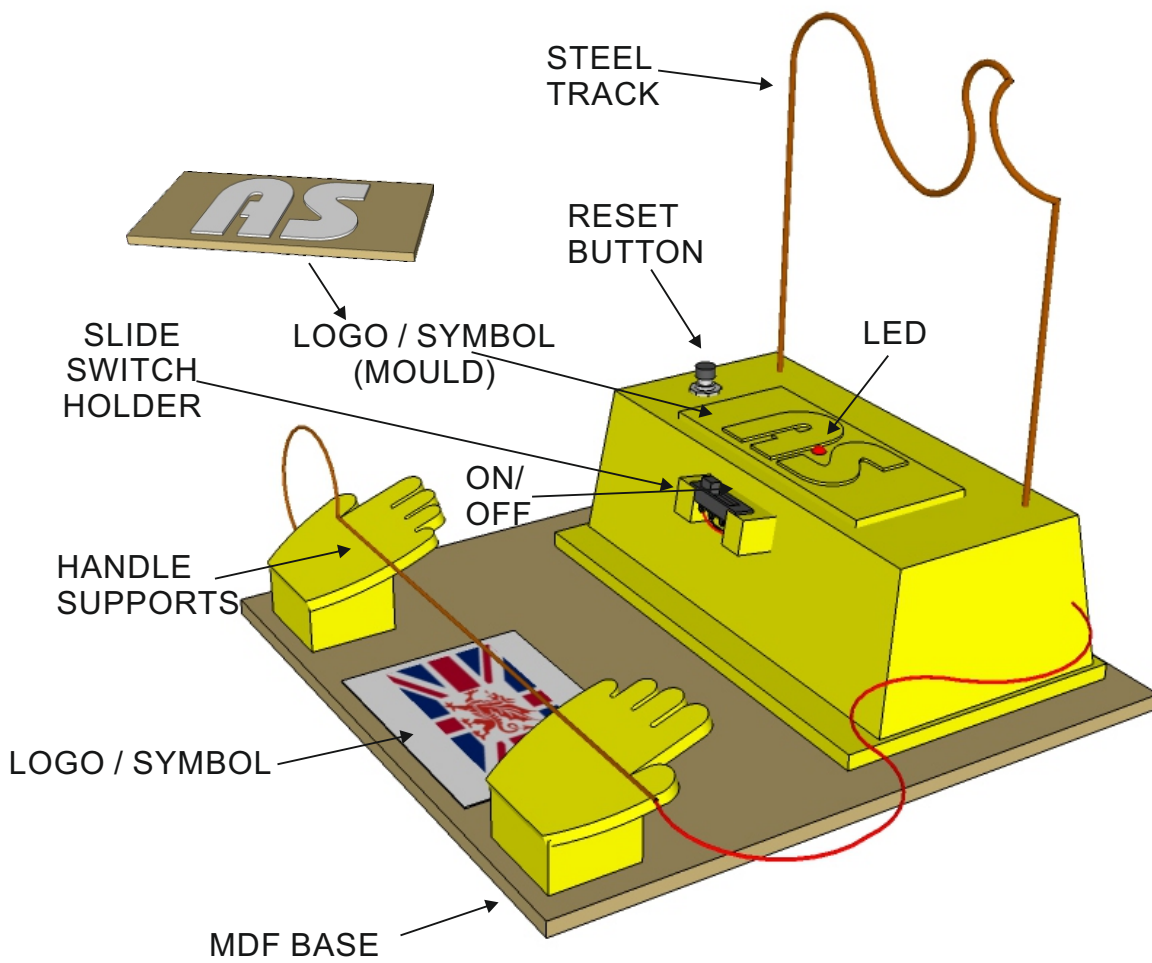
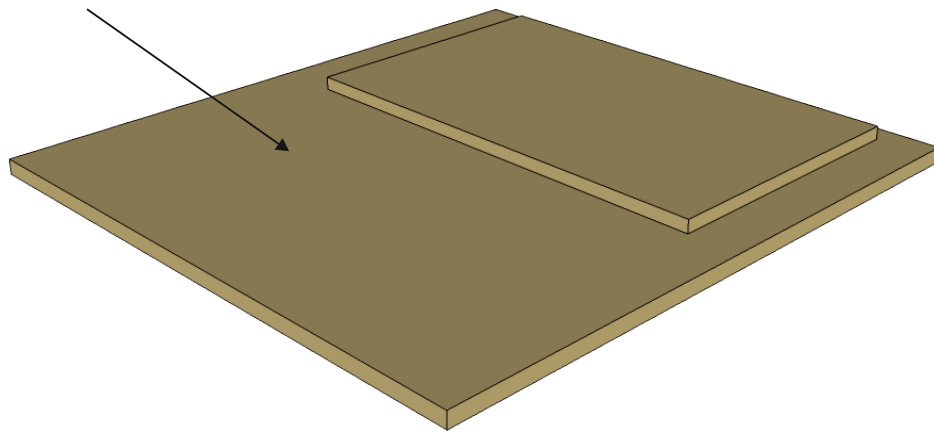
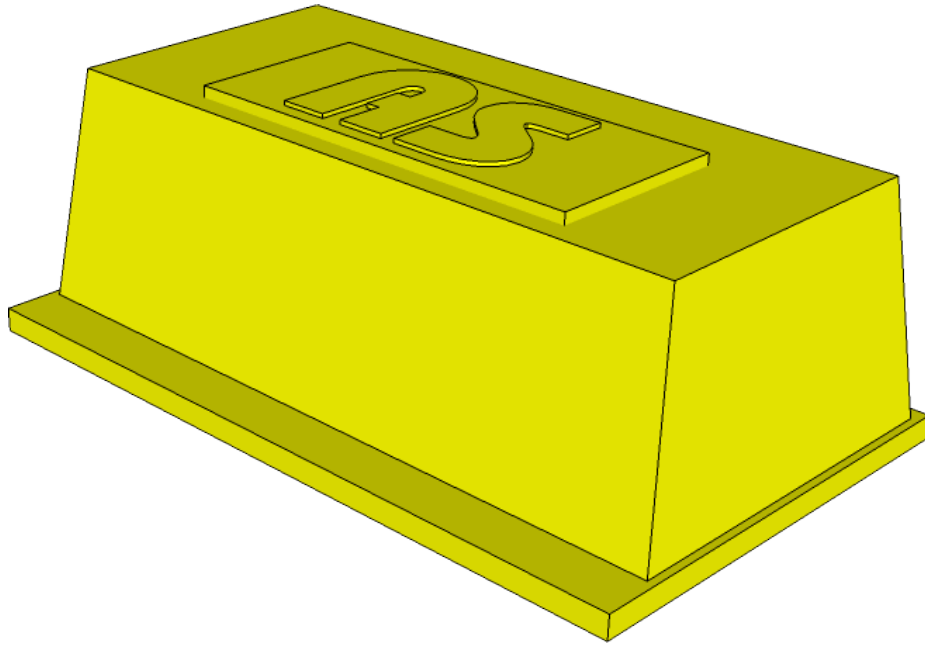
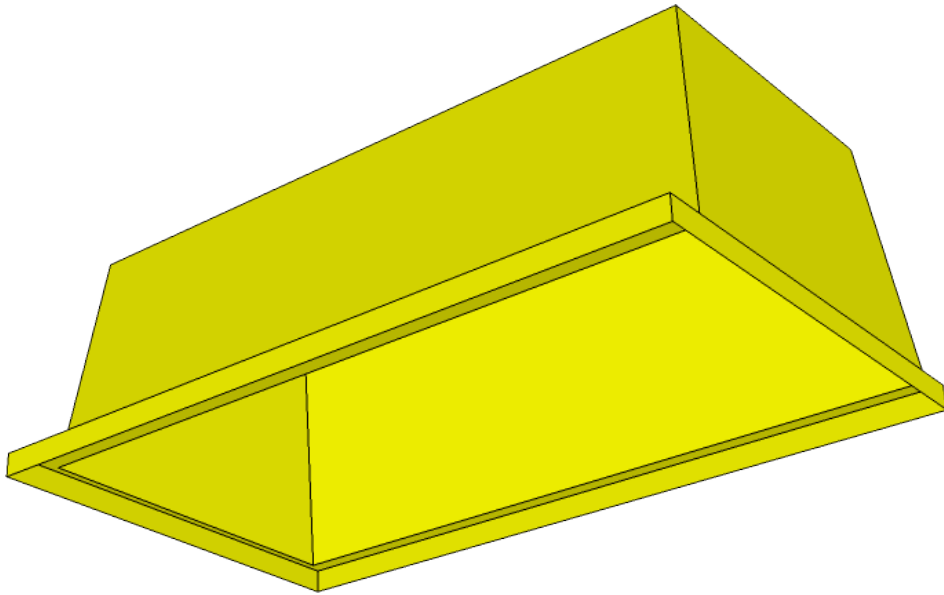


