Catrin Hocking
8CMO
Point of Sale

Systems & Control

Enw.....

Year 8
Point Of Sale Display

Adverts and displays are used to gain our attention and to encourage us to buy products or to do things, and they are designed to interest and to appeal to a **target group** of people.
A moving or animated display is an even better way of gaining notice, as people are generally fascinated by parts that move.

Design Task
Design and make a point of sale display to advertise a product or a charity. The design should appeal to a target group of people and be suitable for use in an exhibition or a shop.

Brainstorm possibilities for each of the following then underline your final choice:

Product?	Target?	Place?
Krispy Kreme doughnuts	Teenagers	In the store
Wales football team	Unisex	In the store
Starbucks frappe chino	Teenagers and children	At the counter in the store
Adidas superstars	Teenagers and young adults	At the till
Costa fruit cooler	All ages	In the window
Fruit shoots	Young children	On the counter at a kids play centre

SELF ASSESSMENT

1. Use the list shown below to help you check that you have all your folio work and that you have put it in the right order.
2. Compare your work with the notes on each topic and the work of others in the class. Give each a grade from:

1 – very good, 2 – satisfactory, 3 – needs improvement, X – missing.

FOLIO WORK

TOPIC NOTES	Grade
Brainstorm – a wide range of different possibilities.	
Analysis (advert) – detailed notes to help you understand and aid you to design.	
Drive systems - detailed and correct answers that show your understanding	
Ideas – a range of interesting ideas, with good shading and notes to help explain.	
CAD development – sketches / printouts that show how you have build up the image	
Construction / Planning– detailed notes that explain construction and how to make it.	
Electronics - detailed and correct answers that show your understanding	
Average grade	

PRACTICAL WORK

TOPIC NOTES	Grade
Organisation – how well you have organised yourself and used your time	
Independent working – did you need much help and support	
Tools and equipment – correct, skilful and confident use	
Accuracy and skill – accuracy of marking out, cutting, drilling, joining etc	
CAD image- design, quality and layout of display image	
PCB manufacture – quality, accuracy of the circuit and neat soldering	
Safety – using tools and machines correctly and safely.	
Quality of finish – work to be free from marks, smooth and look of 'shop' quality.	
Control systems –your understanding and use of the different systems	
Average grade	

3. Write a **sentence** to explain what you are best at and what you need to improve.

In folio work I am good at ……..

In practical work I am good at ……..

In folio work I need to improve ……..

In practical work I need to improve ……..

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Advertisement Analysis

Slogan with a baby related picture

The baby isn't crying and is happy.

Picture of the product

Information about the product

They used a baby who has soft skin to show that the product works.

Annotate the advert above, describing the content, pictures used, graphics used and the content of the information.

Summarize your impression of the target user.

The target audience is parents who have young children. There is a picture to show what it looks like. The parents would buy it to wash their baby and because it is branded they would trust the product.

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Advertisement Analysis

Description about the product.

Showing that it is 3D

Name and slogan

Picture of the TV

Annotate the advert above, describing the content, pictures used, graphics used and the content of the information.

Summarize your impression of the target user.

The target user would buy it because the advert is colourful and isn't boring. The target user would mainly be families that want to watch films together in 3D but anyone could buy it.

Year 8 Systems & Control

Display project – Electronic Components

Electronic circuits are made by linking components together. The components that we are going to use to **control** our display project are described below:

Resistors

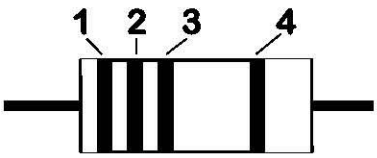
Resistors can have different values of resistance. The standard amount of resistance is called one **ohm.Ω**

Resistors allow you to control the **current** in a circuit, e.g. to obtain a small current put a resistor with many ohms in the circuit.
By choosing the right resistor you could set the current to any value that you want.
A variable resistor called a **potentiometer** can be used to change the resistance in a circuit, e.g. volume control, dimmer switch.

Colour code

A resistor is no use unless you know its resistance. This is marked on it in code. The normal code uses colours.

Black	=	**0**
Brown	=	**1**
Red	=	**2**
Orange	=	**3**
Yellow	=	**4**
Green	=	**5**
Blue	=	**6**
Violet	=	**7**
Grey	=	**8**
White	=	**9**



To decode a resistor

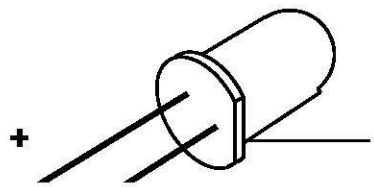
- Colour bands 1 and 2 give you the values
- Colour band 3 gives you the number of zeros
- Colour band 4 gives you the tolerance of the resistor. (How accurately it is made.)

