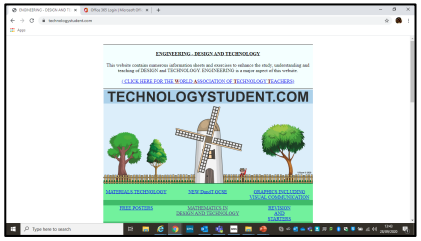
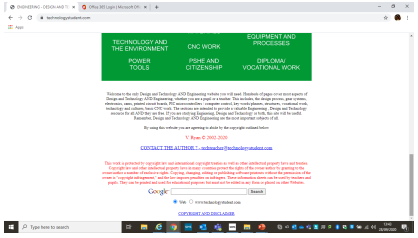
Stewards Academy

Design & Technology
KS3 Blended Learning Booklet

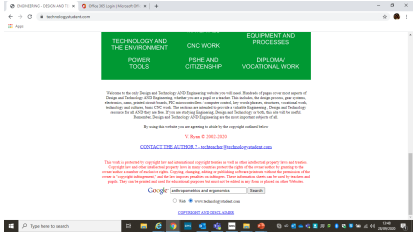
You can find all the answers you need by visiting www.technologystudent.com



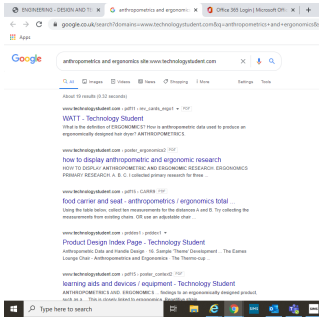
Scroll down to the foot of the page



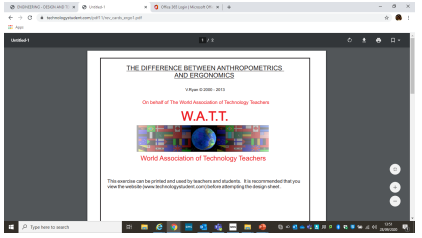
Enter the phrase or words you need to search which are in the first paragraph of the page you are reading.



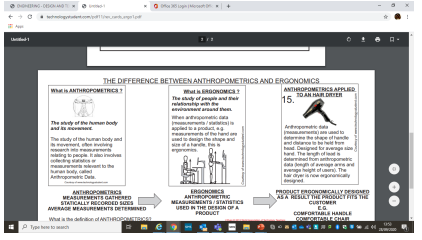
Click on technologystudent.com



A page will appear on google. Choose the most relevant answer. And click on it.



A new page will appear in technologystudent.com. Scroll down and read the information.



Read through the information and fill in the powerpoint page.

Ergonomics

In the box below write the definition of ergonomics and why it is important to consider ergonomics when designing new products. Anthropometrics and Ergonomics page on **www.technologystudent.com**

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Challenge!

Have a look around your home for any products where ergonomics has been considered in their design.

Example

The ergonomics in the design of this computer mouse are the curved shape to make it more comfortable to hold and the rubber scroll wheel allows the user to scroll with ease.

Can you answer these questions?

1) Explain what is meant by '**ergonomics**'.

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2) Look at the image below of a Playstation controller.

Give **two examples** of how ergonomics has been considered in the design of the controller. **One has been completed for you.**

1. There are no sharp edges so the controller is comfortable to hold.

2. .....

3. .....

Ergonomics

Can you answer these questions?

3) Look at the two computer keyboards below.

1980's keyboard

Modern day keyboard

Explain how the use of ergonomics has improved and changed the design of keyboards and **identify three key features** from the modern day keyboard where ergonomics have been used.

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Challenge!

Design a new product to be used in the house or garden. This could be a new tool, chair, remote control or something of your choice. You must draw in pencil and you can use colour pencils if you have them. Label your design to explain what your new product is and how it will work.

Anthropometrics

In the box below write the definition of anthropometrics. Give an example of a product where anthropometrics are used. Anthropometrics and ergonomics page on **www.technologystudent.com**

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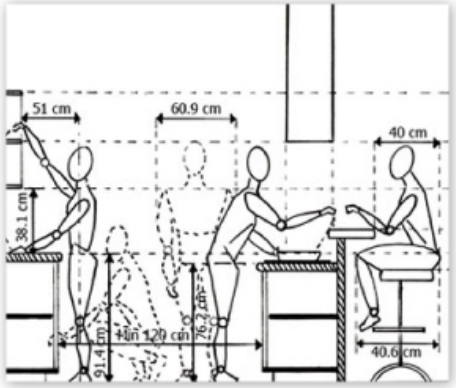
Challenge!

Have a look at the layout of your kitchen at home. Look closely at how anthropometric data is used in the design of your kitchen. How many examples can you find?

Example

Look closely at the size of handles, height of work tops/hobs and oven.
-Are they in reach for an adult?
-Do handles fit the size of an average sized hand?



Can you answer these questions?

1) Look at the image of the headset shown below.

Identify two key features where anthropometrics are used in the design of the headset. One has been completed for you.

1. The location of the microphone on the headset is in line with the average adult's mouth.

2. ……..

3. ……

Planned Obsolescence

In the box below write the meaning of planned obsolescence is and give an example of a product where planned obsolescence may be used.
'What is Planned Obsolescence' page on **www.technologystudent.com**

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Challenge!

Find some items around your home that may slow down over time due to planned obsolescence Have a look at any electrical items and think about how long they are likely to last for.

Example

Mobile phones are deliberately built to slow down after three or four years. This makes the user buy a new mobile phone and keeps mobile phone manufacturers in business.

Can you answer these questions?

1) Explain why some manufacturers use planned obsolescence in the design of their products.

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2) Explain why some people would argue that the use of planned obsolescence in the design or products is not considerate towards the environment.

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Technology Push

In the box below write the meaning of technology push and give an example of a product that has developed over time due to changes in technology.
Find out on the 'What is the Technology Push Model of Product Development' page on **www.technologystudent.com**

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Can you answer these questions?

1) Look at the image below of Apple earphones.

Explain how **technology push** has changed the design of Apple earphones. You must identify at least two design features.

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2) Identify one feature of the earphones that is **ergonomic**.

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MARKET PULL

1) State two ways that manufacturers can collect feedback from the public.

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In the box below write what 'market pull' means. Explain how market pull can change a design of a product.

Find out on the 'What is Market Pull' page on **www.technologystudent.com**

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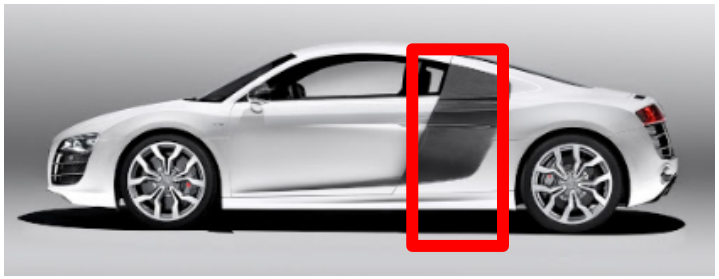
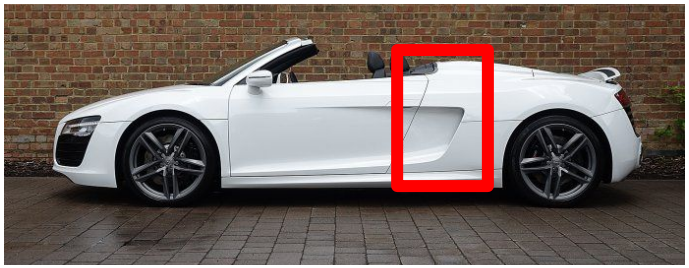
Design features come back when a large amount of people request it!



2010



2012

2020

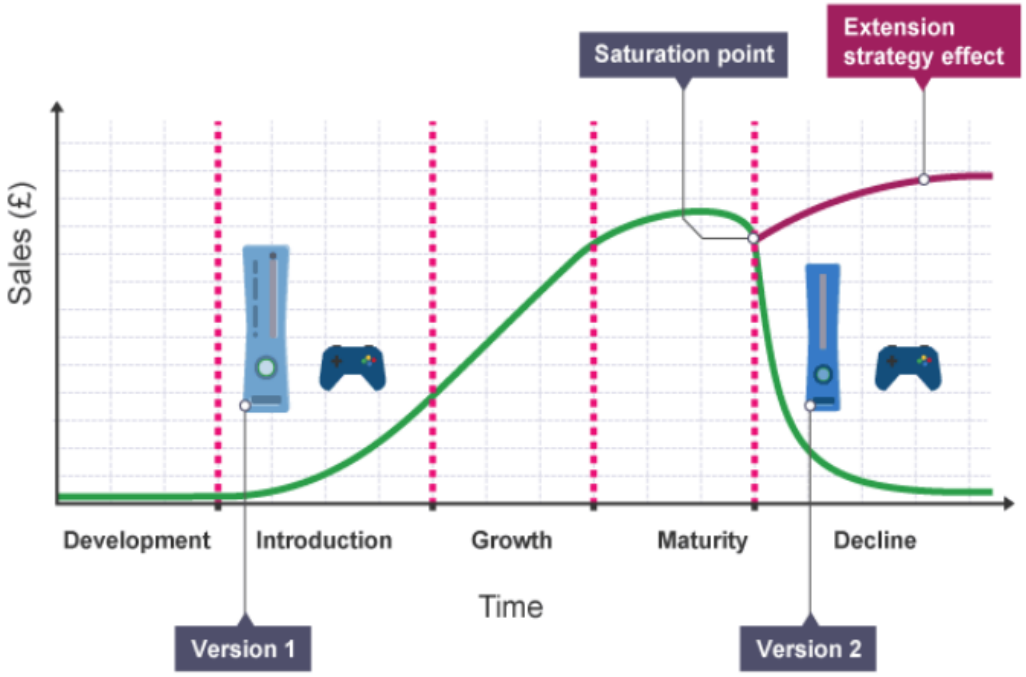
1980's Polaroid camera

2020 Polaroid camera

Product life cycle

Can you answer these questions?