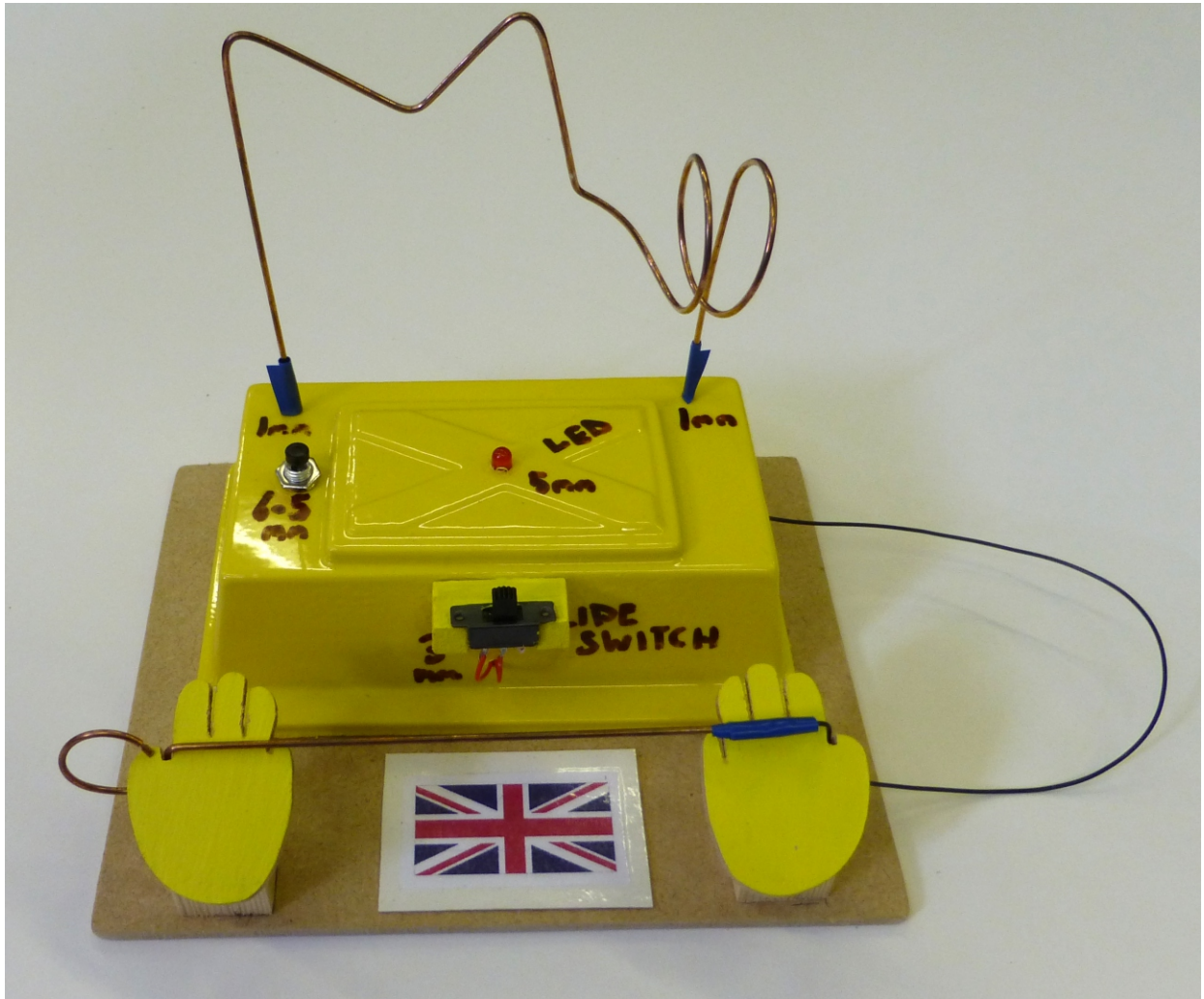
MDF BASE



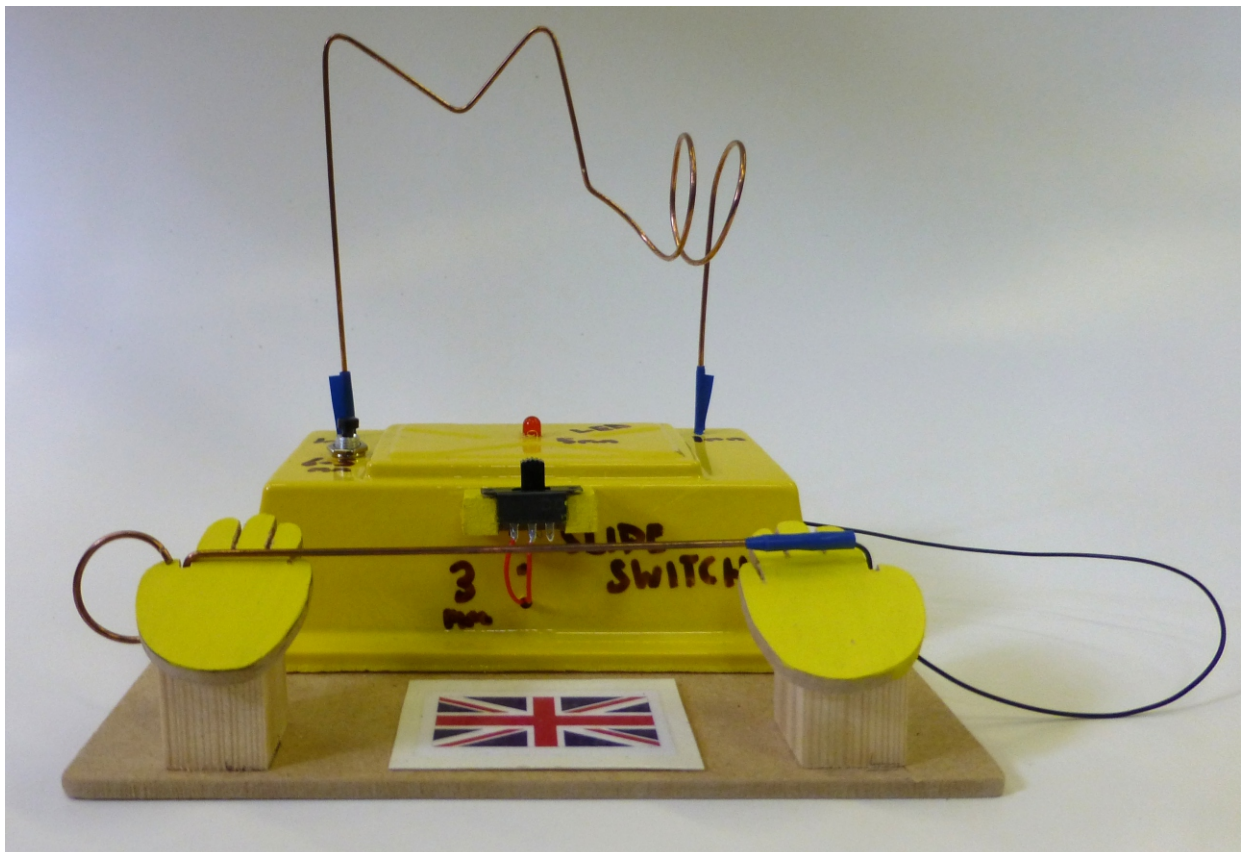


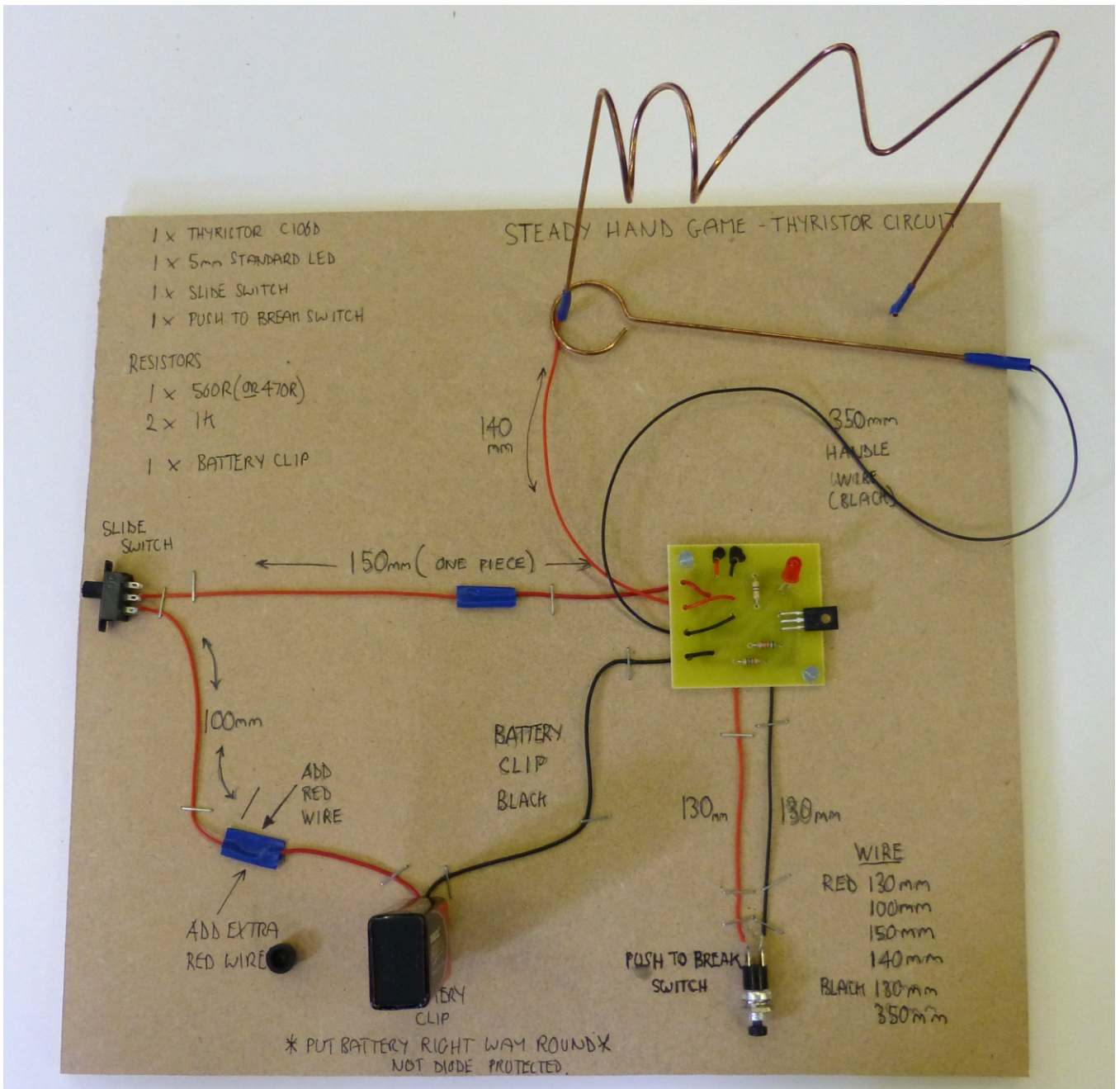
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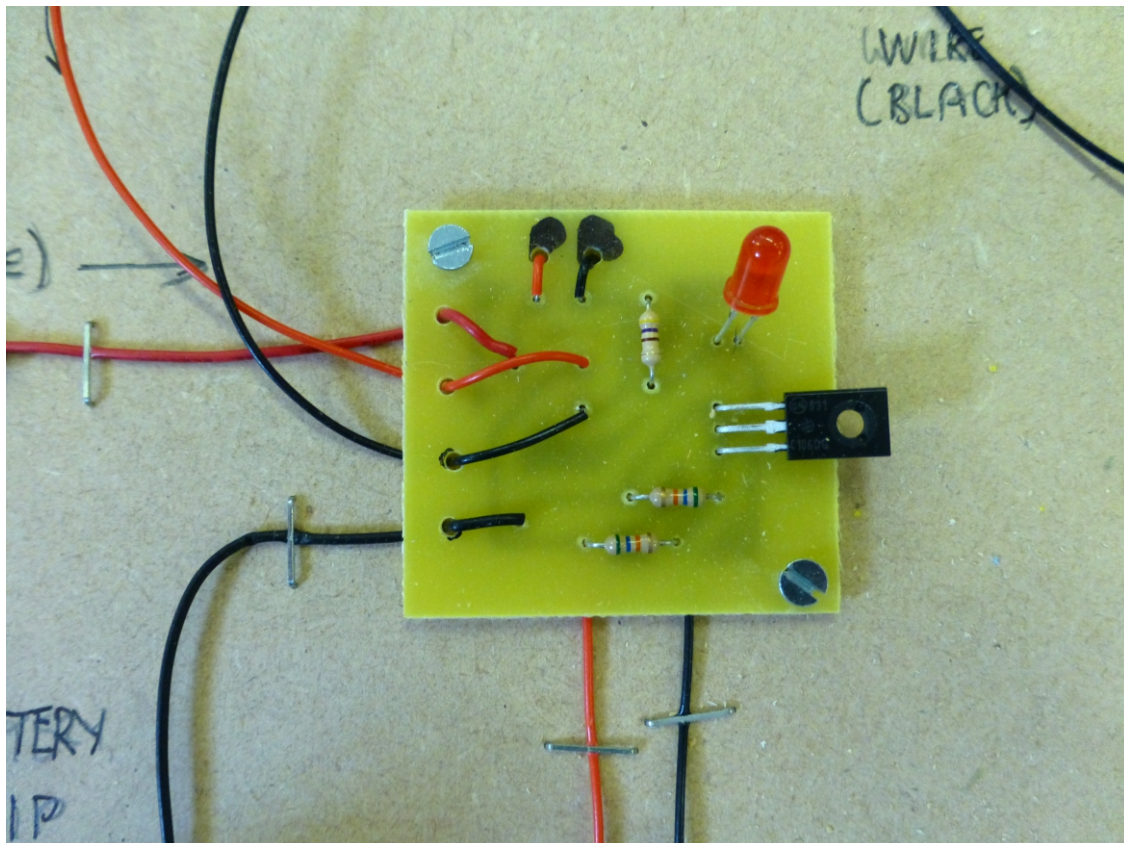
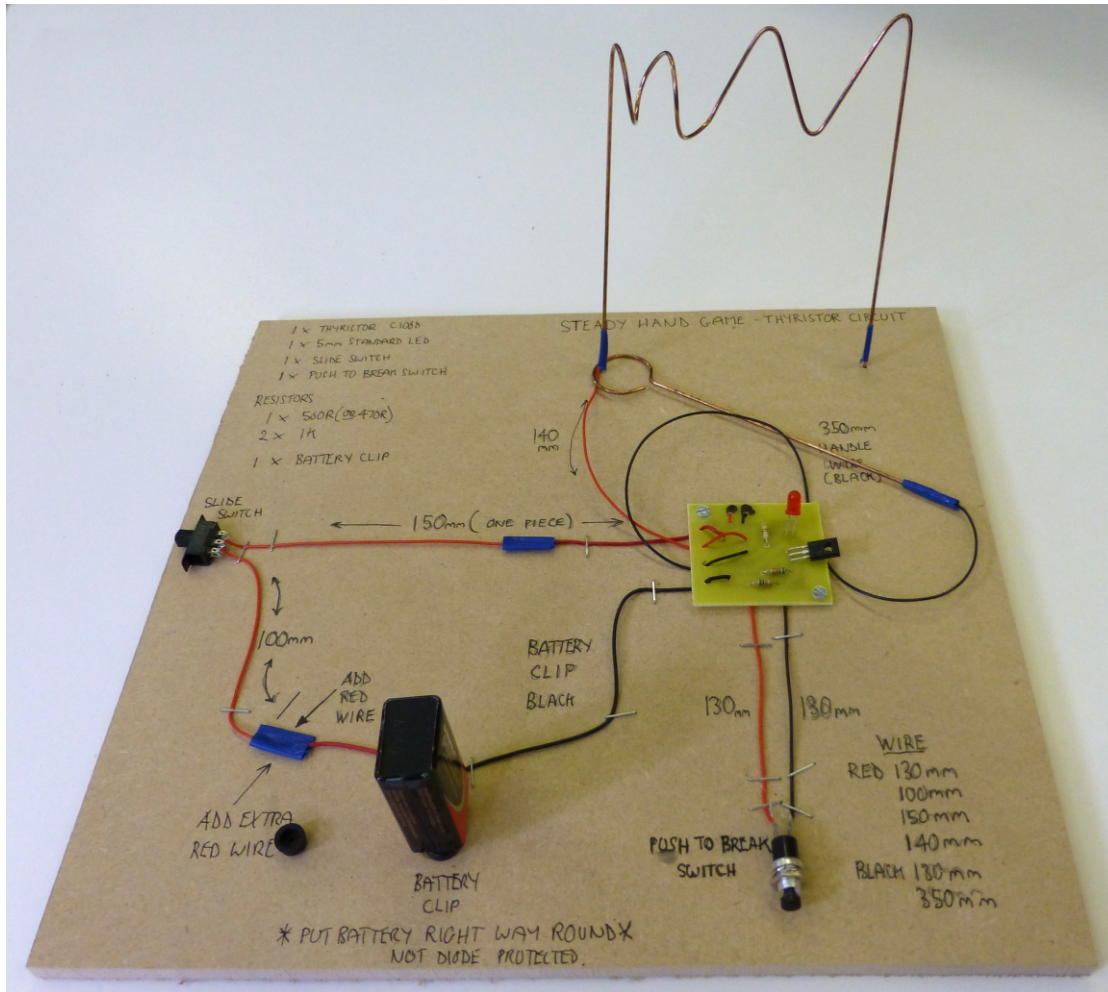