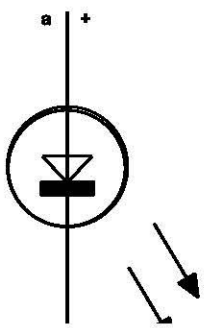
For example, three reds will give us a value of 2200Ω

Light Emitting Diode (LED)

These are often used as a sort of indicator light.
All diodes will allow current to pass in one direction only. The flow must be from the **anode** + to the **cathode** – in the circuit. If it is connected incorrectly the circuit will not work.
Too much current will damage a diode so they are often protected by a resistor to limit the current flow.

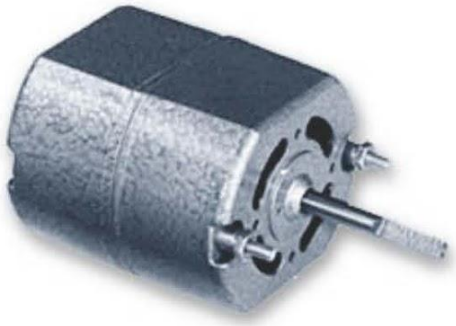
LED and Symbol.

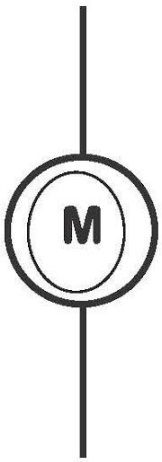




Motors

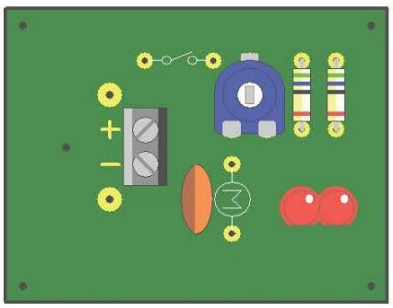
What they are used for
Small DC motors are used to convert electrical energy into the mechanical energy of movement. They have many applications, but you can find them in products such as toys, CD players, video cameras, power tools and so on. To reverse the direction of a motor all you need to do is to change the polarity so that your + becomes – and your – becomes +.



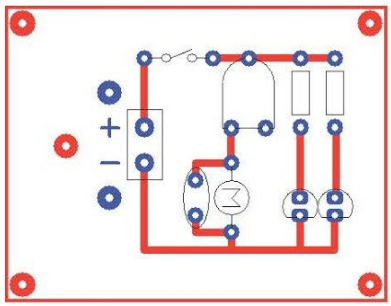


Printed Circuit Board (P.C.B.)

To control our displays we will be creating a P.C.B. The P.C.B uses copper tracks to connect our components together. Diagram 1 gives us a **virtual image** of our circuit. The design has been created using the programme **'P.C.B. Wizard'**. Diagram 2 shows us where to solder our components.



Virtual Image



P.C.B Components

Layout

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Electronics Test Year 8

1. **What is resistance measured in?**

   Ohms

2. **What does the 4th colour band tell us about a resistor?**

   Quality

3. **Why do we need a resistor in our electronics project?**

   Reduce the voltage going to the 2v LED

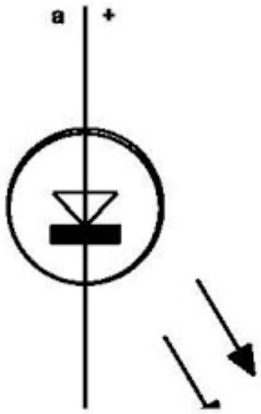
4. **Roughly how many Volts are required to operate an LED?**

   About 2v

5. **Name 2 ways of identifying the negative leg of an LED**

   Flat side and shorter leg

6. **Draw the symbol for an LED**



7. **How do you change the direction of a motor?**

   Change over + to - and - to +

8. **Give an example of where we use small electronic motors**

   Hand drill

9. **What does the term 'CAD' mean?**

   Computer aided design

10. **Why do we use CAD in the development of electronic circuits?**

    We use CAD to help us design our circuit

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Idea Analysis

1. **Describe the product that you will promote and any key features that it may contain.**

I would like to promote Starbucks chocolate s'mores frappuccino. It contains marshmallow cream, chocolate and coffee. Great for the winter. It will have the logo on the top and a picture of the the drink on the front.

2. **Describe the target user and place where your display will be placed.**

The target audience is usually teenagers and young adults. The display would be displayed on the counter by the till.

3. Produce a range of possible slogans for the front of your display.

1) Buy a drink today and feel better tomorrow.

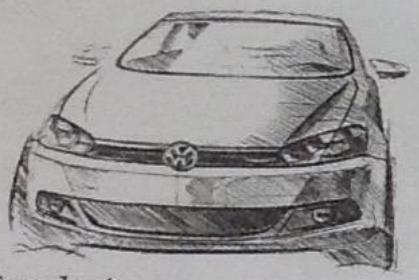
2) Fantastic Famous Frappé

Layout Ideas

Use either portrait or landscape for your sketch ideas

Moving Logo

Out Now!