Use your theory booklets or use the internet to read about product life cycle.
Search "product life cycle" on
www.technologystudent.com
Look at the one relating to cars.



1) Look at the diagram on the left. It shows the amount of sales and stages of the play station game life cycle.

a) Explain why more games are being sold in it's **maturity** stage.

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b) Suggest one way how the sales can increase during the **introduction** stage.

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c) Suggest why sales of the game **decline**.

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FAIRTRADE

Can you answer these questions?

In the box below write the definition of **Fairtrade** and why Fairtrade is **important.**
Look up Fairtrade on the 'Enterprise: Crowdfunding, Fairtrade and Co-operatives' page on technologystudent.com

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1) The image below shows a dress that is sold by a Fairtrade textile company. **Read the information** that is provided on their website about the dress.

Description
100% Cotton, Organic and Fairtrade-certified

Fairtrade
This item is made from 100% organic cotton certified by Fairtrade, one of the most strict standards on the market.

Organic Cotton
This product is made of certified Organic Cotton, grown without chemical pesticides and fertilizers.

Explain what information this gives to the customer about the
-Sourcing of raw materials
-Working conditions
-Consideration of wildlife

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Production methods

Use your theory booklets to read about different types of production methods. This includes, mass, batch, one off and continuous production. In each box write the definition of the production method.
Look on the 'Scales of Production' pages on technologystudent.com

Batch

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Mass

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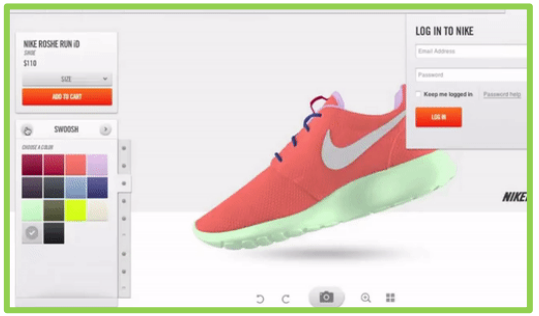
One off



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Computer aided design

In the box below write the definition of computer aided design. Give an example of a product, industry or a game where computer aided design is used.
Look on the 'Production Techniques and Systems' and 'CAD' pages on technologystudent.com

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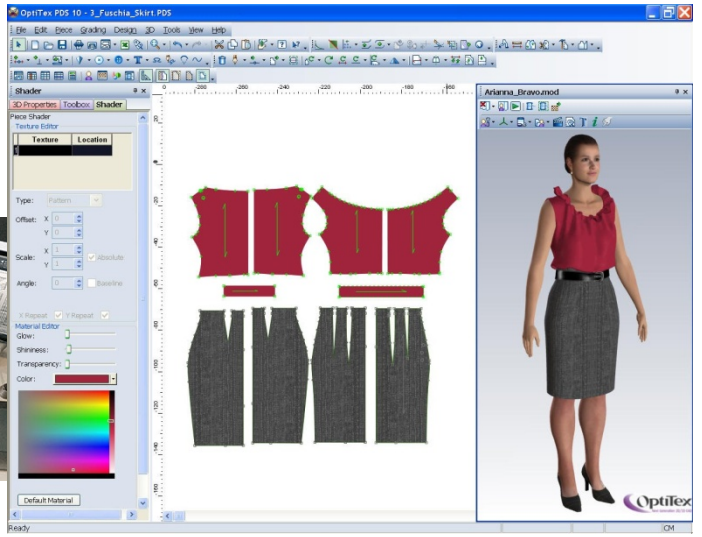

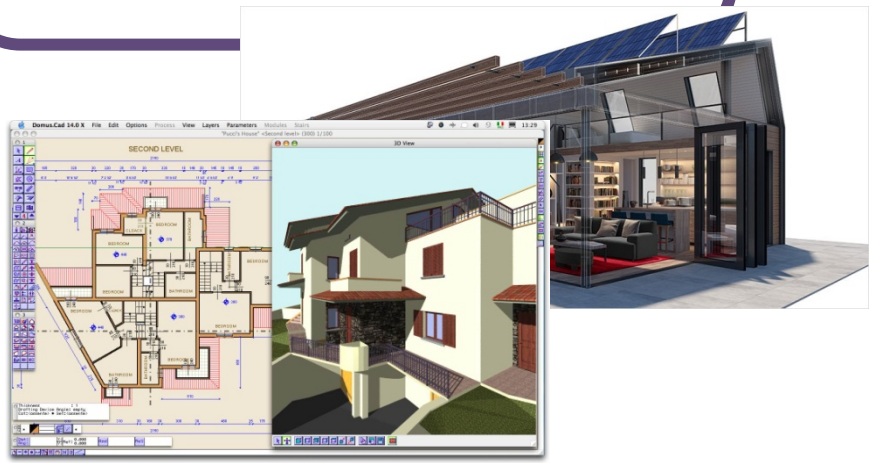

1) Give three advantages and three disadvantages of using **computer aided design**,

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Computer aided manufacture

In the box below write the definition of computer aided manufacture. Explain how computer aided manufacture is different to computer aided design.
Look on the 'Production Techniques and Systems' and 'CAM' pages on technologystudent.com

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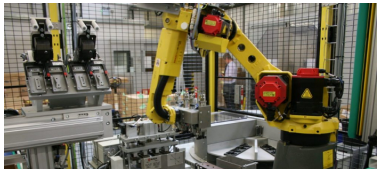

1) Give **two advantages** and **two disadvantages** of computer aided manufacture

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2) Explain how computer aided design can cause
a negative impact on the **environment.**

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Product Sustainability

RETHiNK

Challenge!

Manufacturers are rethinking about how they design products to make sure that they are more sustainable. Adidas have manufactured a new range of 'Parley' trainers. Use the internet and go onto the Adidas website to find what the Adidas Parley trainers are made from.

adidas®

REUSE

Challenge!

Use plastic bottles to create something new!
You could cut up bottles and create a hanging display

RECYCLE

Challenge!

Have a look at items you have in your house That can be recycled. You may need to look at packaging labels if you're not sure.

Product Sustainability

Reduce

Challenge!

Manufacturers and designers are thinking of ways to make products more long –lasting and durable. One example of this is the use of bamboo eco coffee cups instead of single-use polystyrene cups. Another example are rechargeable batteries so that people do not have to keey buying new batteries. Have a look at home and find any products that are designed to last a long time or can be used many timesm

REPAIR

Challenge!

Look around your house and try and find as many products that could be repaired rather than buying brand new products. Many electrical product components can be repaired.

REFUSE

Challenge!

Manufacturers are now refusing to use certain materials and Instead using less packaging or more ecological materials.

Can you answer these questions?

If you are stuck for an answer use the **'Sustainability'** pages on technologystudent.com to help you.

1) Many people use 'bags for life' for their shopping rather than plastic carrier bags.

Explain why using bags for life are more sustainable than plastic carrier bags.

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2) Some materials are biodegradable. Explain what biodegradable means.

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JMARSHALL

Challenge!

Have a look around your home for any scrap or old objects and materials to make a robot figure. Materials could include wire, old coins, bottle tops. old keys and cans. If you need to use superglue ask someone at home to show you how to use it safely.

PAPER AND BOARDS

Look at the
'How paper and card are manufactured' page on technologystudent.com

Answer the questions on this page and use the images below to help you with your answers.

Where does paper come from?

1) Look at the images to the left of how paper is made in industry. Explain in detail how paper is made.

PAPER AND BOARDS

Can you answer these questions?

Look at the
'How paper and card are manufactured' page on technologystudent.com

1) State the name of the **raw material** that is used to make paper from.

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2) Explain how the manufacture of paper can contribute to **deforestation and biodiversity.**

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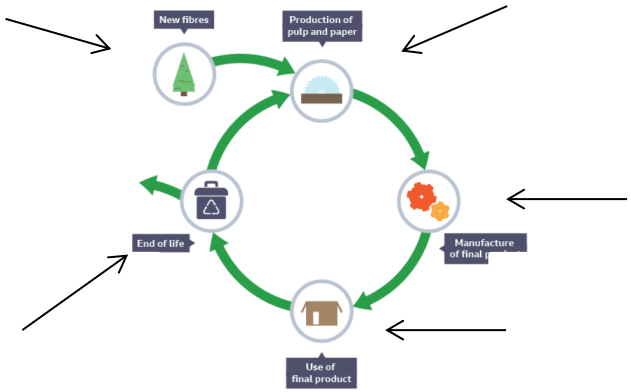
3) Look at the diagram below which shows the **life cycle** of paper. **Label the diagram** to explain the different stages indicated by the black arrows.



Challenge!

Use paper to create mini paper animals, you can use scissors and glue to do this. If you have coloured paper or pencil crayons you can make your animal look more creative and interesting!

PAPER AND BOARDS

Look at the
'How paper and card are manufactured' page on technologystudent.com

Match up the type of paper to it's correct use. One has been done for you.

Corrugated cardboard

Copier paper

Tracing paper

Cartridge paper

Recycled paper

Mount board

Types of paper

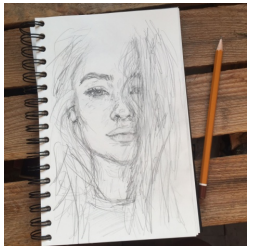
Transparent, used over the top of pictures to create a copy

Used for delivery packaging

Used for regular printing

Used for presenting and mounting photographs

Paper towels



Art sketchbook

PAPER AND BOARDS

Look at the
'How paper and card are manufactured' page on technologystudent.com

Can you answer these questions?