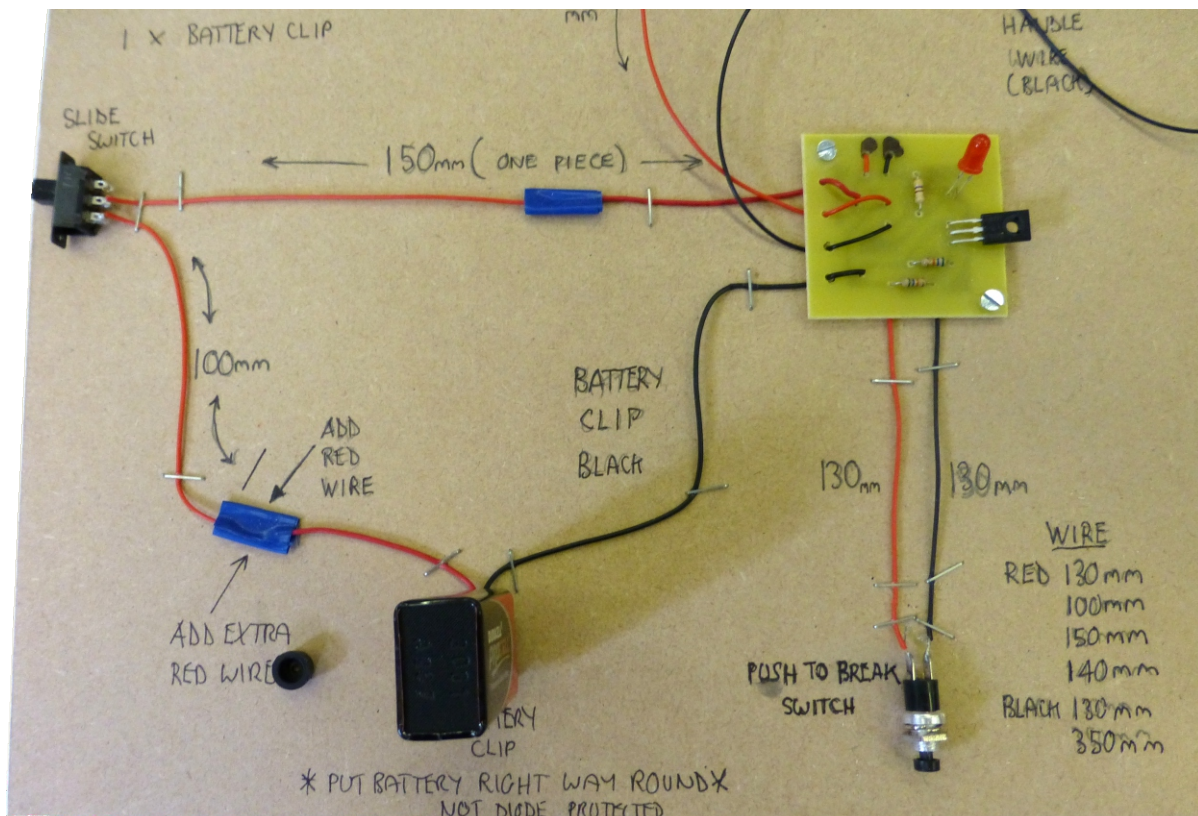


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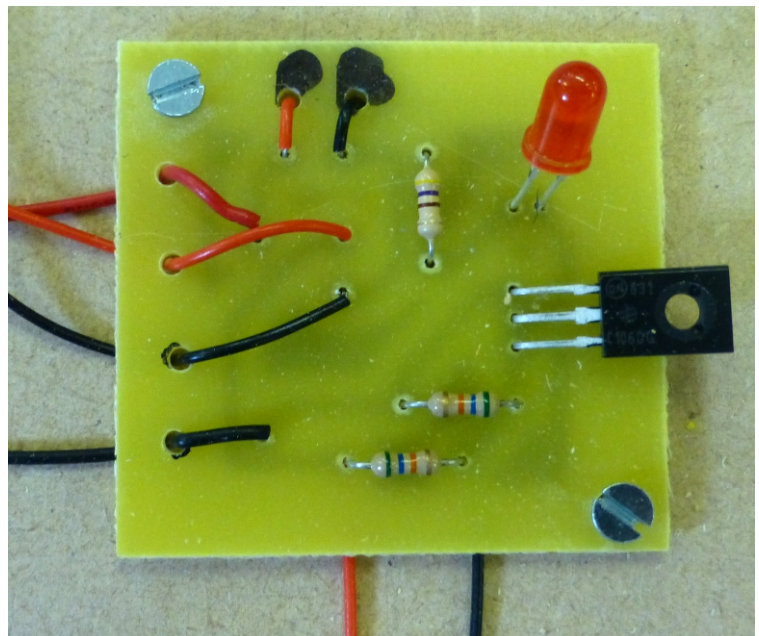
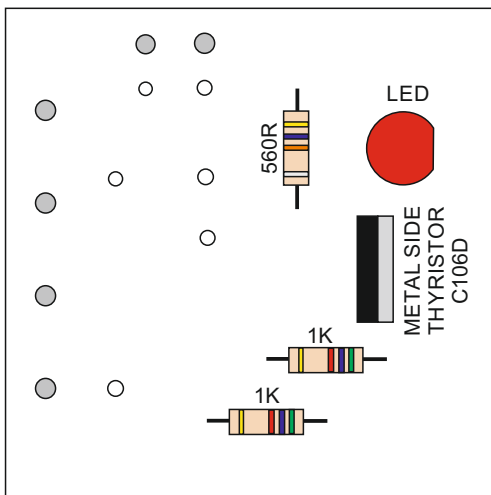








POSITIONING THE COMPONENTS



The LED and thyristor must be positioned the correct way round (see the diagram above).

The resistors can be positioned any way round.