Sketch of product

Only £15995

Price

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Motors and Drive Systems

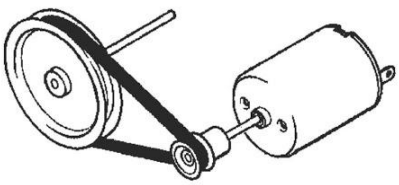
When you pedal a bicycle, you are the motor! The pedal crank is connected to the back wheel by a chain and sprocket so when the crank turns, the back wheel will also turn. The bicycle is a simple example of how **rotary drive** can be transferred.

Electric motors

Small electric motors drive many of the products that you buy. When a small electric motor is switched on the shaft turns at a high speed (8000 r.p.m). This speed is too fast for many applications and needs to be slowed down.

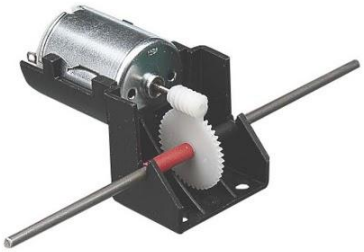
Gears and Pulleys

Gears and pulleys are often used to transfer the **drive** from an electric motor to make something move elsewhere. They also control the speed and direction of movement. Most machines or appliances will have them but they will be hidden from view. Three common methods are shown:



Pulley drive

Gear drive



Worm drive

Changing speed

Using different size gears or pulleys can change the speed of motors. Examples of the use of gears can be seen in a car or a bike. The drilling machine is a good example of how different pulleys are used to control speed.

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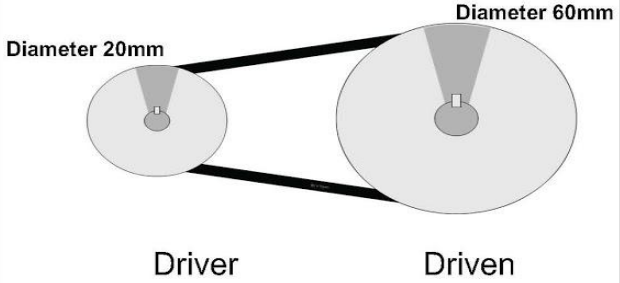
Questions

1. Why is it a good idea to have a range of gears on a bike?

In case they break and so that it is cheaper.

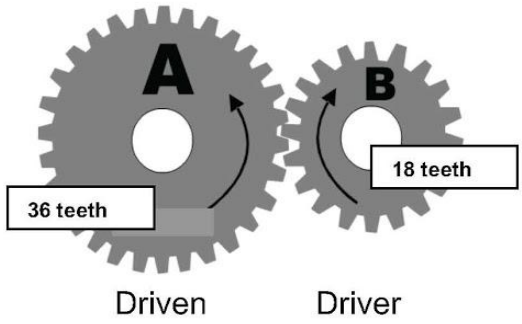
2. How many times does the driver turn compared to the driven? The answer gives you the velocity ratio of the system. E.g 1:4 Use the formula to calculate the ratio:

Velocity ratio = $\frac{\text{diameter of driven pulley}}{\text{diameter of driver pulley}}$



Velocity ratio = 3:1

Velocity ratio = $\frac{\text{number of teeth on driven gear}}{\text{number of teeth on driver gear}}$

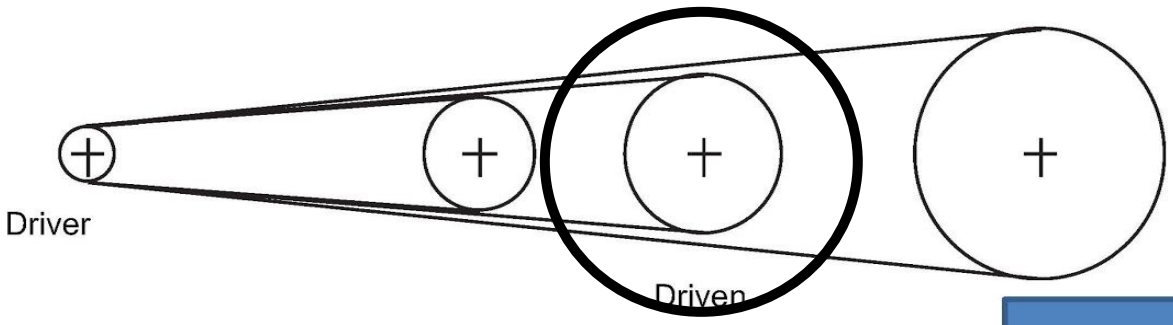


Velocity ratio = 2:1

3. If you were pedalling up a hill you would select a gear that enables you to keep going and not put too much effort, but you only move forward slowly. Would you have selected a large or small gear on the rear wheel?

Large

4. Which size driven pulley would you use to give the fastest speed from the driver pulley that is shown?



Circle your chosen pulley.

Gwaith Cartref

Learn the spellings below ready for a test next lesson. Practice writing the technical terms a number of times each.