Challenge!

Look around for any scrap pieces of corrugated cardboard at home and try building a small architectural model. You can use other materials that you might find lying around to add more detail to your design, The more creative your model is, the better!

1) The image below shows corrugated cardboard packaging for a take away pizza.

Give **two reasons** why **corrugated cardboard** is suitable material to use for pizza takeaway.

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2) Give one disadvantage of corrugated cardboard.

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PAPER AND BOARDS

Paper and board finishes

Look at the
'How paper and card are manufactured' page on technologystudent.com

1) **Embossing** is a finishing technique that is often used on business cards or greetings cards which can suggest quality.

Explain how embossing is **carried out in industry** on paper or card.

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2) Give **two reasons** why playing cards are **varnished.**

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3) UV glossing is a finishing technique that is used on magazine covers.

Explain why **UV glossing** is used for magazine covers.

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PAPER AND BOARDS

Can you answer these questions?

1) Look at the image below of a greeting card with gold lettering.

State the finishing technique that has been used for the gold lettering.

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2) Give one advantage and one disadvantage for using this finishing technique.

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JMARSHALL

Challenge!

Have a look at home for scrap pieces of paper, card, magazines and create a 3D greetings card. Layer up different types of card and paper to create an unusual and interesting design. You could design a 'Thank you' card or a 'Celebrate' card or for any other occasion that you can think of.

PAPER AND BOARDS

Can you answer these questions?

Challenge!

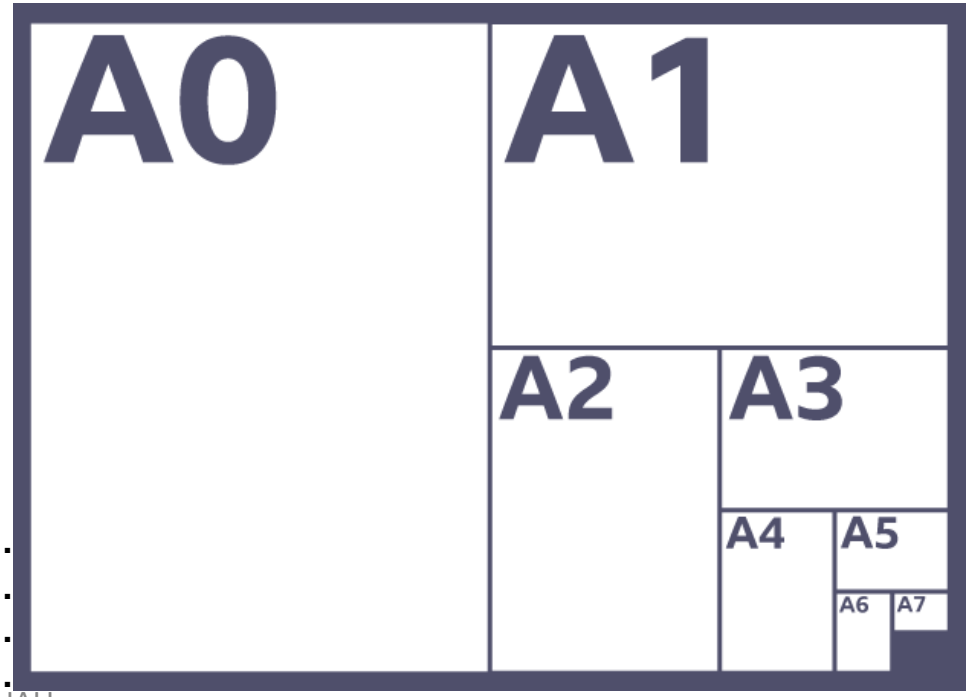
Work out:

1) How many A4 sheets of paper do you need to make A3 size?

2) How many A3 sheets of paper do you need for A2 size?

3) How many A5 sheets of paper do you need to make A4 size?

1) Many work environments, schools and hospitals have posters displayed. Posters are often **laminated**, an example of a poster and a laminating machine is shown below.



Explain how **laminating** is carried out and give **two advantages** of laminating posters.

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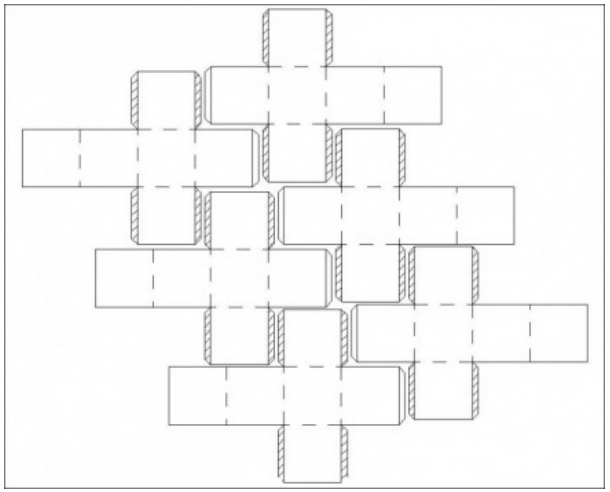
PAPER AND BOARDS

CAD and CAM in industry

1) Tessellation is used in mass or batch production. The image below shows nets for packaging .



Give two reasons why **tessellation** is used in the production
process.

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2) State the name of the **computer aided manufacture** machine shown below that can be used in industry to cut the packaging nets.

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3) Give two advantages of using an inkjet printer.

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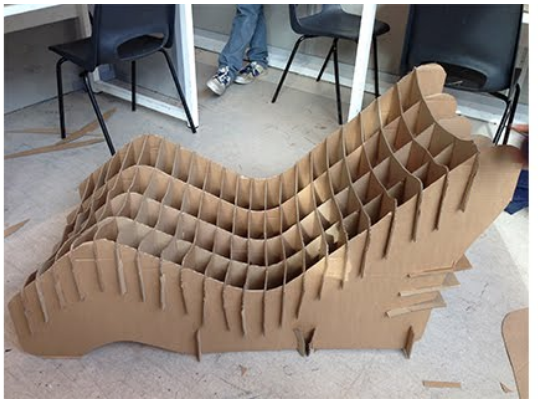
PAPER AND BOARDS

Challenge!

Create a mask using anthropometric data. You will need to measure the size of your head so that your mask will fit and the size of your eyes and mouth depending on the design of your mask. Design the mask how you wish and you could use coloured pens and card to decorate your mask.

Ergonomics and anthropometrics

1) The images below shows a prototype (mock up design) for a new relaxation chair before it is manufactured.



Identify **three features** of the prototype where **ergonomics** has been considered into the design of the product.

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PAPER AND BOARDS

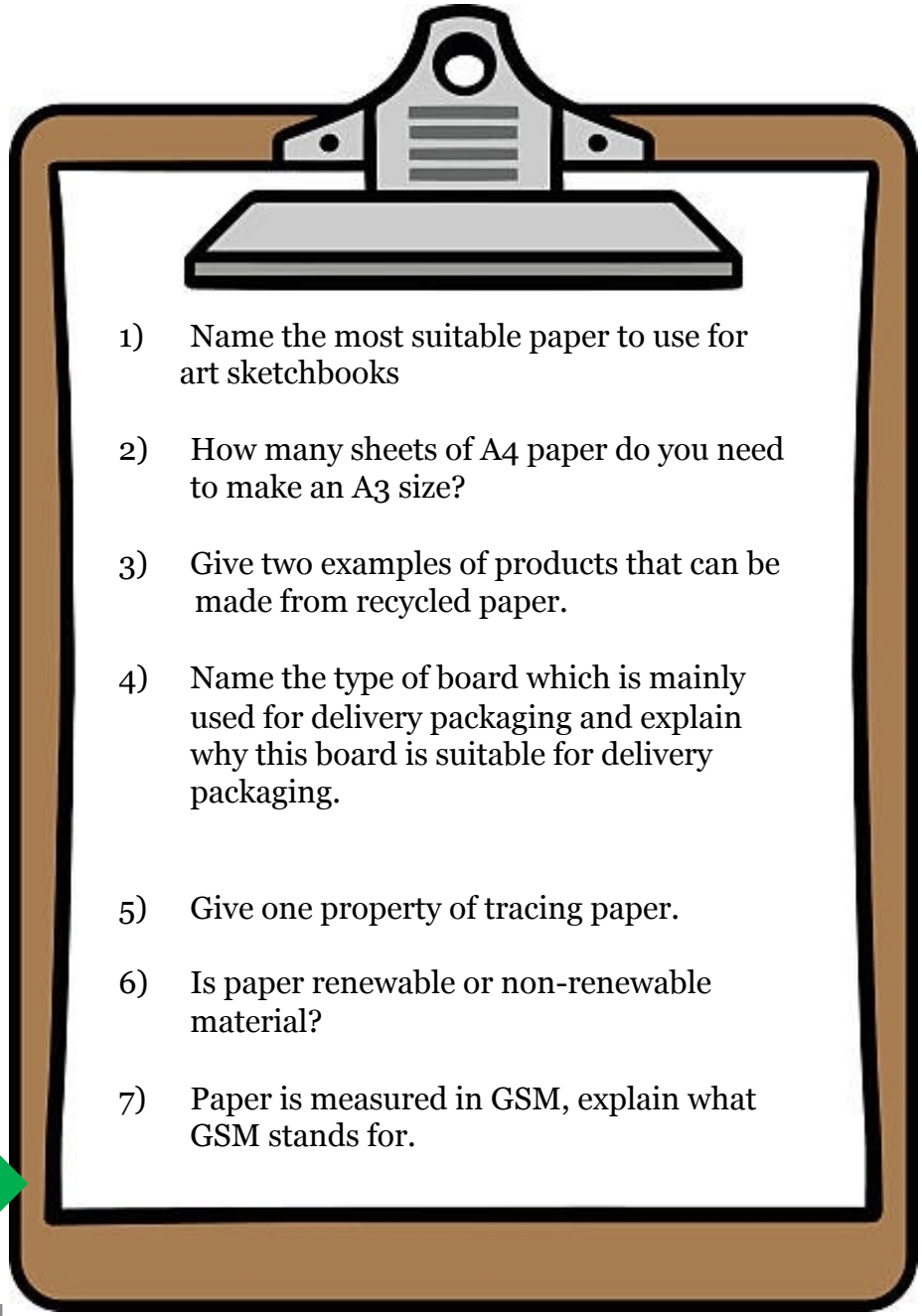
Look at the
'How paper and card are manufactured'
page on technologystudent.com

Names and properties of different types of paper and boards.