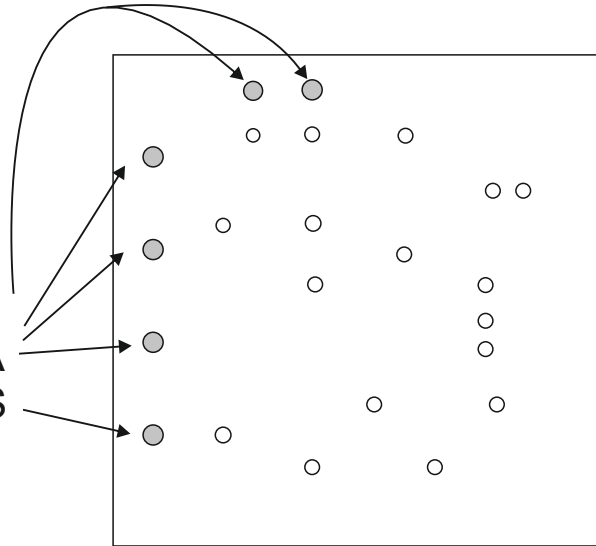
The grey holes are extra holes that you need to drill with a 1.5mm dia drill bit.

ADDING COMPONENTS TO THE PCB

1.
**DRILL EXTRA HOLES
WITH 2mm DIA DRILL**

GREY HOLES

**EXTRA
HOLES**



2. **ADD COMPONENTS**

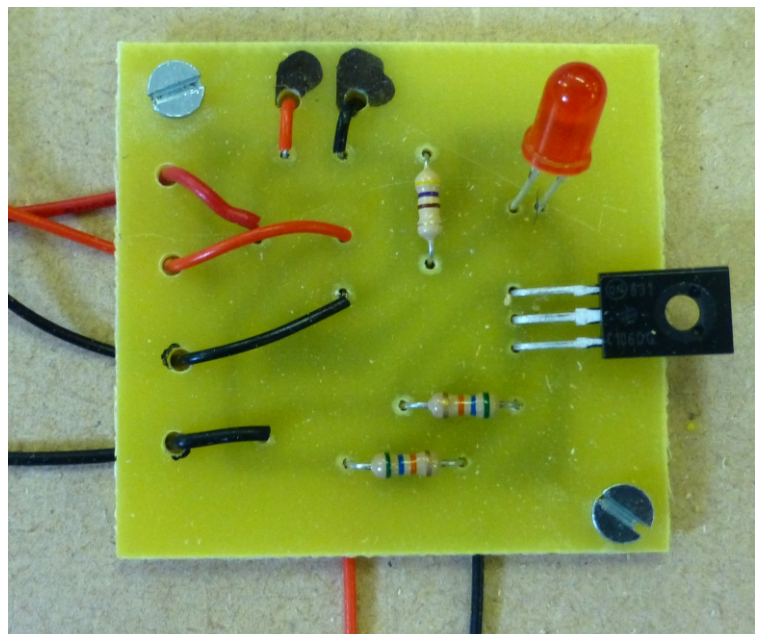
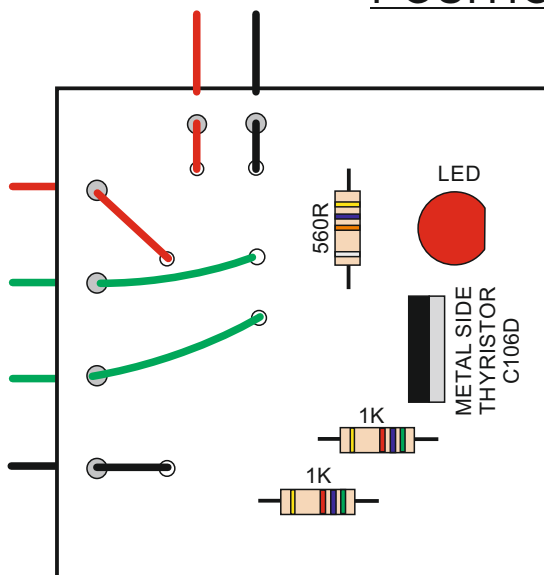
2 - 1K RESISTORS, 1 - 560R RESISTOR, 1 - C106D THYRISTOR

1 - STANDARD LED, 1 - PUSH TO BREAK SWITCH, 1 - BATTERY SNAP

RED AND BLACK AND GREEN WIRES AS SHOWN ON THE CIRCUIT
LAYOUT.

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3. **POSITIONING THE COMPONENTS**

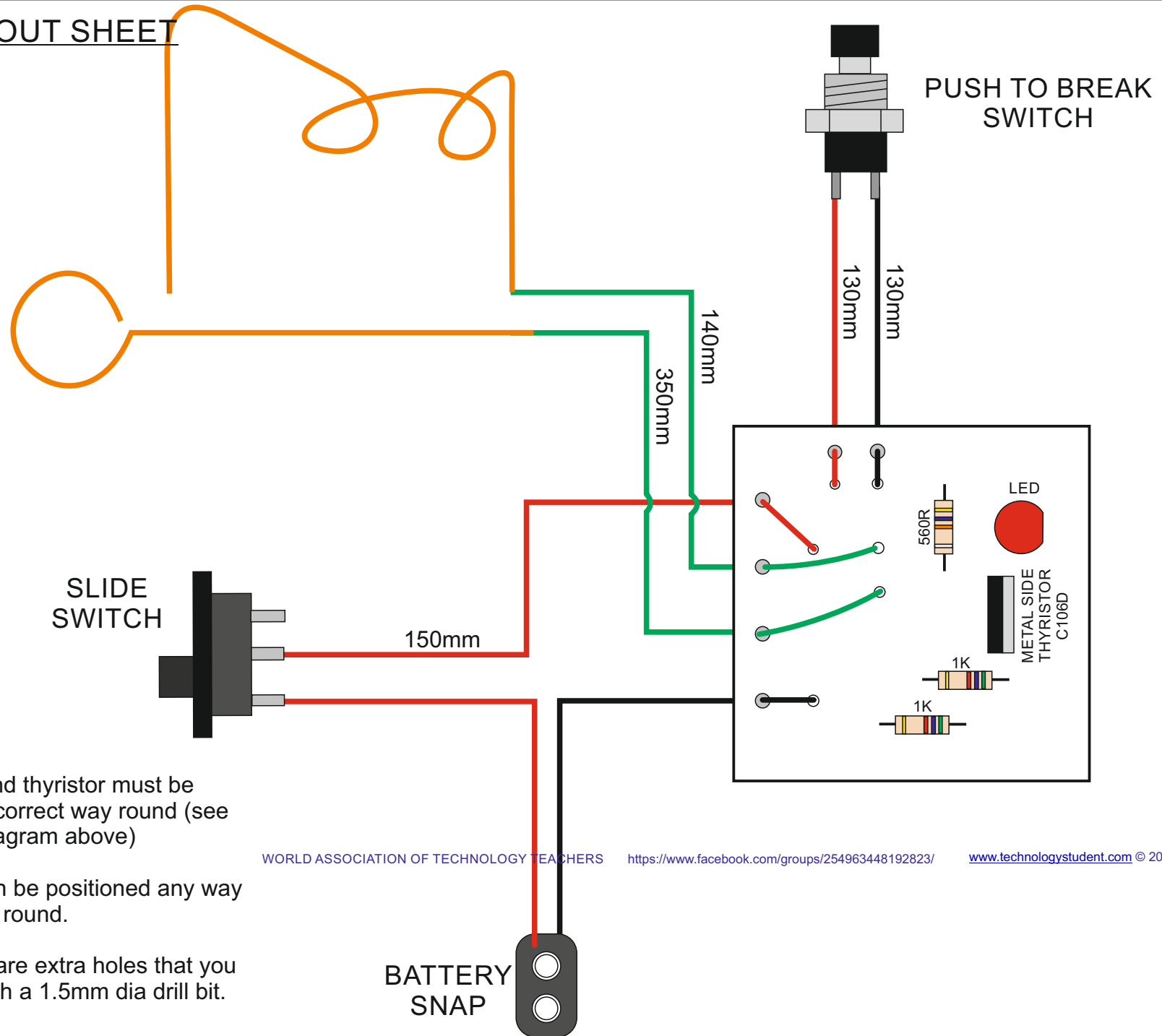


The LED and thyristor must be positioned the correct way round (see the diagram above).

The resistors can be positioned any way round.

The grey holes are extra holes that you need to drill with a 1.5mm dia drill bit.

CIRCUIT LAYOUT SHEET



The LED and thyristor must be positioned the correct way round (see the diagram above)

The resistors can be positioned any way round.

The grey holes are extra holes that you need to drill with a 1.5mm dia drill bit.

CIRCUIT LAYOUT SHEET

LEVEL 4	LEVEL 5	LEVEL 6	LEVEL 7
<p>FAIRLY CLEAR CIRCUIT LAYOUT</p> <p>WORDS SET OUT ON DESIGN SHEET BUT NOT ALWAYS ACCURATELY</p> <p>RULER NOT ALWAYS USED - PRESENTATION SUFFERS AS RESULT</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>GOOD CLEAR LAYOUT TO CIRCUIT SHEET</p> <p>WORDS PRESENTED QUITE ACCURATELY AND SET OUT REASONABLY WELL ON SHEET.</p> <p>RULER USED TO PRODUCE GUIDELINES AND DRAW STRAIGHT LINES.</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>GOOD CLEAR LAYOUT TO CIRCUIT SHEET</p> <p>WORDS PRESENTED WITH ACCURATELY AND SET OUT WELL ON SHEET.</p> <p>RULER USED TO PRODUCE GUIDELINES AND DRAW STRAIGHT LINES.</p> <p>COLOUR AND SHADE ADDED EFFECTIVELY.</p>	<p>EXCELLENT LAYOUT TO CIRCUIT SHEET, WITH SOME INDIVIDUALISM DISPLAYED</p> <p>WORDS PRESENTED VERY ACCURATELY AND SET OUT WELL ON SHEET.</p> <p>RULER USED TO PRODUCE GUIDELINES AND DRAW STRAIGHT LINES.</p> <p>CONSISTENT GOOD USE OF FAINT GUIDELINES</p> <p>COLOUR AND SHADE ADDED, ENHANCING OVERALL QUALITY OF PRESENTATION</p>

Homework: Complete circuit layout sheet.

Extension work:
Produce a 3D version of the circuit sheet.