Try square

Accurately

Tenon saw

Disc sander

Measured

Pillar drill

Hand vice

Pilot holes

Minimise

Splitting

Flush

Hand drill

Countersink

Indentation

Attached

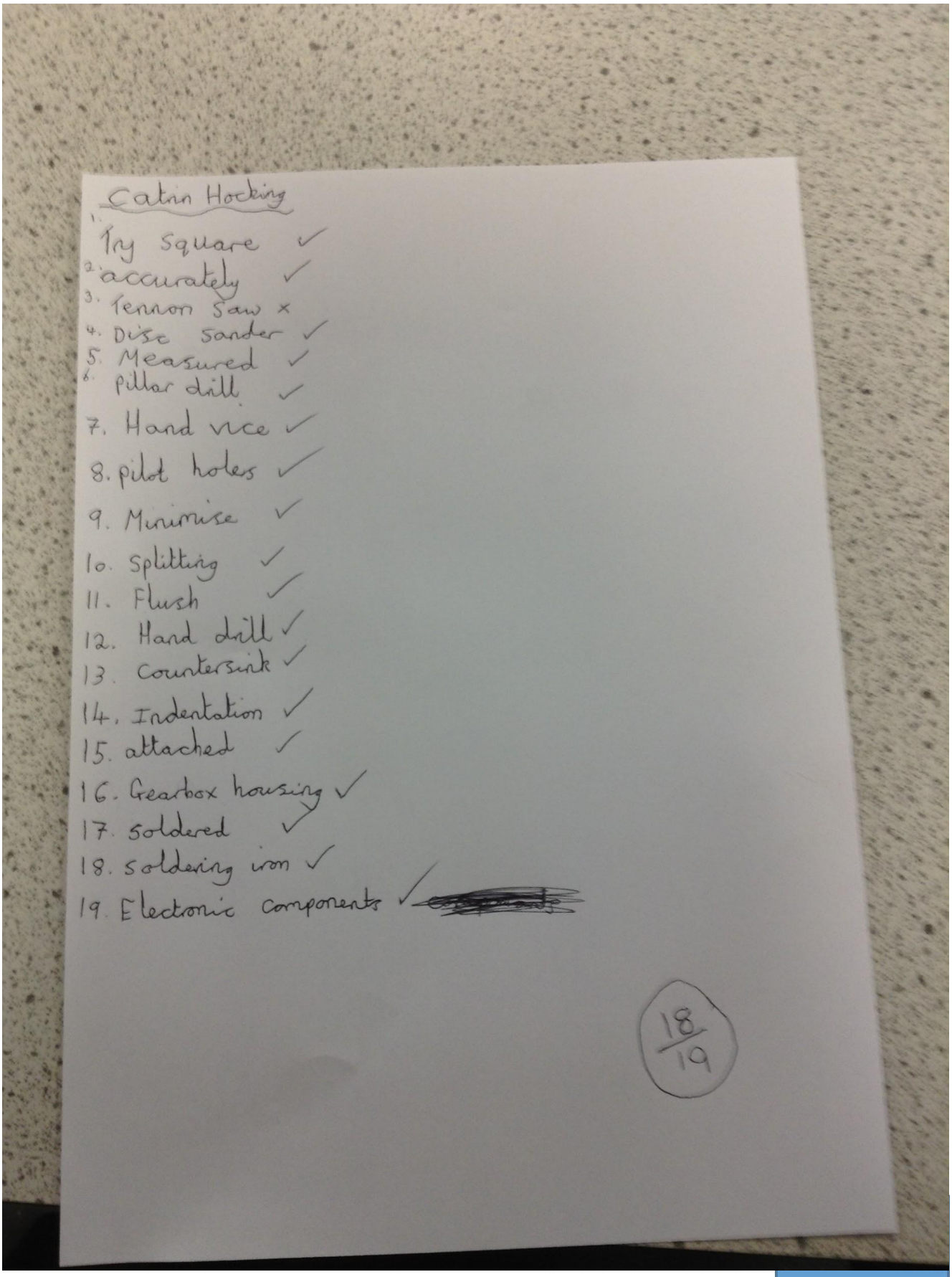
Gearbox housing

Soldered

Soldering iron

Electronic components

Year 8 Spelling test



Systems & Control

Gwaith Cartref

Using the words from the spelling test, write an appropriate sentence for each one.