Paper and card finishing techniques

Use of microns to measure thickness of card & standard paper sizes

Now try the quiz!



1) Name the most suitable paper to use for art sketchbooks

2) How many sheets of A4 paper do you need to make an A3 size?

3) Give two examples of products that can be made from recycled paper.

4) Name the type of board which is mainly used for delivery packaging and explain why this board is suitable for delivery packaging.

5) Give one property of tracing paper.

6) Is paper renewable or non-renewable material?

7) Paper is measured in GSM, explain what GSM stands for.

Textiles

TEXTILES

Where do fibres come from?

Natural fibres are made from a plant source or an animal source. Match up the correct pictures to the fibre. Look at the 'Textiles' chapter' on technologystudent.com. One has been done for you.

Silk

Jute

Wool

Cotton

Linen

1) Synthetic/man-made fibres are made from crude oil.

Explain why crude oil for fibres is **not sustainable**.

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2) Synthetic fibres **do not biodegrade** easily. Explain what this means..

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TEXTILES

Look at the names of each of the **natural fibres**, use the theory booklet and write the properties for each type of fibre, the source it is made from (plant or animal), in the pink box draw a picture of a product that the fibre is usually used for.
Look at the 'Textiles' chapter' on technologystudent.com.

Challenge!

Look in your wardrobe and see what items of clothing you have that are made from natural fibres. You will find a label inside the clothing to tell you which materials have been used. Feel the material to understand it's texture and elasticity.

Example

JUTE	LINEN	COTTON	WOOL	SILK
Jute is very strong but feels very coarse. It is used for sustainable shopping bags or rope. It is made from a plant.	.....	.....	.....	.....
				

TEXTILES

Can you answer these questions?

Challenge!

At home ask your family if anyone knows how to knit, if someone does and you have some wool and knitting needles ask them to show you how to do it! There are lots of Youtube videos That can help you too!

Look at the 'Textiles' chapter' on technologystudent.com.

1) Explain why **wool** is a suitable fabric to use for winter jumpers.

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Challenge!

If you have wool at home try making a decorative letter which could go on a wall in your bedroom or on a bookshelf. Cut your letter out of cardboard and start to wrap wool around it. If you have different coloured wool you can mix and change colours.

2) Give one disadvantage of wool.

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3) State the natural source that is used to make wool from.

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TEXTILES

Look at the names of each of the **synthetic fibres**, Look at the 'Textiles' chapter' on technologystudent.com. and write the properties for each type of fibre, the source it is made from (plant or animal), in the pink box draw a picture of a product that the fibre is usually used for.

Challenge!

Look in your wardrobe, and garage and see what items of clothing items you have tha are made from synthetic fibres. You will find a label inside the clothing to tell you which materials have been used. Feel the material to understand it's texture and elasticity.

ELASTANE	POLYPROPLYENE	ACRYLIC	POLYESTER	NYLON
Elastane has high elasticity and is always mixed with other fibres. It is used to produce fabrics for sportswear.	.....	.....	.....	.....
				

TEXTILES

Can you answer these questions?

Look at the 'Textiles' chapter' on technologystudent.com

1) Give **one advantage** of polyester.

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2) Give one example of a product that is mainly made from **nylon**.

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3) Name the most suitable fabric for **sports clothes**.

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4) Explain the **difference** between a natural and a synthetic fibre.

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5) Natural fibres are biodegradable. Explain what **biodegradable** means.

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6) Plant fibres are often treated with chemical fertilisers. Explain the **impact on the environment** of using **chemical fertilisers.**

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7) Explain why synthetic fibres or fabrics are **non-renewable.**

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8) Look at the symbol below which can be found on many types of products or packaging. State what the **symbol means and it's importance**.

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TEXTILES

Look at the 'Textiles' chapter' on technologystudent.com

Challenge!

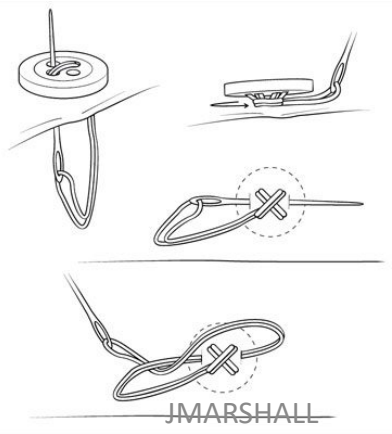
At home see if anyone in your family has embroidery thread or cotton. You will need an embroidery needle and some fabric to sew onto. Experiment with different types of stitches. You can use YouTube to find videos to help you.

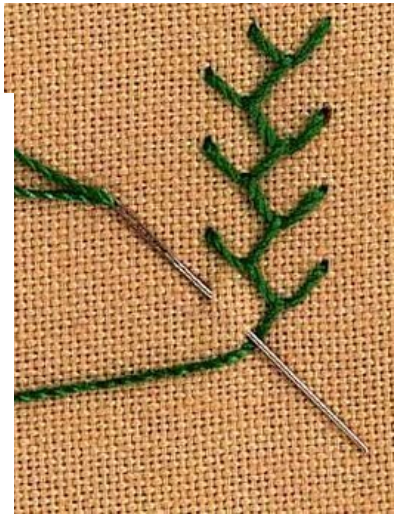
Challenge!

At home ask someone if there is a sewing machine, ask a parent guardian to show you How to use a a sewing machine safely. Experiment and see What patterns you can do!

Challenge!

Have a look if you have any spare buttons lying around and have a go at sewing a button onto a piece of fabric. Ask someone at home to help show you how to do this.





TEXTILES

Chemical finishes

1) The chart below shows different types of chemical finishes that can be applied to fabrics. Complete the missing areas of the chart. Look at the 'Textiles' chapter' on technologystudent.com to help you.

Name of chemical finish	Definition
	a silicone-based spray can be used to prevent grease and dirt clinging to the fibres and is usually sprayed on after a product has been manufactured
flame resistance	
water repellency	silicones (a tough synthetic material) are applied to a fabric's surface to temporarily prevent water being absorbed by the fabric; PVC can coat the fabric to make it permanently water proof but doesn't allow the skin to breathe
	synthetic fibres can be treated with chemicals to help decrease their water absorption, making them waterproof and prevent the build-up of static that makes fabric cling to itself
shrink resistance	
crease resistance	
mercerising	

A shirt is an example of a product that may have a crease resistant finish

Table cloths or rucksacks are examples of products that have a water resistant finish

Some types of uniform or protective clothing are given a flame resistance finish

TEXTILES

Mixed fibres and microfibres

Look at the 'Textiles' chapter' on technologystudent.com to help you.

1) Microfibers are used in cleaning cloths. The below images show what the fibres look like under a microscope.

Explain what microfibers are and why they are used in cleaning cloths.

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2) Fibres are sometimes mixed together in some items of clothing.

Explain why fibres are mixed together on some textile products.

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TEXTILES

Look at the 'Textiles' chapter' on technologystudent.com to help you.

1) Give **two advantages** of using a sewing machine to sew rather than sewing by hand.

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2) Give **one advantage and one disadvantage** of using **digital printing** onto fabric/textile products.

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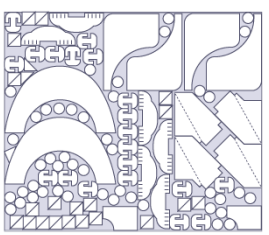
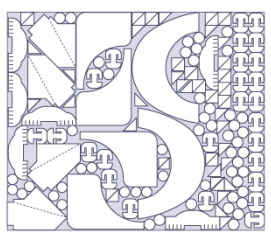
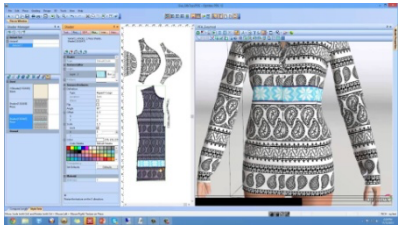
CAD and CAM in industry

3) Explain how **CAD** is used in the textile industry. Give two **advantages and two disadvantages** of using CAD in the design and production of textile products.







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3) Explain how **a CNC embroidery machine** is different to a standard **sewing machine.**

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TEXTILES

Production methods

Look at the 'Scales of Production' chapter' on technologystudent.com to help you.

1) Some textile products are made specifically for the user. State the type of production method that is used for **customised products**.

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2) Give an example of a textile product that is **mass produced**.

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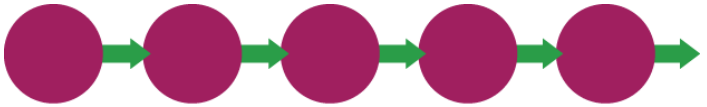
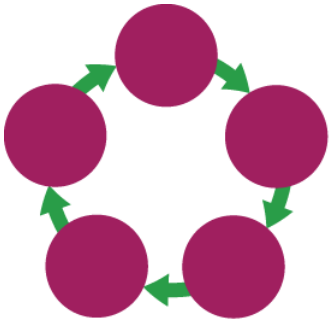
2) In the textile industry cell and line production is used.

