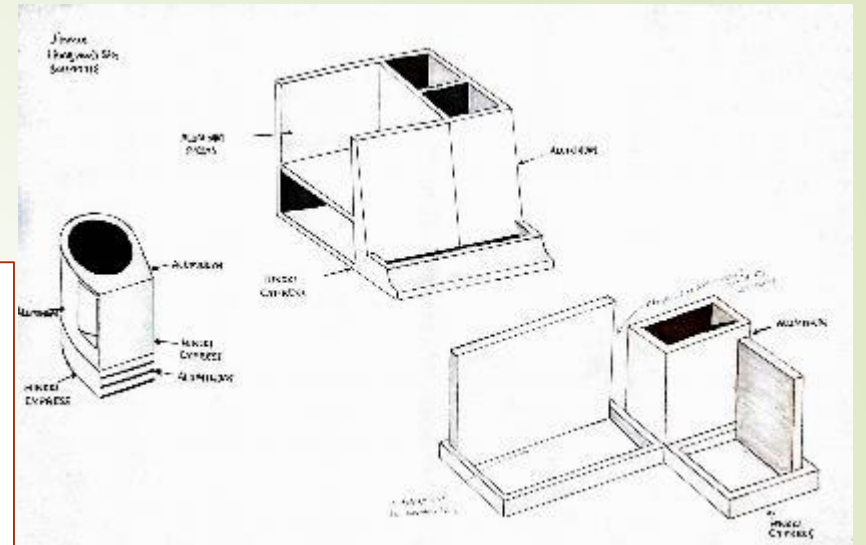
- ▶ You should explain how the joint works
- ▶ Include a sketch / image of the joint you are explaining
- ▶ Explain whether you will be using in your design (at this stage you should keep your options open).
- ▶ Explain what they are used for.



Task 4- Initial Designs

Produce **4** different designs for the des tidy. If possible, these should be sketches. If not, use any computer software you have access to. Some things to consider when designing:

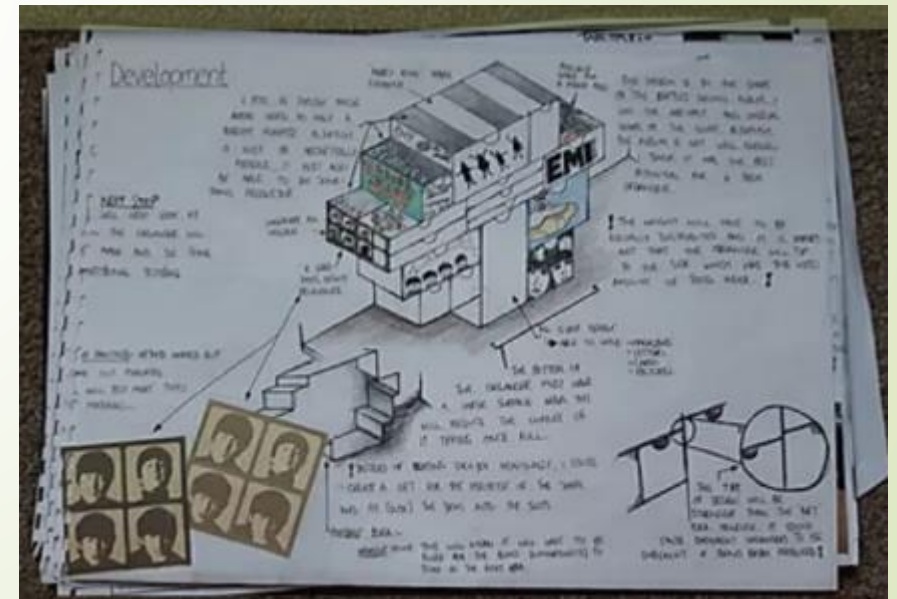
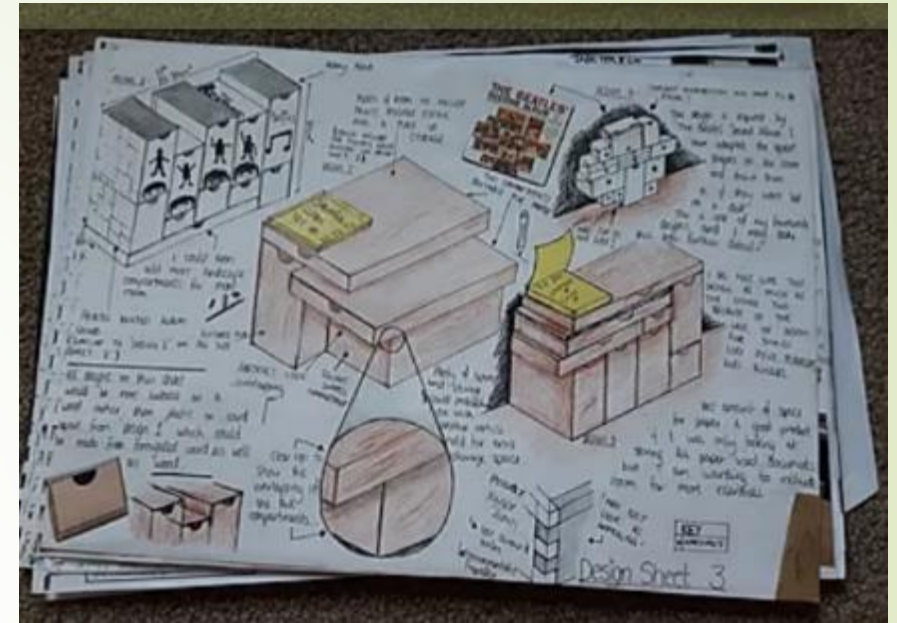
- Use either 2D sketches or 3D sketches to communicate your ideas.
- Include different views / detail drawings i.e. Side views, what the product looks like inside etc.
- Use notes to also help communicate your ideas and how each of the products will be stored and accessed.
- Remember to include compartments / places for store all items stated in the design brief.
- What joints will you use to hold the product together?
- Sketches should be fully coloured (if you have colours at home).
- Each idea should be unique- try to make the 4 designs as different as possible.
- What wood will you use and why?



Task 5- Design Development / Final Design (this should take the equivalent of 2 lessons).

Now you have produced 4 different ideas, pick **TWO** and develop them further. To help you with this, consider the following points:

- ▶ How you could improve the desk tidies further / make them better?
- ▶ Ask someone for their opinion- what do they like about your designs? What do they think could be improved?
- ▶ Have you thought in detail about what joints you will use and where?
- ▶ What type of wood will you use and why?
- ▶ Are you using any other materials? I.e. Line bent acrylic for hold pencils.
- ▶ Sketch different views / insides to communicate all details.
- ▶ Another person should be able to make the product from the detail you have given- are you sure you have included as many details as possible so that someone else could make it?



Task 6- Evaluation / User Feedback

Now you have completed a final sketch of your product, you need to write an evaluation. Consider the following points to help you write the evaluation:

- What do you like about the desk tidy, and why?
- What could you change to improve it?
- What joints did you use? Will these work?
- What material did you chose and why?
- How are the items stored? Are the items easily accessible?
- Does the product appeal to a Y11 student? Why is this?
- Ask someone for their feedback- what do they like about it? What could be improved? Would they buy one for their children (if applicable).