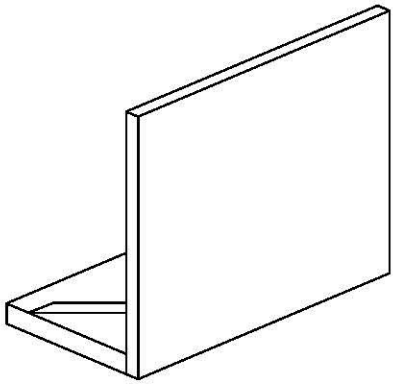
Try square- an implement used to check and mark right angles in constructional work.
Accurately- in a way that is correct in all details; exactly.
Tenon saw- a small saw with a strong brass or steel back for precise work.
Disc sander- a machine having one or more flat circular disks faced with abrasive for smoothing wood surfaces
Measured- when you measure something with a ruler
Pillar drill- A pillar drill is a fixed style of drilling machine that can be mounted o a stand or bolted to the floor or workbench. Unlike a hand-held drill machine; it i far more accurate.
Hand vice- Definition of hand vise. : a small clamp or vise on a handle designed for holding small objects while they are being worked usually by hand.
Pilot holes- a small hole drilled ahead of a full-sized hole as a guide.
Minimise- reduce (something, especially something undesirable) to the smallest possible amount or degree.
Splitting- break or cause to break forcibly into parts, especially into halves or along the grain.
Hand drill- a small portable drill held and operated by hand
Countersink- a hole (usually in wood) with the top part enlarged so that a screw or bolt will fit into it and lie below the surface
Indentation- the space left between the margin and the start of an indented line
Attached- joined, fastened, or connected to something.
Gearbox housing- The gear housing is the casing that surrounds the mechanica components of a gear box. It provides mechanical support for the moving components, a mechanical protection from the outside world for those internal components, and a fluid-tight container to hold the lubricant that bathes those components.
Soldered- join with solder. "the wires to this clip are soldered to the circuit board"
Soldering iron- an electrical tool used for melting solder and applying it to metal that are to be joined.
Electronic components- An electronic component is any basic discrete device o physical entity in an electronic system used to affect electrons or their associated fields.

Electronics

Systems & Control

Planning

Now show that you can think ahead and plan the making of the **FRAME.**



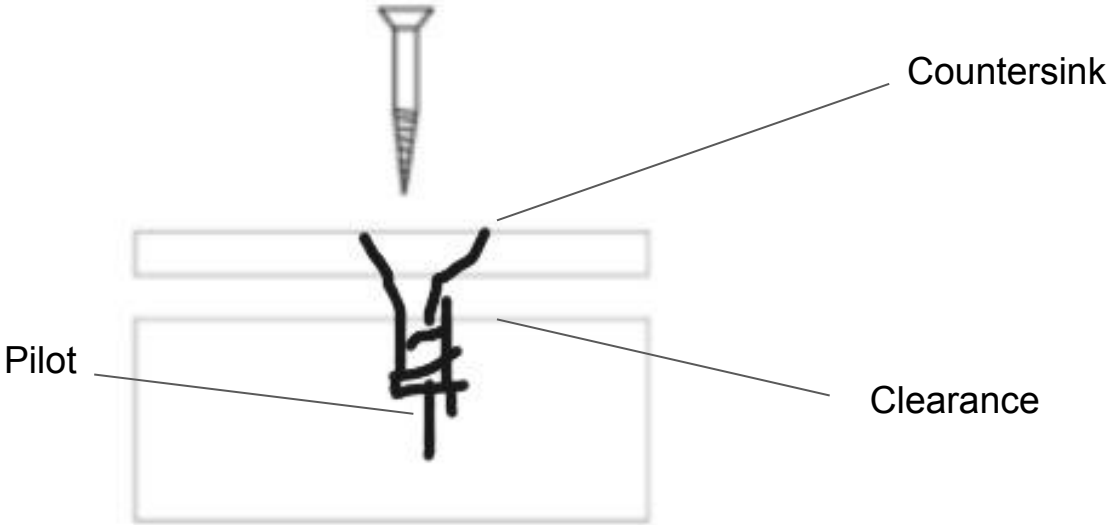
Use the **words** in each box as a sentence starter to describe a making process, explaining what is to be done to each part and naming the tools to be used and the safety precautions that need to be followed. The first example is given for you.

Process (first draft)
Mark out the MDF base strip to the length of the front panel using a ruler and try square.
Saw We measured out the size of the base that we wanted and make a mark with a tenon saw and made another mark a couple of millimetres from the line.
Trim the ends We used a belt sander to sand the ends and make it the right size.
Mark out the holes We used a pencil and ruler to mark how thick we wanted the base and measured half way and then measured 30mm from the edge so the mdf wouldn't split.
Drill Using the pillar drill we drilled a clearance hole in the upright part of the point of sale display. We then marked out where we wanted the drill holes to go on the base and then drilled 2 pilot holes with a hand vice.
Screw Using a screwdriver we screwed the upright part to the base.
Mark out triangles We used a tenon saw to cut out a rectangle and then we cut it into 2 triangles.
Trim We sanded the edges to make them smooth and even.
Glue We then glued the triangles in between the upright part and base of the point of sale project and waited for it t dry.
Paint We then got a sponge and dabbed the paint onto the mdf.