The diagram below indicates **line production.**



The diagram below indicates **cell production.**



Explain the difference between line production and cell production.

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TEXTILES

Ergonomics and Anthropometrics

Look at the 'Ergonomics and Anthropometrics' page on technologystudent.com to help you.

1) The image below shows a travel pillow that is used for long distance travelling on aeroplanes. Explain how **ergonomics and anthropometrics** have been used in the design of the travel pillow.

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Challenge!

In the box below draw a design of a new textile product that can be used inside or outside of the home that is comfortable to use and designed with human measurements in mind (adult or children). This could be an item of clothing , a new home furnishing, for example cushions or a child's toy. Examples are shown below of textile products where ergonomics and anthropometrics have been used in their design.

TEXTILES

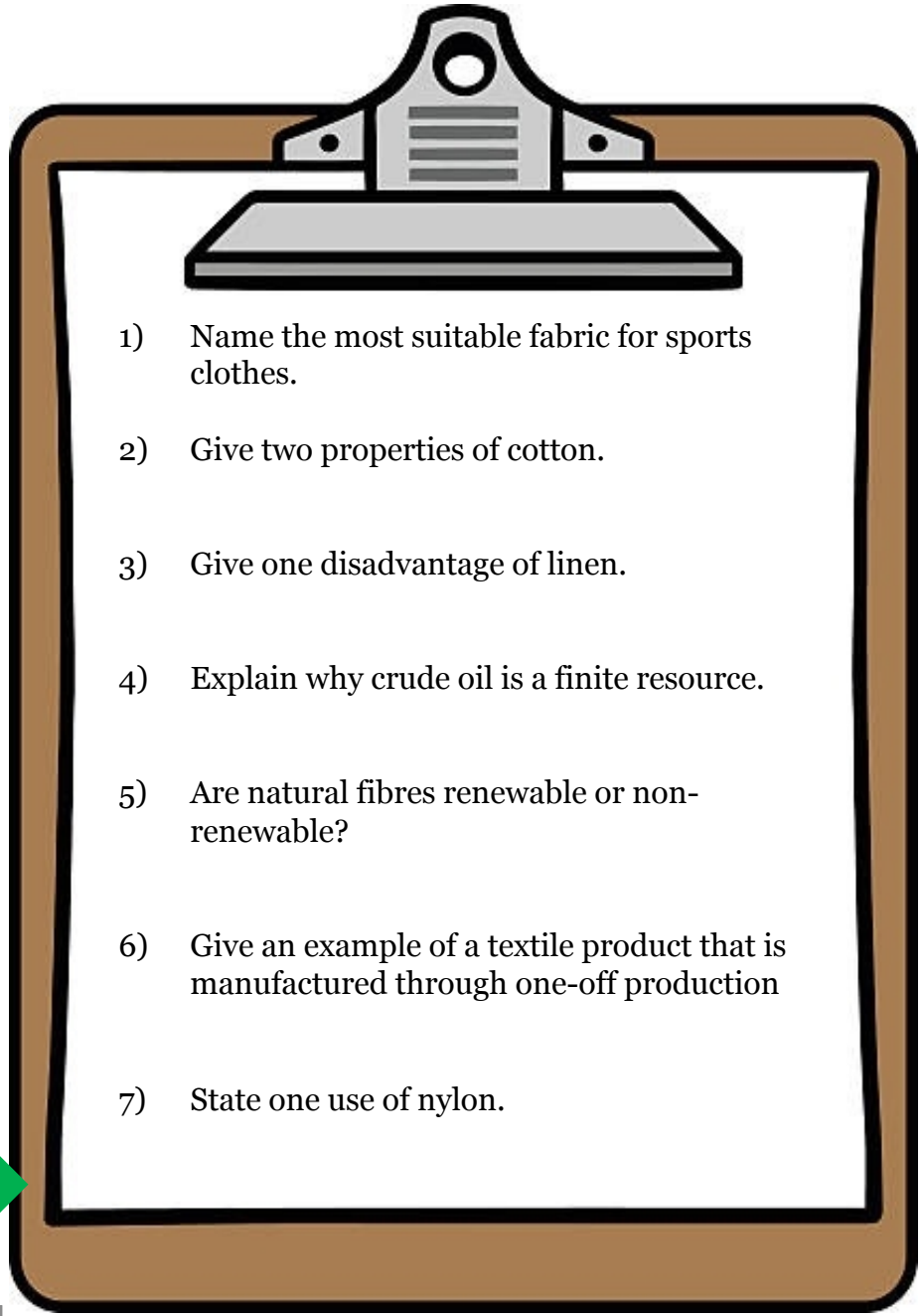
Use the technologystudent.com to read the following information

Types of synthetic and natural fibres including their properties.

Chemical finishes that are applied to fabrics

Production methods

Now try the quiz!



1) Name the most suitable fabric for sports clothes.
2) Give two properties of cotton.
3) Give one disadvantage of linen.
4) Explain why crude oil is a finite resource.
5) Are natural fibres renewable or non-renewable?
6) Give an example of a textile product that is manufactured through one-off production
7) State one use of nylon.

Plastics

PLASTICS

Look at the 'Polymers' chapter' on technologystudent.com to help you.

1) Most plastics are made from crude oil. State how crude oil is extracted from the Earth's crust.

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2) Crude oil is a finite resource. Explain what finite means.

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3) Explain what is meant by '**single use** plastic'.

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Where do plastics come from?

4) Scientists and manufactures are starting to manufacture **bioplastics**. Explain what bioplastics are and name a bioplastic that is used in 3d printers.

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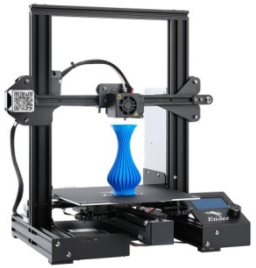

4) Plastics take many years to decompose and are not biodegradable. Explain the **impact of plastic waste on biodiversity.**

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PLASTICS

Types of plastics

There are two main categories of plastics. Thermoplastics and Thermosetting plastics. Use technologystudent.com to match up a type of plastic and what it is used for. One has been done for you. In the box below write the definition s of **thermosetting** plastics and **thermoplastics**.

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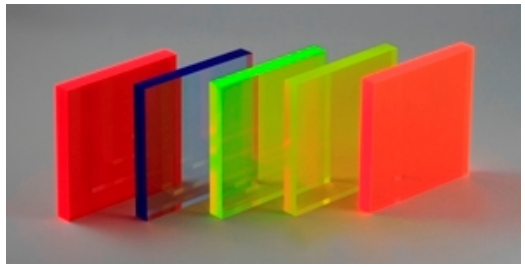
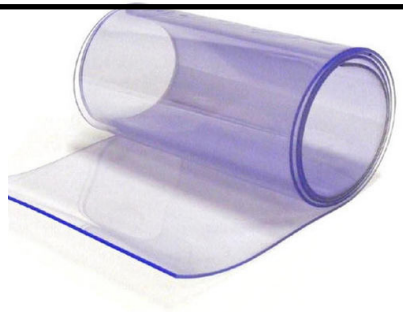




Acrylic (thermoplastic)

Epoxy Resin (Thermosetting)

High density polythene (thermoplastic)

Melamine formaldehyde (Thermosetting)

Polyvinyl Chloride (thermoplastic)

Urea formaldehyde (Thermosetting)

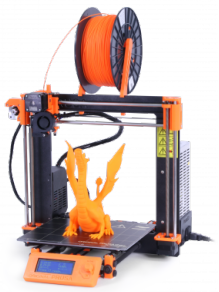
Low density polythene (thermoplastic)

PLASTICS

CAD and CAM in industry

Look at the 'CAM' PAGES on technologystudent.com to help you.

1) Give one advantage and one disadvantage of using a **3D printer** to manufacture products.



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2) The image below shows a **vinyl cutter**. Explain how a vinyl cutter works and what it is used for.

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3) CNC machines are used to cut plastic. Give one advantage of using a CNC machine.

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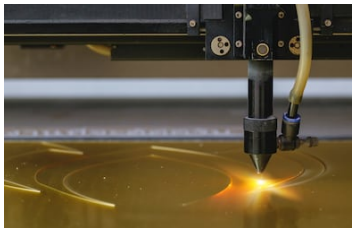
4) The image below shows a laser cutter. Explain how a laser cutter works.



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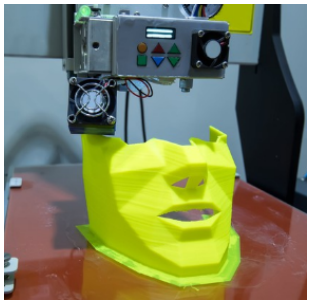
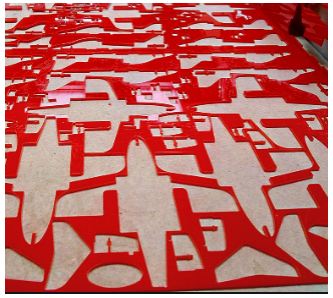
PLASTICS

Production methods

Look at the 'Scales of Production' chapter' on technologystudent.com and read about production methods. Complete the missing areas of the chart of advantages and disadvantages for each production method.

1) 3d printers use additive manufacture. Laser cutters use subtractive manufacture. Explain the difference **between additive and subtractive manufacture**.





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Scale of production	Advantages	Disadvantages
One-off		
Batch		Downtime between batches
Mass	High volumes can be produced, materials can be bulk purchased at cheaper rates, low-skilled workforce required	
Continuous		Expensive to set up due to specialised equipment, expensive machinery repairs

PLASTICS

Ergonomics and Anthropometrics

Look at the 'Ergonomics and Anthropometrics' page on technologystudent.com to help you.