PCB MANUFACTURE AND SOLDERING LEVELS

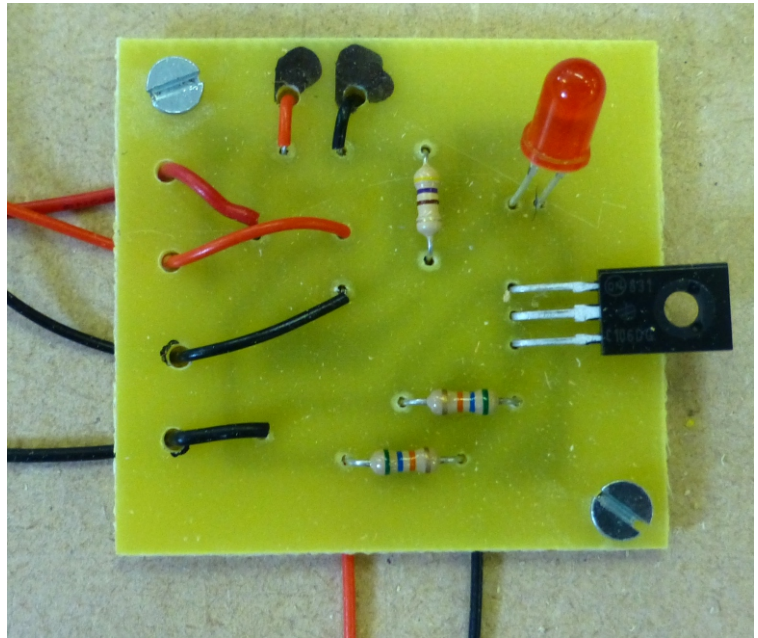
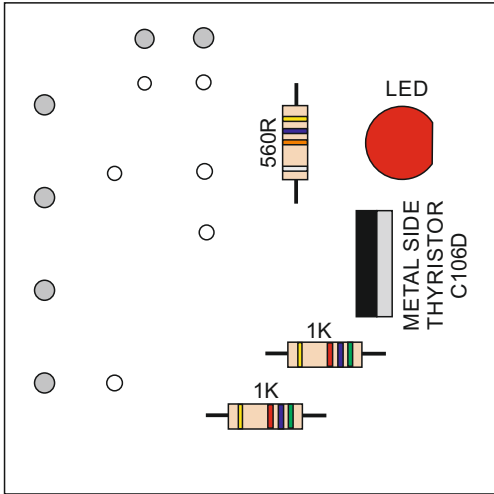
LEVEL 4	LEVEL 5	LEVEL 6	LEVEL 7
<p>CIRCUIT MAY WORK</p> <p>COMPONENTS IN THE RIGHT POSITIONS, BUT HAVE BEEN RESOLDERED OR ARRANGED THE WRONG WAY ROUND.</p> <p>PCB COMPLETE BUT MAY NOT BE WORKING FULLY</p> <p>SOME SIGNS OF INACCURATE SOLDERING</p> <p>REQUIRES FAULT FINDING AND DESOLDERING.</p> <p>WIRES NOT SECURED FULLY</p>	<p>CIRCUIT GENERAL WORKS</p> <p>COMPONENTS IN THE RIGHT POSITIONS AND RIGHT WAY ROUND.</p> <p>PCB COMPLETE AND WORKS.</p> <p>QUITE ACCURATE SOLDERING</p> <p>WIRES SECURED FULLY TO PREVENT THEM BEING PULLED FROM THE PCB.</p>	<p>CIRCUIT WORKS</p> <p>COMPONENTS IN THE RIGHT POSITIONS AND RIGHT WAY ROUND.</p> <p>PCB COMPLETE AND WORKS EVERY TIME.</p> <p>ACCURATE SOLDERING</p> <p>WIRES SECURED FULLY TO PREVENT THEM BEING PULLED FROM THE PCB.</p> <p>GOOD LEVEL OF ACCURACY IN ALL ASPECTS OF PCB PRACTICAL</p>	<p>CIRCUIT WORKS</p> <p>COMPONENTS IN THE RIGHT POSITIONS AND RIGHT WAY ROUND.</p> <p>PCB COMPLETE AND WORKS EVERY TIME.</p> <p>VERY ACCURATE SOLDERING</p> <p>WIRES SECURED FULLY TO PREVENT THEM BEING PULLED FROM THE PCB.</p> <p>VERY GOOD LEVEL OF ACCURACY IN ALL ASPECTS OF PCB PRACTICAL</p>

Homework: Discuss the problem and brief with parents/relatives and make changes if necessary..

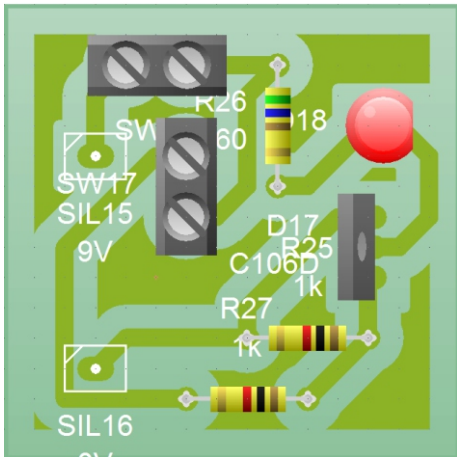
Extension work:

How could the completed circuit be used, for another purpose?

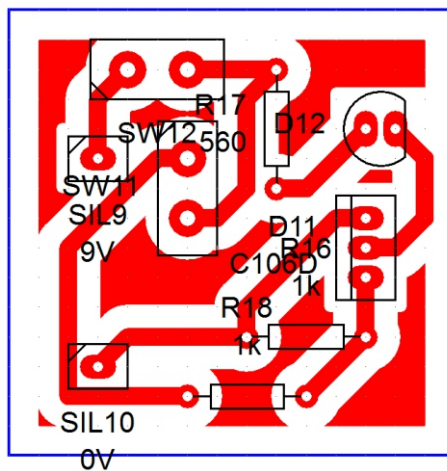
Notes and diagrams.



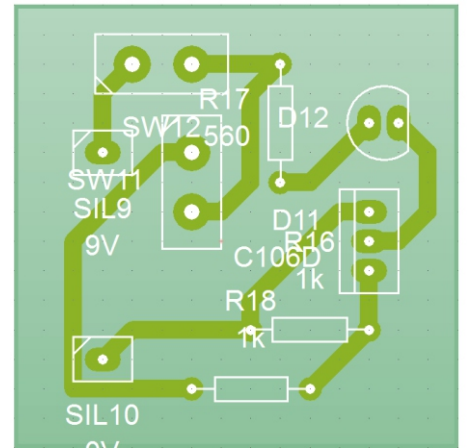
REAL WORLD



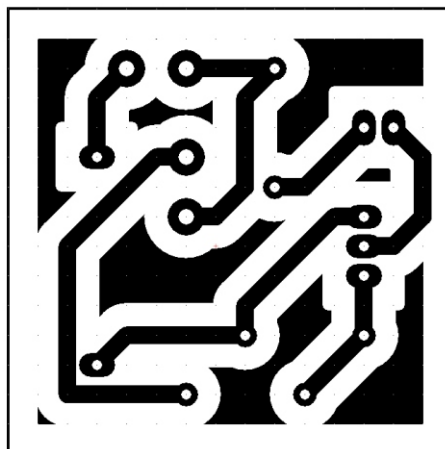
NORMAL



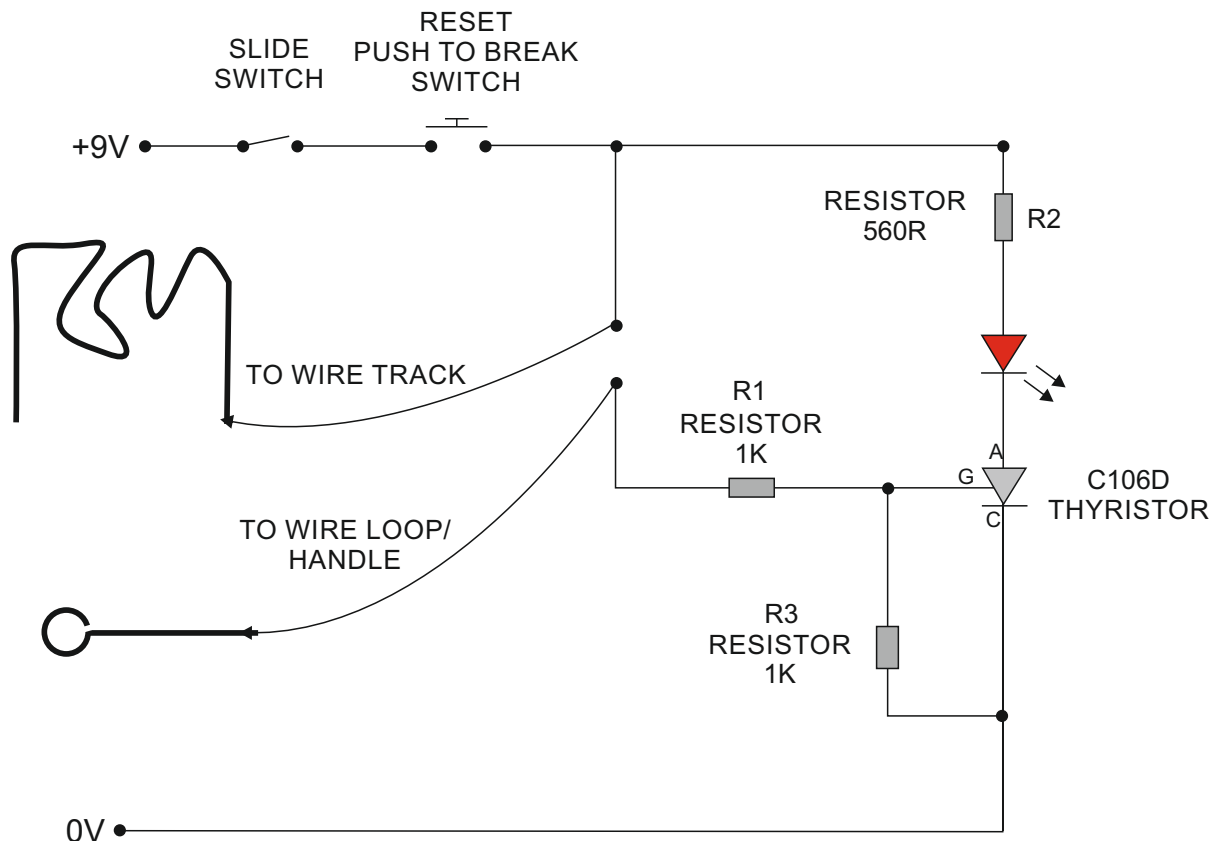
CURRENT FLOW



ART WORK



CIRCUIT DIAGRAM



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The circuit above represents a steady hand game. It consists of a wire loop that has to be moved around a wire course without touching it. If the wire course is touched by the loop the LED lights, until all power is switched off or a reset button is pressed.