Systems & Control

POS Display
Construction / Planning

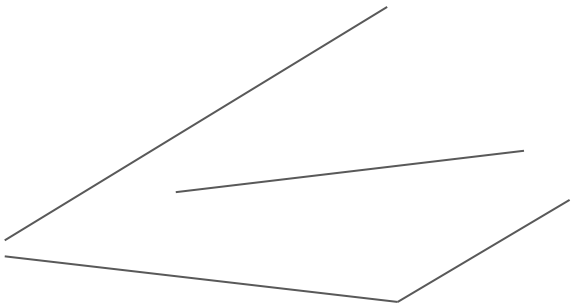
1. Complete the drawing to show how the frame is constructed by screwing parts together. Draw the holes you would make and label each from the following: pilot hole, countersunk hole, clearance hole.



2. Give two precautions you would take to prevent the MDF strips from splitting when you screw parts together.

- We used a vice so that t stayed in place so it would be harder for it to split.
- We drilled a clearance hole

3. On the demo model you have been shown, explain the purpose of the triangular piece between the front and the base? Add simple **sketches** and **notes** to show what would happen without it.



Systems & Control

Now that you have completed your first draft for your planning sheet write a detailed list in the space below. Use the **VCOP** resources to improve your work. If possible, use your ICT skills to present your work and paste below.

First we marked out the MDF to the same length as the front upright piece of the point of sale. We used a ruler and try square and so that It was accurate and the markings were straight. We also used a pencil to write with so that if we made a mistake, we could rub it out.

Then we measured out the size of the base that we wanted and made a mark with a tenon saw. We made sure we all had aprons on and had our hair tied back to make sure that we didn't hurt ourselves or others when using the equipment. We made another mark a couple of millimetres from the line so that it wasn't too small when we sanded it.

After that we used a belt sander to sand down to the first line that we made. We made sure we sanded down so it was the same length as the upright piece. When we used the belt sanders we took off our ties if they weren't inside our aprons so they couldn't get caught.

We then used a pencil and a ruler to mark out where we wanted the holes to go. The holes we marked out were to attach the front upright piece to the base. We measured half way and then measured 30mm from the edge so the mdf wouldn't split.

Using the pillar drill we then drilled a clearance hole in the upright part of the point of sale display making sure that we had safety goggles on and all loose clothing and hair was out of the way. We then marked out where we wanted the drill holes to go on the base and drilled 2 pilot holes.

After that we used a screwdriver to screw the upright part to the base. We had to make the holes bigger so that the screws were level with the surface. When screwing in the screws we had to be careful so the mdf wouldn't split.

We measured and cut a rectangle from a long piece of mdf and then used a ruler and pencil to draw a line from one corner to the other. We cut along the line with a tenon saw and used a bench hook to put underneath our work so that we wouldn't cut the table.

Then we sanded the edges so they were smooth and even. The triangle had to be the right size so that they could fit between the upright piece and the base.

We then glued the triangles between the upright piece and the base so it was more sturdy. After that we painted the mdf with a colour of our choice. We used a sponge and dabbed the paint onto our work. We applied the paint in thin layers so it would dry quicker.

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Gwaith Cartref

Read through and learn the following sentences. You will be tested on the tools, processes and spelling next lesson to improve your literacy skills in Design Technology.

1. When we marked out our base we used a **try square** to mark **accurately** at 90 degrees to the edge of the material.
2. Using a **tenon saw** we cut the base to the correct size.
3. Using the **disc sander** we removed the waste material form the base.
4. To mark out the screw holes we **measured** the material and made a mark at the half way point.
5. We used a **pillar drill** and **hand vice** to drill the **pilot holes** in the base of our material.
6. To **minimise** the chance of **splitting** we marked our holes 25mm from the edge of the material and drilled a pilot hole into the base.
7. To make the heads of the screws sit **flush** with the work, we used a **hand drill** with a **countersink** attached to make an **indentation** in the MDF.
8. We **attached** the **gearbox housing** to a small block of pine which was then glued in place using PVA.
9. Using double-sided tape, we attached our image to the MDF.
10. We **soldered** all the **electronic components** in place using a **soldering iron**.

In the space below see how many of the following words you can translate into Welsh:

1. Saw……
2. Drill……..
3. Ruler……
4. Pencil……..
5. Glue……
6. Soldering…….
7. Safety……..
8. Measure……..

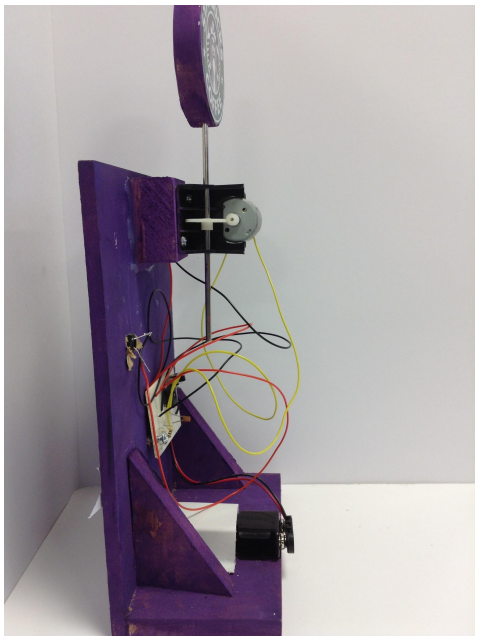
Electronics

Year 8 Point of Sale

Practical work

Add three images of your finished work onto this page. Make sure your photographs are clear.