1) The image below shows a bucket that has been designed with ergonomics and anthropometrics in mind. Explain how **ergonomics and anthropometrics** have been used in the design of the bucket.

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Challenge!

In the box below redesign the comb to make it more **ergonomic**. For example, you could add a handle with a rubber grip to make it more comfortable or change the shape of it to make it more comfortable and easy to use.

PLASTICS

Take some plastic bottles, carefully cut them with scissors to shape them into an unusual design to create planters for garden plants. You can decorate your planters by painting them or gluing buttons on to them. Be creative and have fun!

Challenge!

Can you answer these questions?

Look at the 'Polymers' and 'Fairtrade' pages on technologystudent.com to help you.

1) Plastic identification codes are used on plastic products. Explain why plastic identification codes are used.

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2) The symbol shown below is often found on plastic packaging. Explain what **information** this gives to the customer about the sourcing of produce.

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PLASTICS

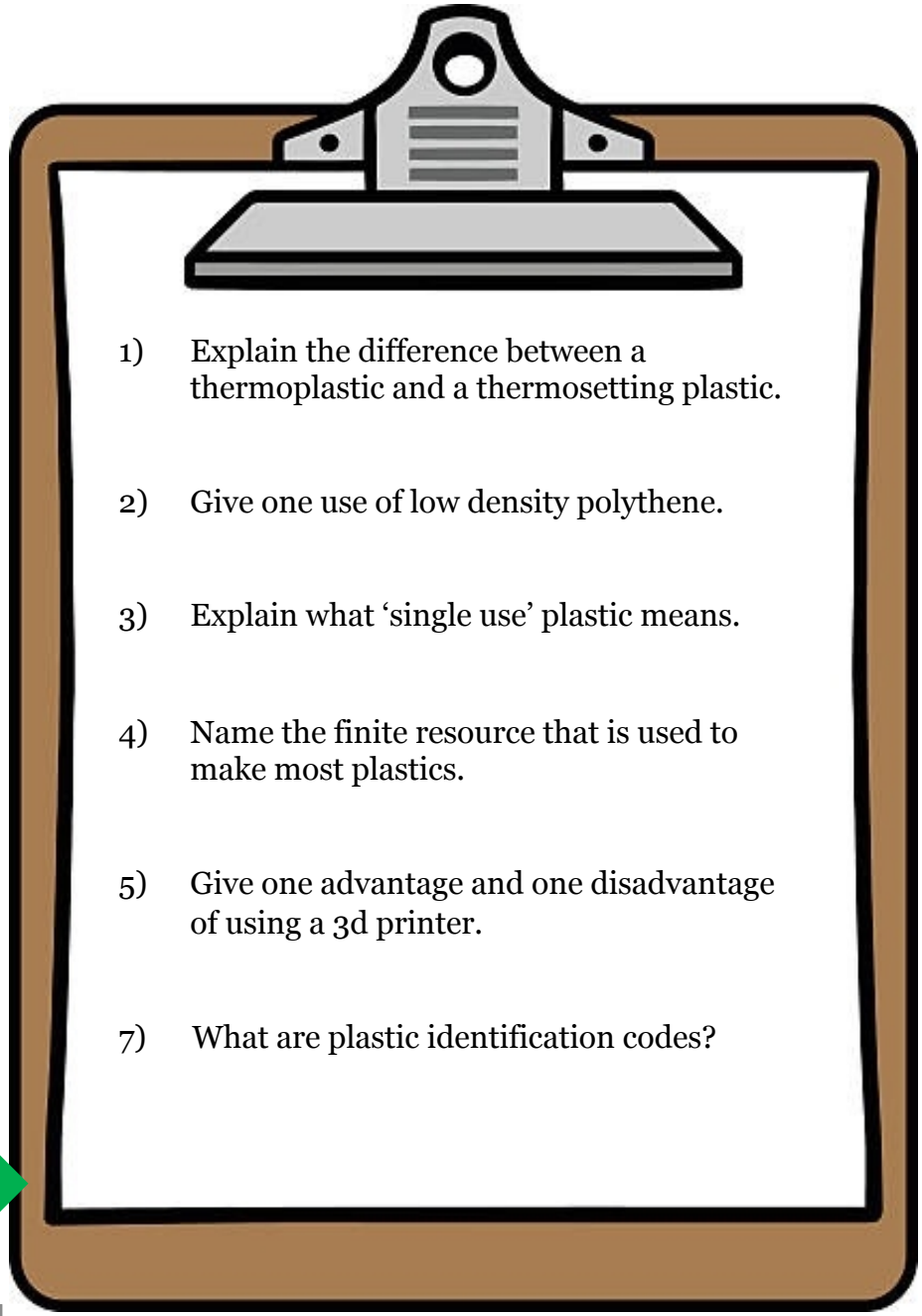
Use technologystudent.com to read the following information

Thermoplastic and thermosetting plastics

Use of CAD and CAM in the production of plastic products

How plastics are made

Now try the quiz!



1) Explain the difference between a thermoplastic and a thermosetting plastic.

2) Give one use of low density polythene.

3) Explain what 'single use' plastic means.

4) Name the finite resource that is used to make most plastics.

5) Give one advantage and one disadvantage of using a 3d printer.

7) What are plastic identification codes?

Timber

TIMBER

Where does wood come from?

There are lots of different types of trees and woods but similar to plastics they are usually put into two categories. Hardwoods and softwoods. Look at the 'Natural and Manufactured Timbers' chapter on technologystudent.com to help you find out about what hardwoods and softwoods are and make notes in the boxes.

Hardwoods

- What type of tree do hardwoods come from? Do these trees lose their leaves?
- Do hardwoods grow in cool or warm climates?
- Are hardwoods cheap or expensive to buy?
- How long does it take for hardwood trees to grow

Softwoods

- What type of tree do softwoods come from? Do these trees lose their leaves?
- Do softwoods grow in cool or warm climates?
- Are softwoods cheap or expensive to buy?
- How long does it take for softwood trees to grow

TIMBER

Can you answer these questions?

Answer the following questions about sourcing wood. Look at the 'Natural and Manufactured Timbers' chapter on technologystudent.com to help you to help you or use the internet for research.

1) To make wooden products trees need to be cut down, this is called **logging.** If new trees are not planted this is called **deforestation**.

Explain what **deforestation** means.

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2) Explain how **deforestation** can affect **biodiversity**.

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3) Some wooden products will have the FSC symbol (Forest Stewardship Council). Explain how the **Forest Stewardship Council** helps forest management.

FSC

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TIMBER

Types of woods

Read about the different types of hardwoods and softwoods in your theory booklet or use technologystudent.com to help you, match up the name of the wood to the correct picture.
Green = hardwoods Blue = softwoods

Oak

Pine

Cedar

Mahogany

Beech

TIMBER

Manufactured boards

Boards are separate to softwoods and hardwoods. They are used for many different things. Look at the 'Natural and Manufactured Timbers' chapter on technologystudent.com to help you and read how boards are made and what they can be used for.

Challenge!

At home try and find a piece of furniture that is made from a type of board. You may need to ask someone at home to help you.

1) Cross section stability is used in plywood. Explain what **cross section stability** is and why it is used in plywood.

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3) The image below shows **M.D.F board**. State what M.D.F stands for and give an example of one use for this board.

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2) State the name of the board shown below and state what the board is made from.

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TIMBER

Flat pack furniture

Look at the 'Natural and Manufactured Timbers' chapter on technologystudent.com to help you

Challenge!

At home try and find a piece of assembled flat pack furniture. This could be a bed, wardrobe, Drawers. Ask someone at home to help you if you're not sure.

1) Chipboard and M.D.F board are usually used for flat pack furniture.

2) Veneers thin strips of wood that are glued onto board (usually chipboard).
Explain why **veneers** are used.

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Explain what **flat pack furniture** is and give one advantage
and one disadvantage of flat pack furniture.

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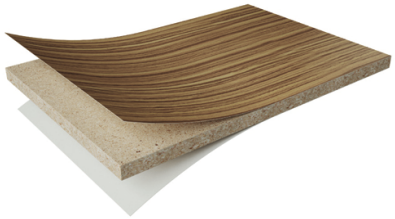

TIMBER

Wood finishes

Use technologystudent.com or the internet to read about different types of wood finishes. Answer all questions on this page.

Challenge!

Ask someone at home if there is any wood stains/varnishes/primer in the garden shed or garage and a scrap piece of wood that you could test the varnish or wood stains out on to make a sample..

1) Explain why **varnish** is a suitable finishing technique to use on **outdoor wooden products.**

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2) Give one advantage and one disadvantage of using **wood stains.**

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3) A garden bench needs to be primed before painting. State **two ways** in which a **primer** helps to prepare the wood for painting.

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TIMBER

CAD and CAM in industry

Look at the 'CAD' and 'CAM' pages on technologystudent.com to help you

1) Give two advantages and two disadvantages **computer aided manufacture**.

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2) State the name of the machinery shown in the image below.

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3) Give two advantages of using a **CNC machine** rather than a **laser cutter** in mass production of wooden products.

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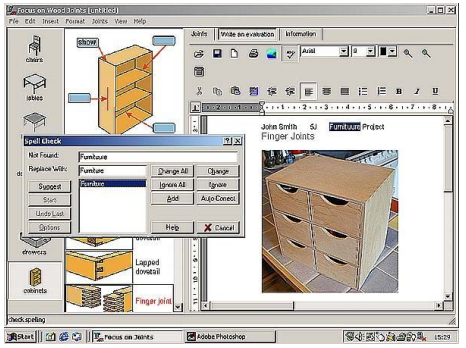
3) Give two advantages of using **computer aided design** to design furniture.



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TIMBER

Use the 'Scales of Production' page on technologystudent.com to read about different types of production methods to help you answer the question on this page.