The LED will continue to light after the loop has touched the wire course. This is due to the thyristor which once activated cannot be deactivated, until all power is turned off. This type of circuit is also known as a 'latching circuit'

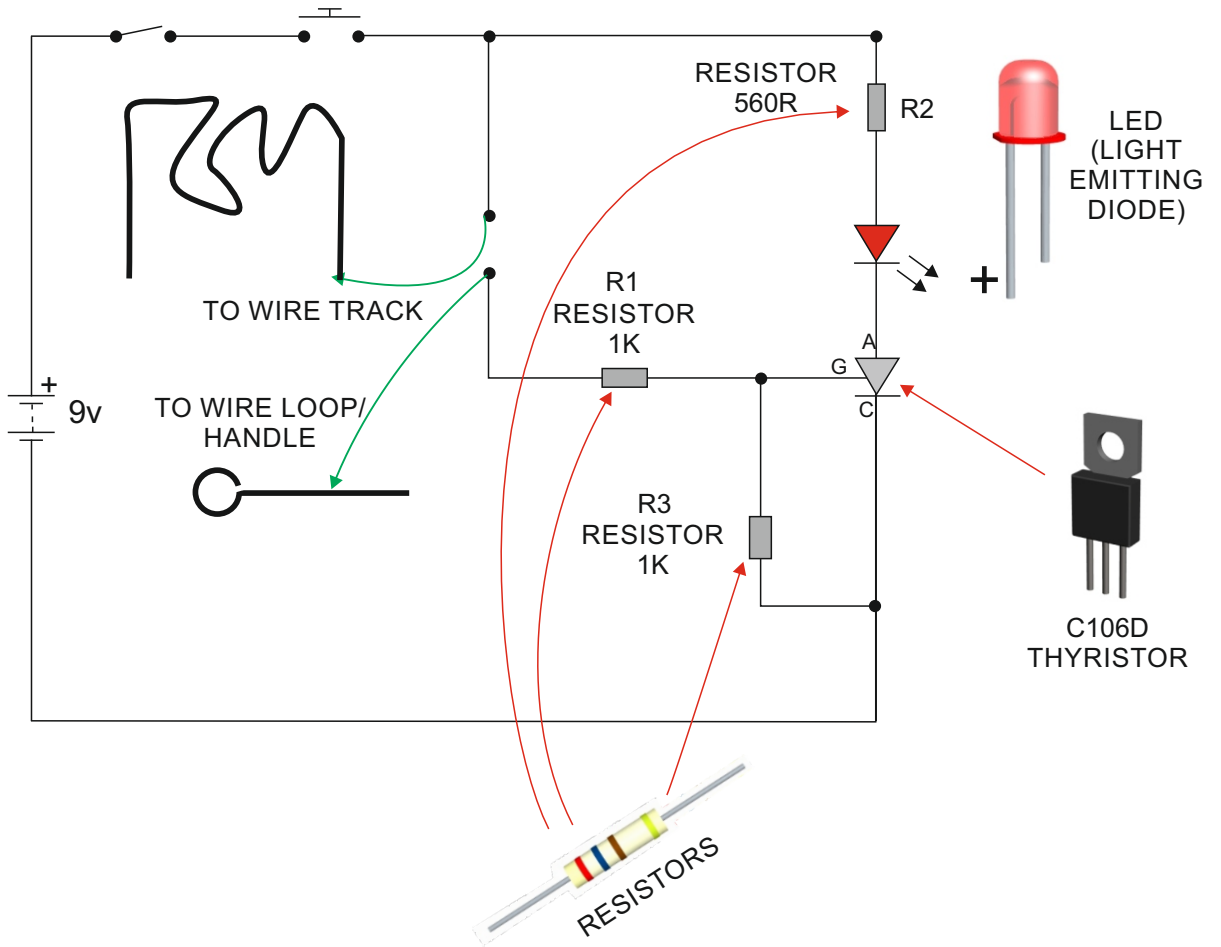
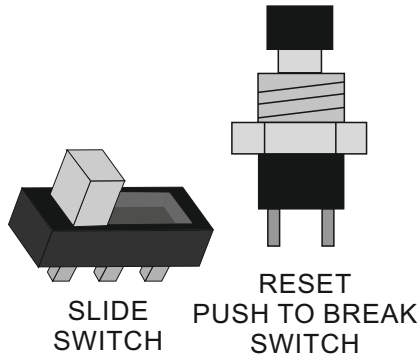
HOW THE THYRISTOR CIRCUIT WORKS

When the main switch is closed (turned to ON), current cannot flow around the circuit because the thyristor has not been switched on. Consequently the LED is not illuminated.

When the wire loop / handle touches the wire track, current flows through resistor R1 into the GATE (G) of the thyristor, switching it on. This allows current to flow through resistor R2, the LED and through the thyristor, from anode (A) to cathode (C), to 0 volts. The LED illuminates.

Once the thyristor is switched on, current is allowed to flow through the anode (A) and cathode (C), illuminating the LED. Even if the wire loop / handle is taken away from contact with the wire track and current no longer flows into the gate, current can still flow through the anode and cathode. The thyristor only needs to be switched on once, to allow current to flow.

The thyristor is reset by either switching power off and back on, to the entire circuit, or by pressing the reset switch.




STEADY HAND GAME - THYRISTOR CIRCUIT

1. You are going to use the components shown below to build a thyristor circuit. Complete the table by:

A. Writing the correct name of each component.

B. Indicating if the function of the component is TRUE or FALSE. If FALSE, write the correct function of the component below.

COMPONENT	NAME	FUNCTION
	BATTERY SNAP	Used to connect to mains electricity. TRUE / FALSE _____ _____ _____
	LIGHT EMITTING DIODE	Shines brightly and uses little electrical power. TRUE / FALSE _____ _____ _____
	THYRISTOR	Is a type of sensor used to detect light / dark. TRUE / FALSE _____ _____ _____
	MINIATURE SLIDE SWITCH	Stores and discharges electricity. TRUE / FALSE _____ _____ _____
	FIXED RESISTOR	Used to protect other components such as LEDs TRUE / FALSE _____ _____ _____



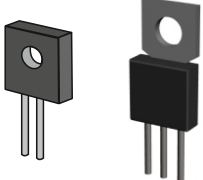
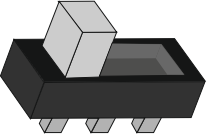
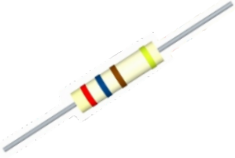
BATTERY SNAP FIXED RESISTOR CAPACITOR TRANSISTOR
 MINIATURE SLIDE SWITCH LIGHT EMITTING DIODE BULB
 THYRISTOR TOGGLE SWITCH DIODE

STEADY HAND GAME - THYRISTOR CIRCUIT

1. You are going to use the components shown below to build a thyristor circuit. Complete the table by:

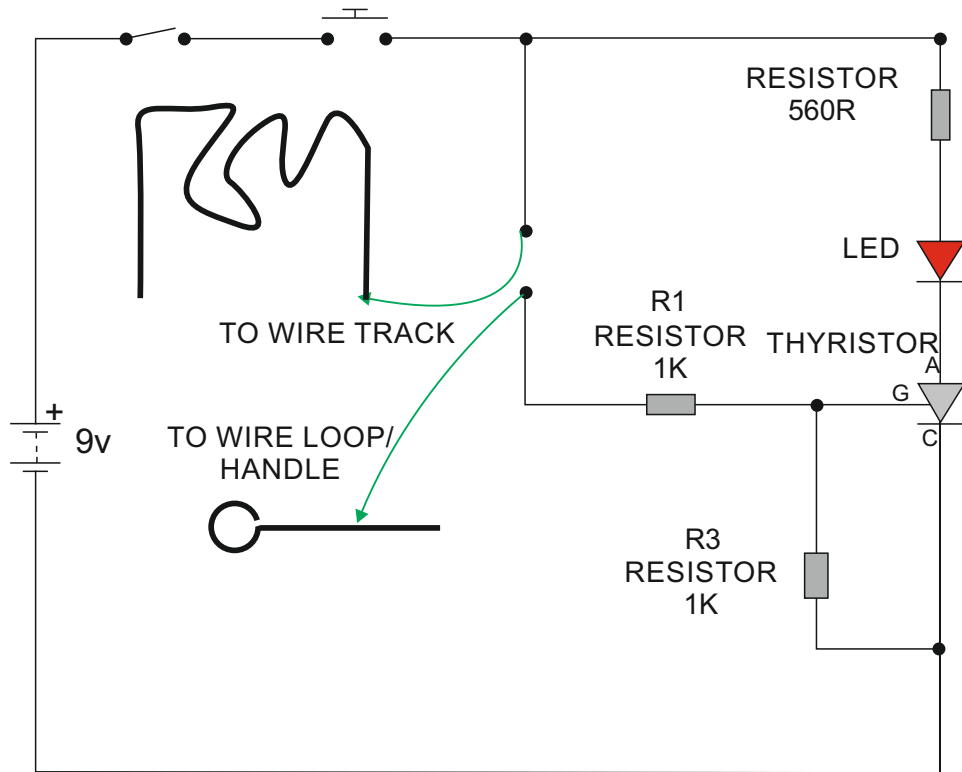
A. Writing the correct name of each component.

B. Indicating if the function of the component is TRUE or FALSE. If FALSE, write the correct function of the component below.

COMPONENT	NAME	FUNCTION
	BATTERY SNAP	Used to connect to mains electricity. TRUE / <u>FALSE</u> The battery snap connects the 9 volt battery to the circuit.
	LIGHT EMITTING DIODE	Shines brightly and uses little electrical power. <u>TRUE</u> / FALSE The LED needs 3 volts or less to emit light. It emits a bright light and will last thousands of hours.
	THYRISTOR	Is a type of sensor used to detect light / dark. TRUE / <u>FALSE</u> A thyristor is a type of switch. When electricity reaches the 'gate', it allows electricity to flow through the anode and cathode.
	MINIATURE SLIDE SWITCH	Used to increase and decrease voltage. TRUE / <u>FALSE</u> A slide switch is a cheap type of switch and it simply turns a circuit on or off.
	FIXED RESISTOR	Used to protect other components such as LEDs <u>TRUE</u> / FALSE Resistors restrict the flow of electricity around a circuit. They are used to protect sensitive components from receiving too much current.