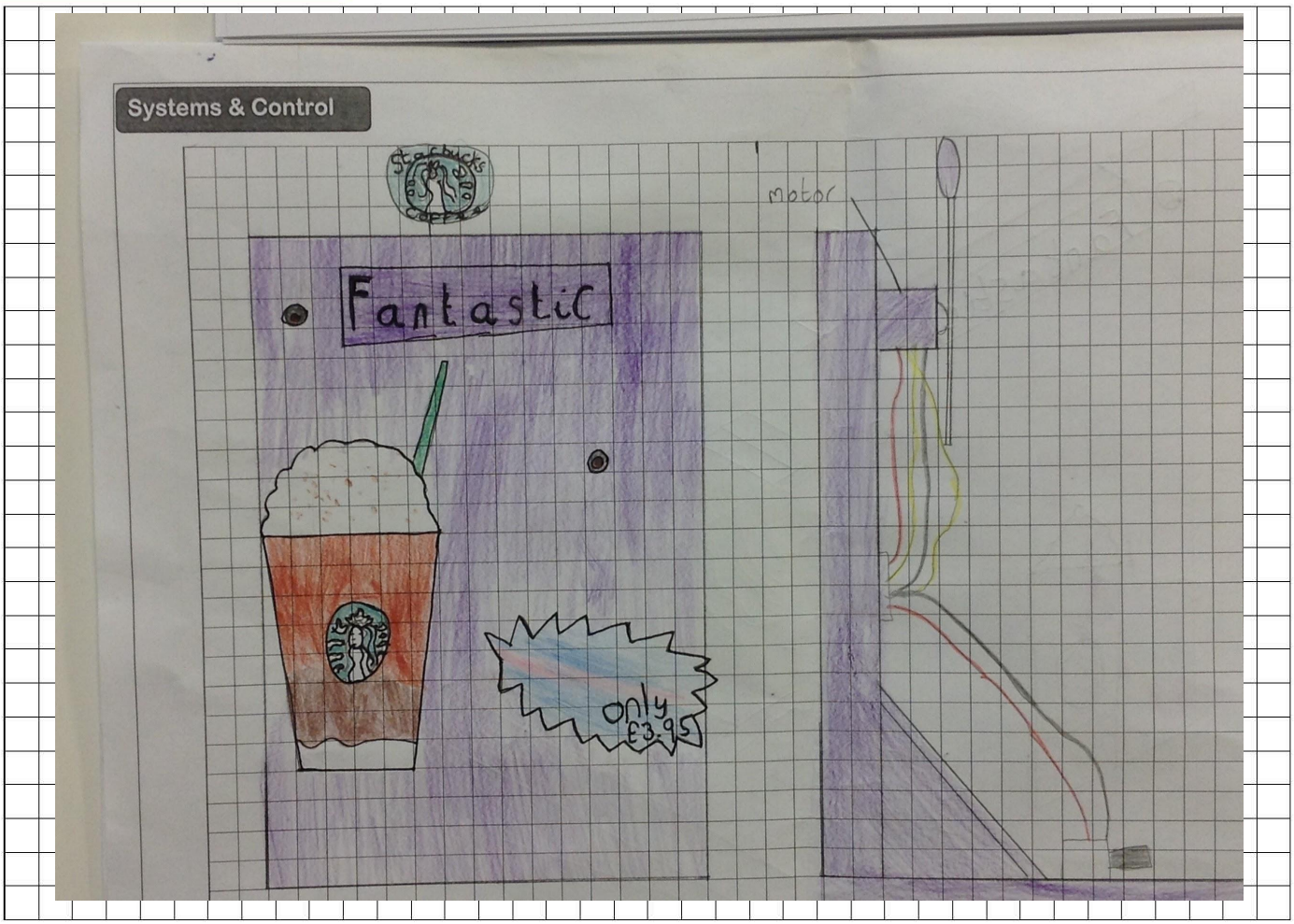
Front view

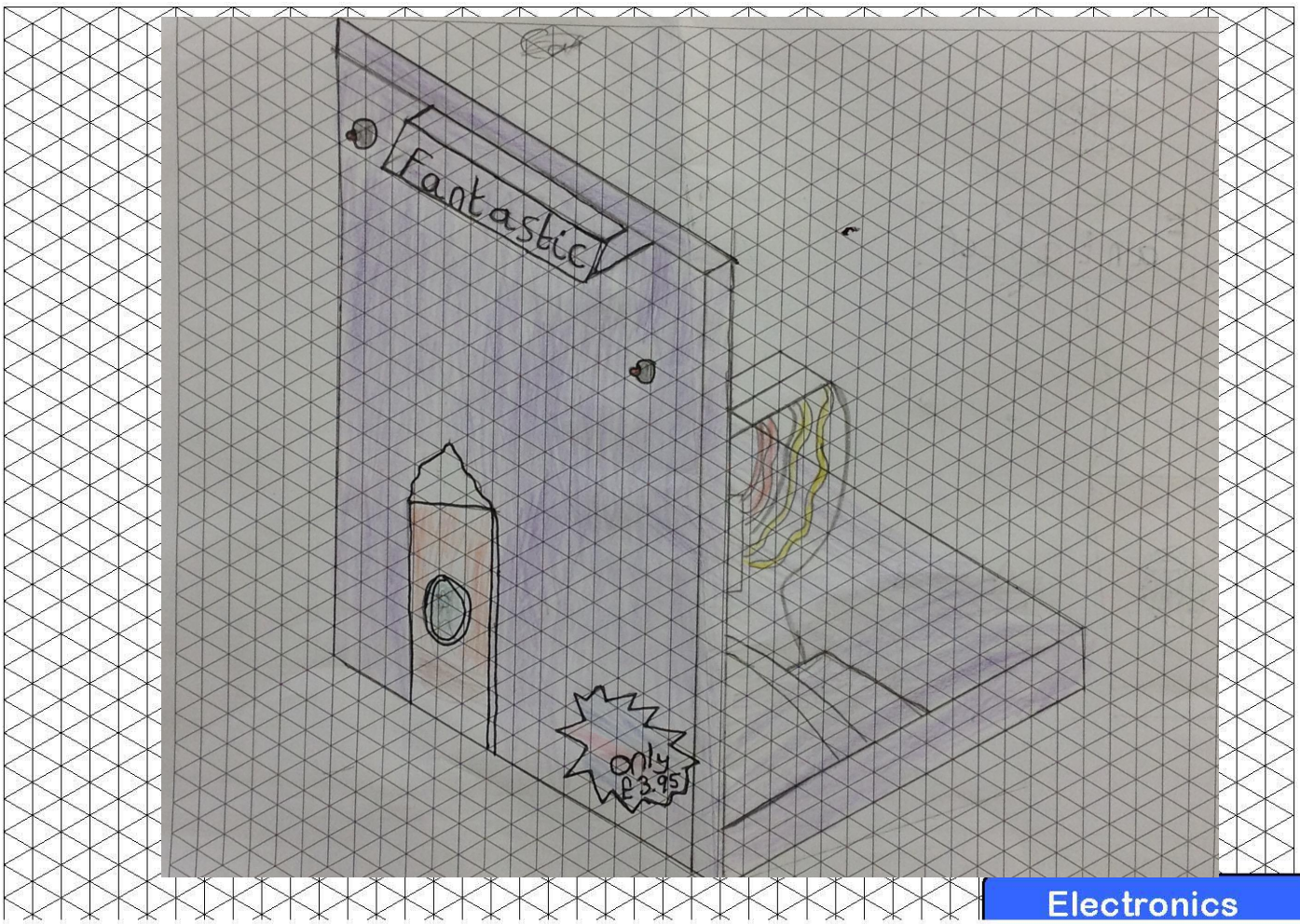


Side view

Plan view

Systems & Control





Electronics

Systems & Control

Your opinion

Now that you have completed your P.O.S. project we would like you to tell us what you thought about the project and how we could make it better. In the spaces below write a sentence giving your opinion. Some of you will then be asked to write some points for discussion on the whiteboard.

What areas did you enjoy the most?

I enjoyed making the project and using a hot glue gun to glue everything together. I also enjoyed screwing things together.

What areas did you find the most difficult?

I found the circuit board and wires difficult because there were loads of wires and it was hard to tell what goes where.

What parts of the project would you change?

I would make it so that there was a cover over the back so that the wires can't get damaged when they are taken home.

Is there any other comments that you would like to add regarding the P.O.S project?

I think that the project is good but it's not something that would be used.

FOLIO	PRACTICAL	PROGRESS	EFFORT	HOMEWORK	CONDUCT
1	1	1	1	1	1

Your strengths are:
You have worked very hard during practical lessons producing a very good Point of Sale Catrin. During lessons you have worked independently throughout the project using tools and equipment safely. In your folio you have created interesting design ideas and good quality written work.

To improve:
Keep up the hard work Catrin, your skills are developing well.

Level working towards:
The folio and practical work that you have completed during this project is commendable Catrin and has provided the evidence to move you up to a level 6. Well done Catrin, if you continue to work at this level you will be looking at achieving a level 7 by the end of year 9.

Fantastic