Hardwood stool

- **Hardwood**
- **Hand crafted**
- **Fair trade**
- **FSC symbol displayed**

Plywood flat pack chair

- **Plywood with a veneer finish**
- **Flat pack furniture**
- **FSC symbol displayed**

Production methods

1) Look at the two wooden products shown on the left and the information that is provided for each product.

Answer the following:

- Which **production methods** have been used for each product (mass/batch/one-off)
- Which product is **cheaper** to buy and why
- Comment on the **sourcing of timber** used for the products

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TIMBER

Ergonomics and Anthropometrics

Answer the questions below about how ergonomics and anthropometrics are considered in the design of the wooden products shown. Use the relevant pages on technologystudent.com

1) The image below shows a foldable walking cane that can be used by elderly people or people with disabilities. Write about how **ergonomics** have been used in the design of the walking cane. You must identify two features.

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2) The image below shows a wooden kitchen toy set for children to use. Identify three features of the kitchen set where **anthropometric data** has been used.

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TIMBER

Challenge!

If you have a garden have a look for any sticks or twigs, collect them and put together a mini sculpture made from twigs and sticks. You can use tape or string to attach twigs together.

TIMBER

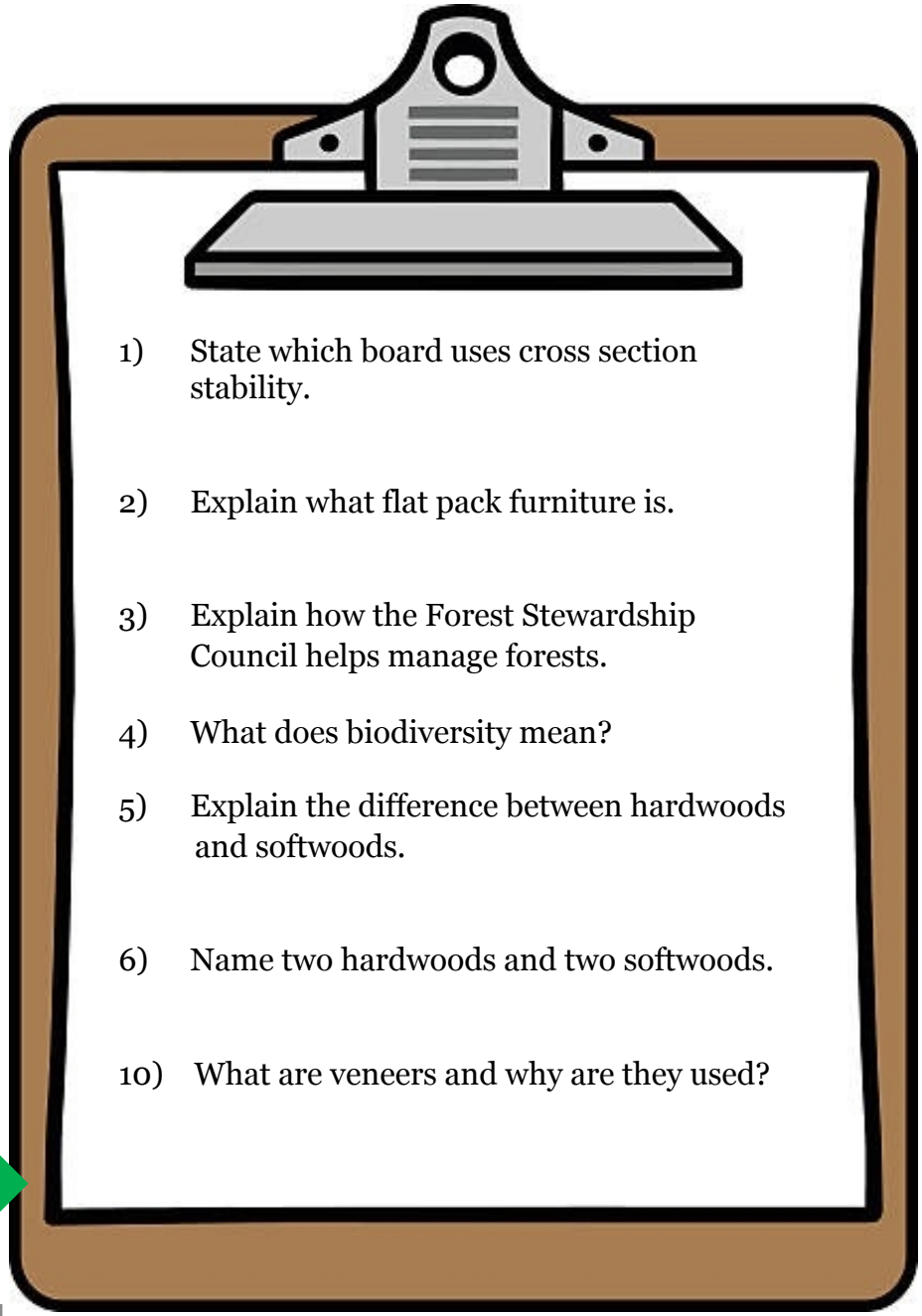
Use technologystudent.com to read the following information

Softwoods, hardwoods and boards

Deforestation and biodiversity

Wood finishes

Now try the quiz!



1) State which board uses cross section stability.

2) Explain what flat pack furniture is.

3) Explain how the Forest Stewardship Council helps manage forests.

4) What does biodiversity mean?

5) Explain the difference between hardwoods and softwoods.

6) Name two hardwoods and two softwoods.

10) What are veneers and why are they used?

Metals

Metals

Use your theory booklet or the internet to read about where metal comes from to help you answer the questions on this page.

Look at the 'Metals' chapter on technologystudent.com to help you

1) The image below shows an **ore**. Explain what an ore is.

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2) Explain why iron ore is a **finite** resource.

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Where do metals come from?

1) The image below shows miners/workers for a company called 'Fairtrade Gold'. The company has strict requirements on working conditions. The **Fairtrade symbol** is shown on their products and website. Use this information to write what this suggests about the following listed below…

-Sourcing of materials
-Working conditions for miners

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Metals

Metals are usually put into one of two categories, ferrous and non-ferrous metals. Look at the 'Metals' chapter on technologystudent.com to help you research the properties of ferrous and non-ferrous metals.

Non- Ferrous metals

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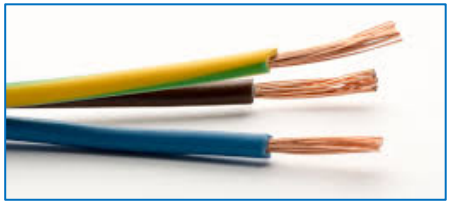

Types of metals

Aluminium is used for….

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Silver is used for….

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Copper is used for….

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Zinc is used for….

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Tin foil is used for….

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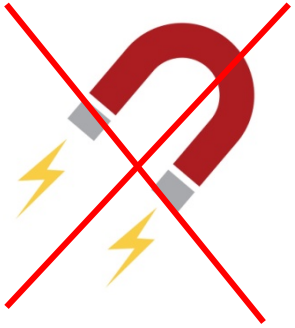
Non-Ferrous metals are NOT magnetic because they do not contain iron.



Metals

Metals are usually put into one of two categories, ferrous and non-ferrous metals. Look at the ‘metals’ chapter on technologystudent.com to help you or use the internet to research the properties of ferrous and non-ferrous metals.

Ferrous metals

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Types of metals

Stainless steel is used for….

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High speed steel is used for….

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Cast iron is used for….

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High carbon steel is used for….

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Mild steel is used for….

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Ferrous metals are magnetic because they contain iron.

Metals

Alloys

An alloy is a mixture of more than one metal. Look at the 'Metals' chapter on technologystudent.com to help you to read what alloys are used for and use the internet to answer the following questions.

Brass is used for….

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Brass is a mixture of

C……

+

Z……

Bronze is used for….

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Bronze is a mixture of

C……

+

T……

1) Explain why metals are sometimes **mixed together** to make **alloys**.

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2) **Steel** is an alloy. Complete the boxes below of the elements that create steel.

I……

+

C……

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Steel

Metals

Look at the 'Metals' chapter on technologystudent.com to help you

1) Explain why **copper** is used in **electrical** wires.

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2) Explain what is a **non-ferrous** metal is.

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3) List three **magnetic** metals.

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Can you answer these questions?

4) Explain why **stainless steel** is used for cutlery.

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5) Explain why metals are used for **radiators**.

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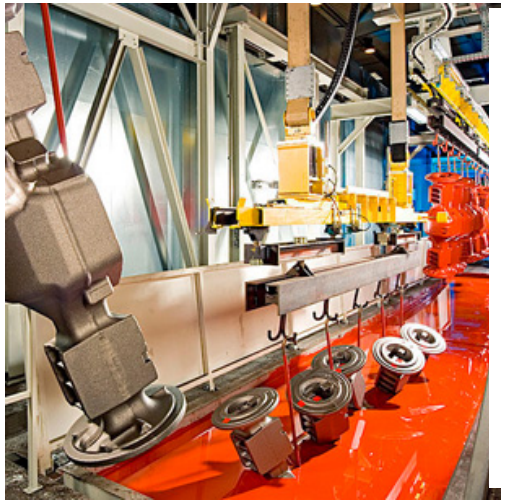
Metals

Metal finishes

Use technologystudent.com the chapter on ‘Finishes to Metals’ to read about metal finishes and why they are used.
Then answer these questions.

Dip coating



1) Explain what **dip coating** is and why it is used.

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Powder coating

2) Explain what **powder coating** is and why it is used.