BATTERY SNAP FIXED RESISTOR CAPACITOR TRANSISTOR
 MINIATURE SLIDE SWITCH LIGHT EMITTING DIODE BULB
 THYRISTOR TOGGLE SWITCH DIODE

CIRCUIT DIAGRAM



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HOW THE CIRCUIT WORKS



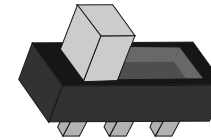
NAME: _____

FUNCTION: _____



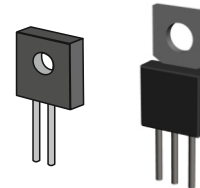
NAME: _____

FUNCTION: _____



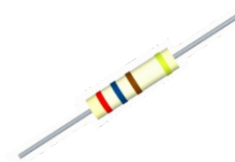
NAME: _____

FUNCTION: _____



NAME: _____

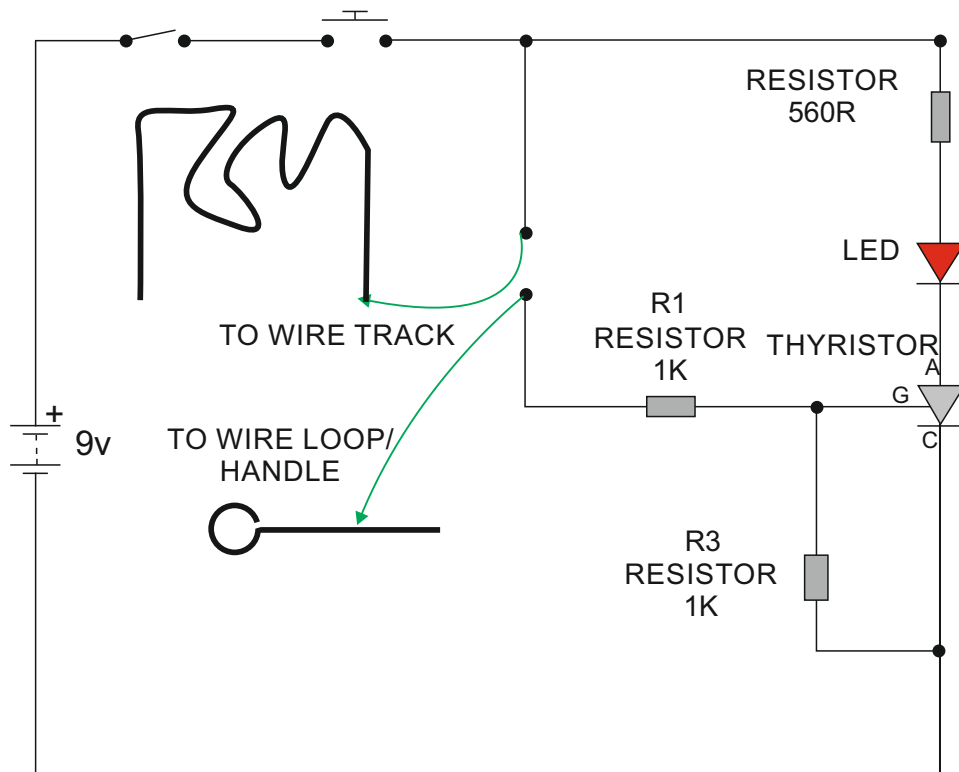
FUNCTION: _____



NAME: _____

FUNCTION: _____

CIRCUIT DIAGRAM



NAME: *BATTERY SNAP*

FUNCTION:

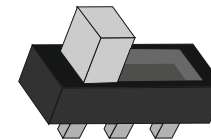
The battery snap connects the 9 volt battery to the circuit.



NAME: *LIGHT EMITTING DIODE*

FUNCTION:

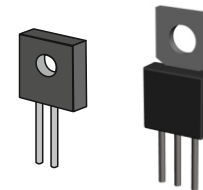
The LED needs 3 volts or less to emit light. It emits a bright light and will last thousands of hours.



NAME: *MINIATURE SLIDE SWITCH*

FUNCTION:

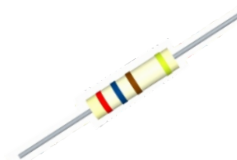
A slide switch is a cheap type of switch and it simply turns a circuit on or off.



NAME: *THYRISTOR*

FUNCTION:

A thyristor is a type of switch. When electricity reaches the 'gate', it allows electricity to flow through the anode and cathode.



NAME: *FIXED RESISTOR*

FUNCTION:

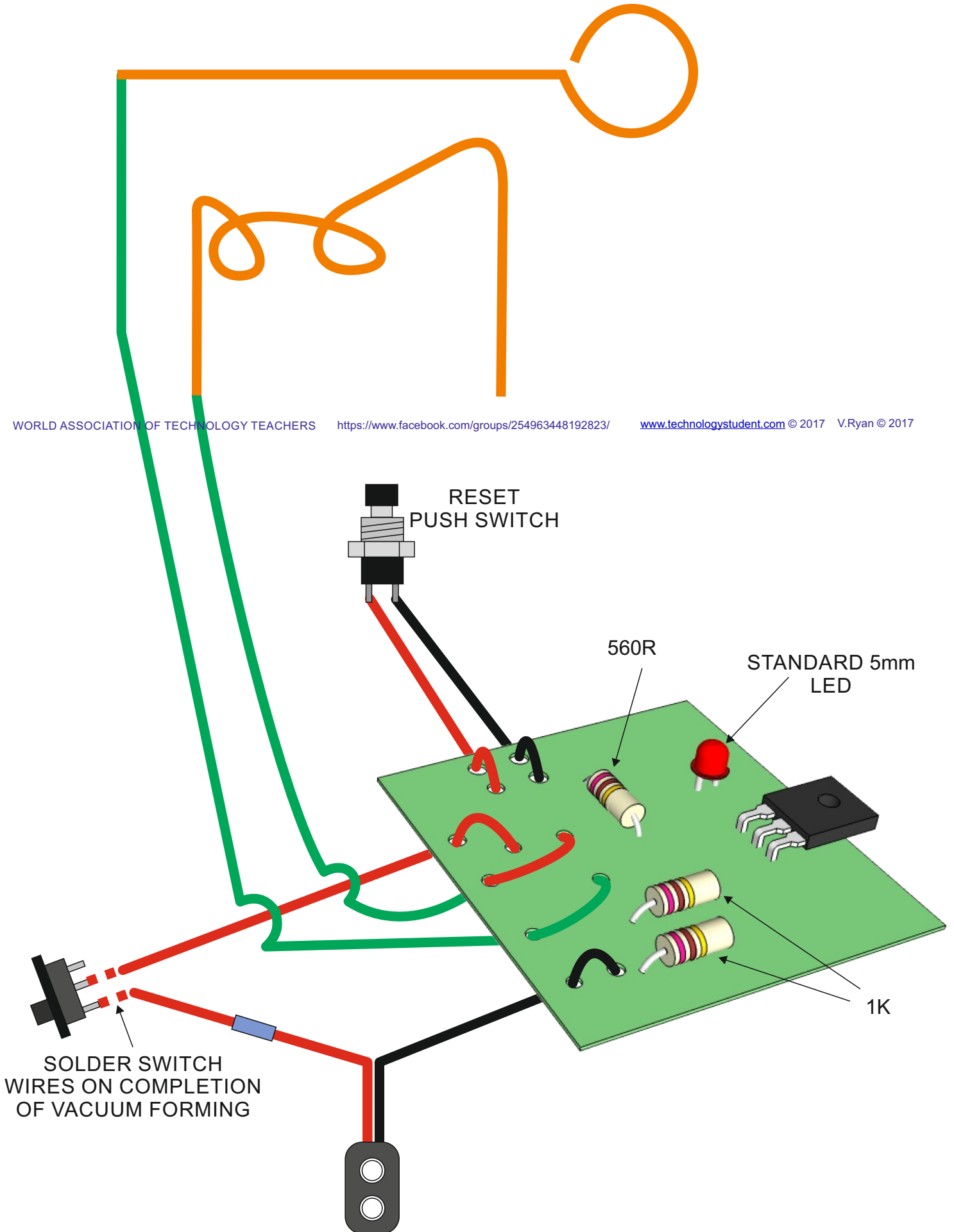
Resistors restrict the flow of electricity around a circuit. They are used to protect sensitive components from receiving too much current.

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HOW THE CIRCUIT WORKS

WHEN THE HANDLE TOUCHES THE WIRE TRACK, ELECTRICITY CAN FLOW INTO THE THYRISTOR SWITCHING IT ON AND THE LED LIGHTS.

THE THYRISTOR IS A SPECIAL TYPE OF SWITCH, ONCE ACTIVATED IT CANNOT BE TURNED OFF. THE POWER SWITCH MUST BE TURNED OFF TO STOP THE BUZZER SOUNDING.



STEADY HAND GAME

You are to design a logo / symbol for the centre-front of the base

You are to design a logo / symbol for the top of the mould, manufactured using MDF/card.

You are to design a method of holding the handle. The handle is used to follow the steel track, without touching the track.

PCB

You will manufacture the PCB, using the UV light box and PCB etching/developing tanks

You will drill the component holes in the PCB and solder the components in position.

You will make a slide switch holder and glue it to the vacuumed formed body.

You will test your completed circuit and fault find, if necessary.

EVALUATION

You will evaluate your steady hand game and the games of other pupils.

KEYWORDS - EXERCISE

Carefully study both the keywords and the link words. Cross out each link word and write it alongside the relevant keyword. Two examples have been completed for you.