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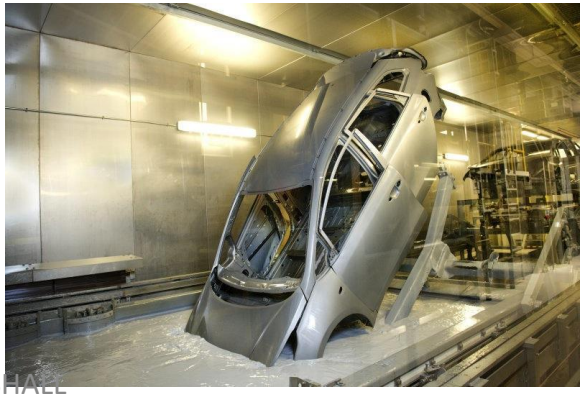
Galvanising

3) Explain why **zinc** is used for **galvanising.**



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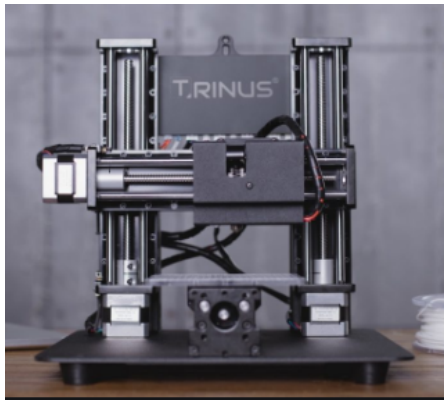
Metals

CAD and CAM in industry

Use technologystudent.com to read about 'CAD' and 'CAM' production methods to help you answer these questions.

1) It is now possible to 3D print metal.



Give one advantage of using **a 3d printer.**

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3) Give three advantages of using **automation** in continuous production.

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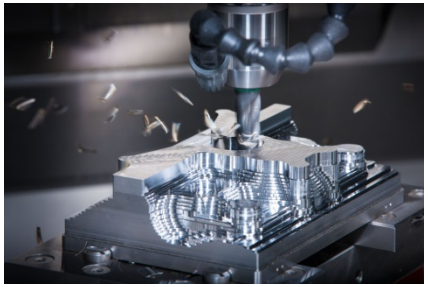
4) . State the **name of the machine** that is shown in the image below that is used to cut and etch into metal.



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4) Give two disadvantages of relying on the use of **computer aided design** in industry.

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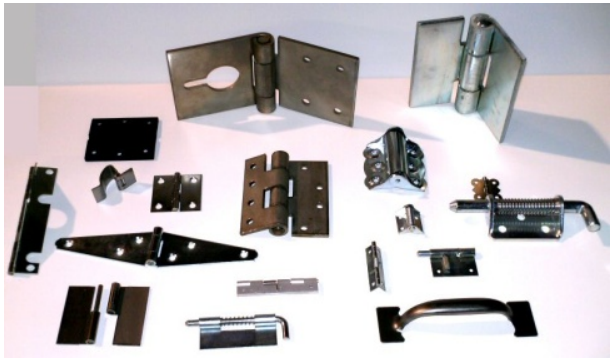
Metals

Production methods

Use your theory booklet or the internet to read about different types of production methods to help you answer the question on this page.

1) Hundreds of thousands of metal fixtures and fittings are being manufactured globally. State which **production method** is being used for this.



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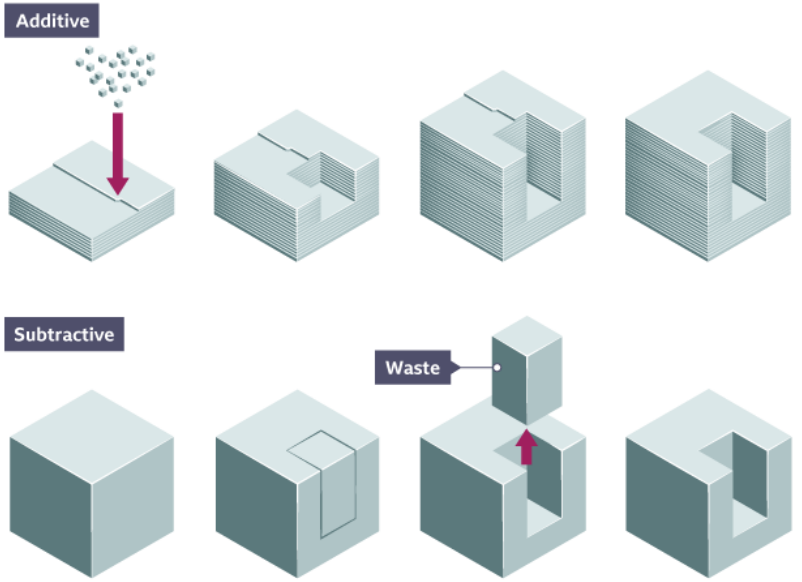
2) Look at the diagram below. Explain the differences between **additive and subtractive** manufacture.



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3) Explain why additive manufacture is **less wasteful** than subtractive manufacture.

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Metals

Ergonomics and Anthropometrics

Look at the ‘Ergonomics and Anthropometrics’ pages on technologystudent.com to help you

The image below shows a foldable metal zimmer frame which can be used be elderly people or people with disabilities to support them to walk. Label key features where ergonomics and anthropometric data has been used in the design of the zimmer frame. One example has been done for you.

Ergonomics

Foldable and adjustable settings so the zimmer frame can be stored away easily and can fit inside vehicles.

Metals

Challenge!

At home have a look for any tin cans that you can use to make tea light holders or pencil pots. Please make sure if you are cutting into the tin can that someone at home helps you with this as it can be dangerous and you can cut yourself. Paint your can to decorate it or wrap string around it to make it look creative.

JMARSHALL

Metals

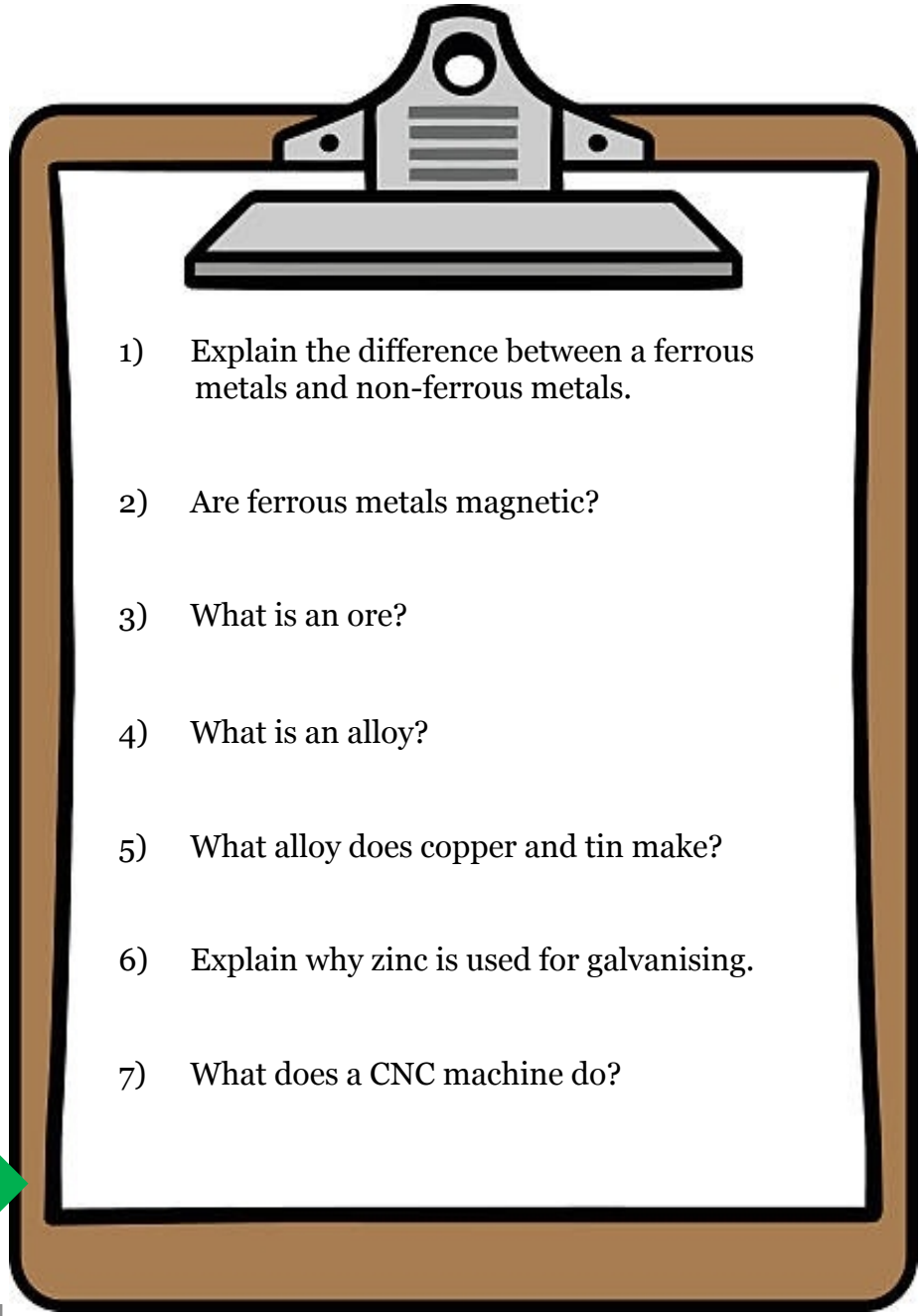
Use technologystudent.com to read the following information

Ferrous and non-ferrous metals

Alloys

Metal finishes

Now try the quiz!



1) Explain the difference between a ferrous metals and non-ferrous metals.

2) Are ferrous metals magnetic?

3) What is an ore?

4) What is an alloy?

5) What alloy does copper and tin make?

6) Explain why zinc is used for galvanising.

7) What does a CNC machine do?