KEYWORDS

AGE GROUP

COST

ELECTRONICS LEDS

MARKET CUSTOMER

MATERIALS

EQUIPMENT

AESTHETICS

MASS PRODUCTION

SAFETY

MACHINES

LINK WORDS

~~CUSTOMER~~

CIRCUIT

CHILD

MACHINE DRILL

SLIDE SWITCH

IMAGES

~~LEDS~~

FILES

TEENAGER

ADULT

THE LAW

SAWS

WORKER

TO SELL

WOODS

THYRISTOR

SANDING MACHINE

ONE OFF

PLASTICS

RESISTORS

BATTERY

METALS

CONTINUOUS

CHISELS

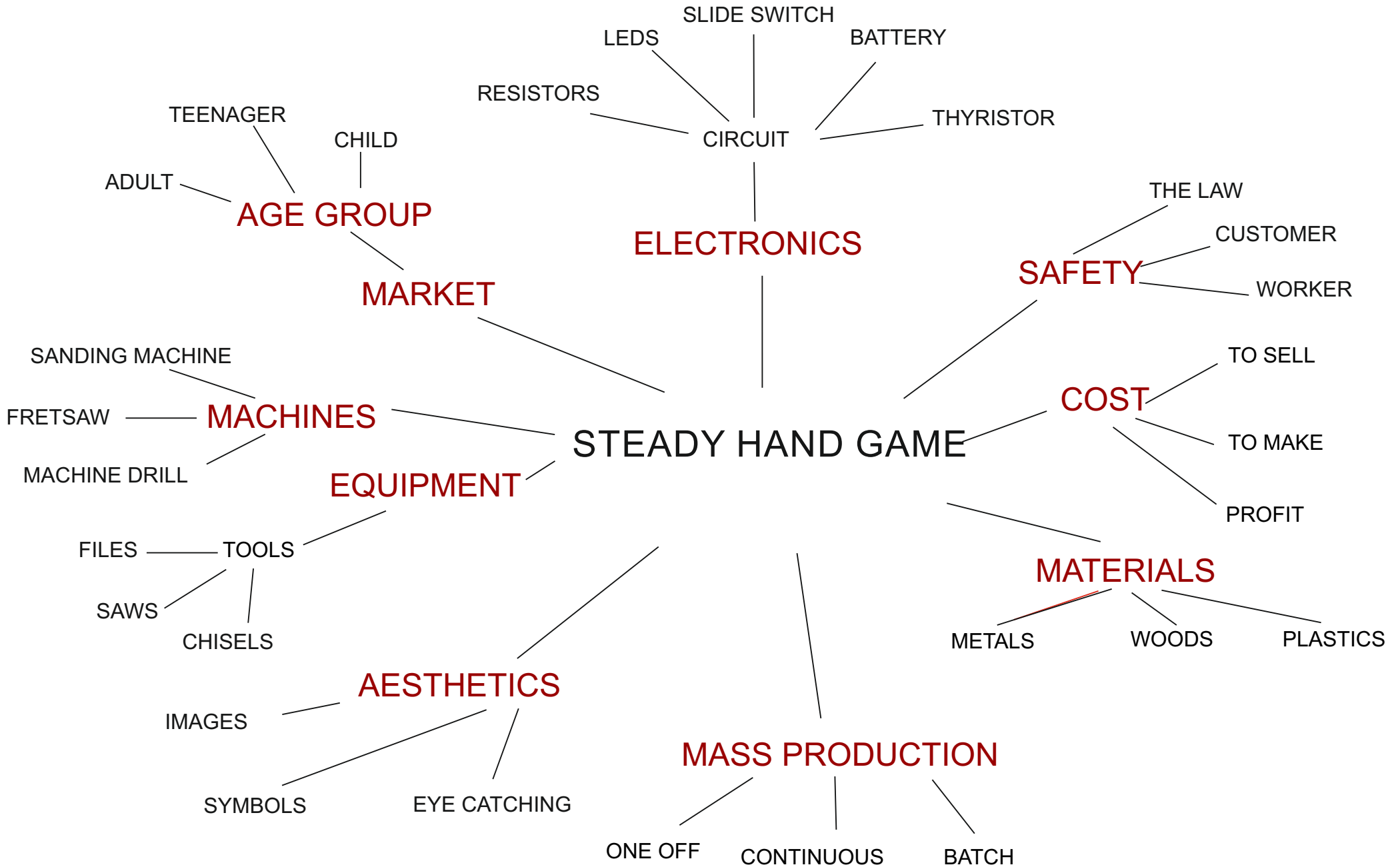
BATCH

FRETSAW

EYE CATCHING

SYMBOLS

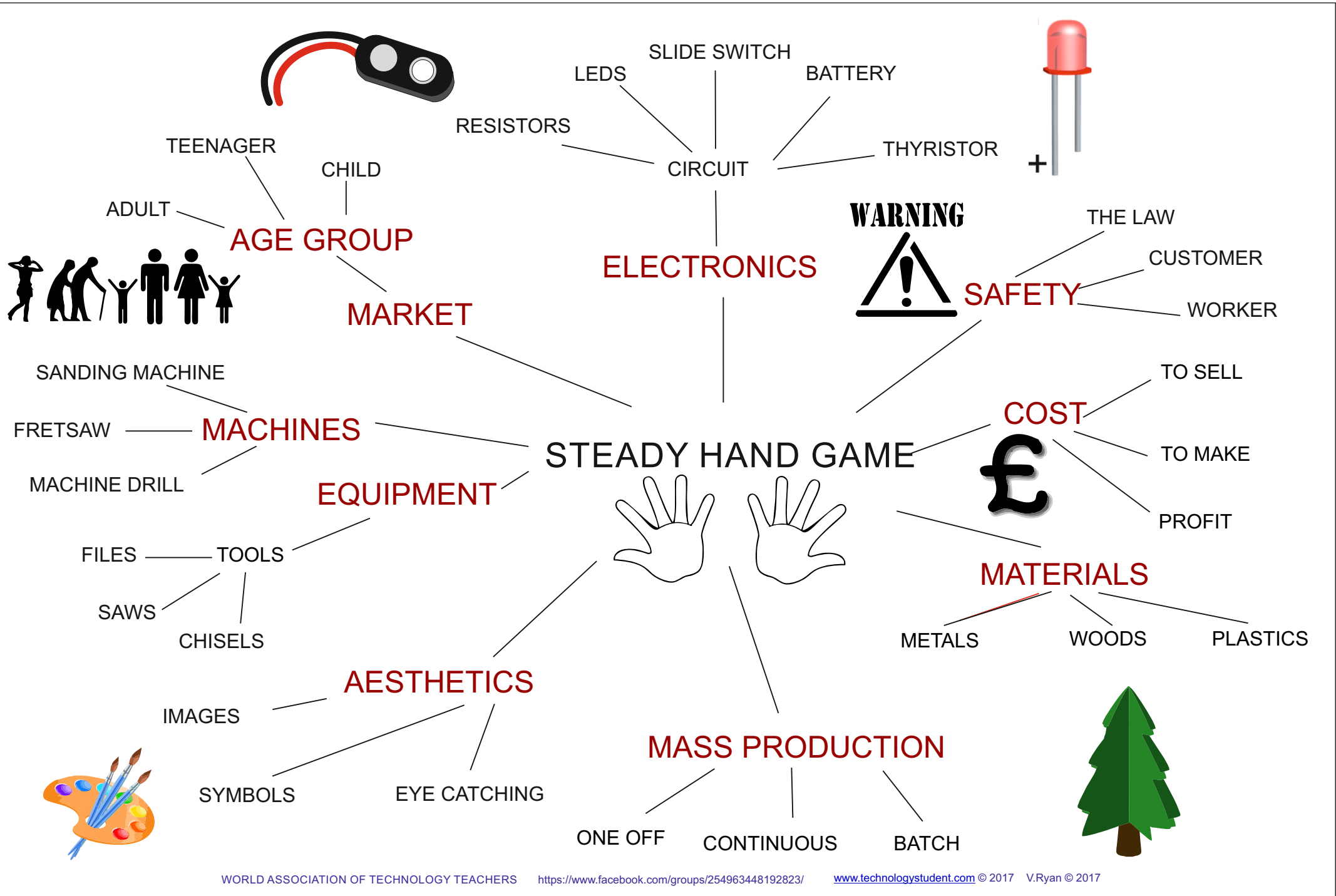
TOOLS



NAME:

RICH PICTURE

DATE:



NAME:

RICH PICTURE

DATE:

LEVEL 4	LEVEL 5	LEVEL 6	LEVEL 7
<p>LIMITED RANGE OF WORDS</p> <p>WORDS GENERALLY RELATE TO THE THEME. BASIC NUMBER INCLUDED.</p> <p>WORDS SET OUT ON DESIGN SHEET BUT NOT ALWAYS ACCURATELY</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>GOOD RANGE OF WORDS</p> <p>WORDS GENERALLY RELATE TO THE THEME. BASIC NUMBER INCLUDED.</p> <p>REASONABLE LAYOUT TO THE PAGE. CLEAR ARRANGEMENT OF WORDS</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>VERY GOOD RANGE OF WORDS</p> <p>ALL WORDS RELATE TO THE THEME</p> <p>WORDS ARRANGED WITH SOME ACCURACY ON THE DESIGN SHEET</p> <p>COLOUR AND IMAGES INCLUDED. INTERESTING LAYOUT.</p>	<p>EXCELLENT RANGE OF WORDS</p> <p>EXTRA WORDS / PHRASES ADDED</p> <p>ALL WORDS RELATE TO THE THEME</p> <p>VERY ACCURATE LAYOUT, WITH WORDS DISTRIBUTED WELL ON THE PAGE</p> <p>COLOUR AND IMAGES INCLUDED. VISUALLY PLEASING DESIGN SHEET</p>

Homework: Complete rich picture.

Extension work:

Collect images of popular electronic games. Select one and list its functions/features. How does it improve our lives / your life?

EDUCATIONAL TOYS STARTER

Arrange the toys shown on the cards - in order of the most educational to the least educational. You will be asked to explain your order of toys, especially your first and last choices.

1



2



3



4



5



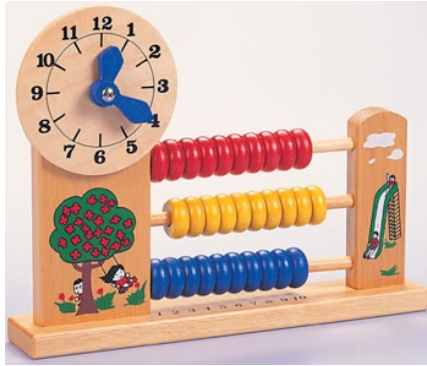
6



1



2



3



4



5



6



CUSTOMERS - STEADY HAND GAME

What is meant by the term potential customer?

Why is it important to identify your potential customers?

Consider the 'headings' below. Who is the most likely potential customer for the steady hand game? Please a tick next one or more. Justify / explain your choice.

CHILD 2-3 YEARS

CHILD 3 - 6 YEARS

CHILD 6 - 12

TEENAGER

PARENTS

COMPUTER GAME ENTHUSIAST

GAMES COLLECTOR

BUSINESS PERSON

Would the steady hand game be a good choice for someone who needs a travel game? Underline Yes or No.

YES/NO

EXPLANATION:

What type of game do you like to play? Write a description of the game and explain why you like it.

DESCRIPTION:

WHY YOU LIKE IT:

CUSTOMERS - STEADY HANE GAME

What is meant by the term potential customer?

A potential customer(s) is a person, who is likely to find a product useful or interesting. He / she is expected to either buy or consider buying the product. Potential customers are often groups of people with similar interests or life styles, such as teenagers, parents, pensioners, guitarists etc...

Why is it important to identify your potential customers?

It is important for a company to identify potential customers, so that money and time is not wasted on developing a product that will not sell.

If potential customers for a new product cannot be identified, the product is likely to be 'dropped'. A company will not spend money and time developing a design or setting up an expensive production line, unless the product is likely to be successful and make a profit.

Consider the 'headings' below. Who is the most likely potential customer for the steady hand game? Please a tick next one or more. Justify / explain your choice.

CHILD 2-3 YEARS

CHILD 3 - 6 YEARS

CHILD 6 - 12

TEENAGER

PARENTS

COMPUTER GAME ENTHUSIAST

GAMES COLLECTOR

BUSINESS PERSON

Would the steady hand game be a good choice for someone who needs a travel game? Underline Yes or No.

YES/NO

EXPLANATION:

What type of game do you like to play? Write a description of the game and explain why you like it.

DESCRIPTION:

WHY YOU LIKE IT:

THE DESIGN PROBLEM AND DESIGN BRIEF

Designers begin by identifying a problem that needs solving.
The designer then writes down, how the problem will be solved.

The Problem and Design Brief are sometimes viewed as two different sections of the design process. However, they are very closely related.

WHAT IS A DESIGN PROBLEM



The problem is a paragraph or more in length.

It describes the problem you are aiming to solve.

Do not say how you intend to solve the problem, only what the problem is.

WHAT IS A DESIGN BRIEF



In the design brief you will say clearly what you intend to design and make.

It is usually a paragraph or more in length.

It normally starts with the statement; 'I am going to design and make.....'

DESIGN PROBLEM EXERCISE

A local company manufacturing games for young children has found that sales of its products are falling.

A recent survey has shown that the games they produce are too traditional and old fashioned.

Many are based on board games and card games. People do not find these types of games stimulating or interesting.

However, the survey has found that electronic games that involve a degree of skill are likely to be popular especially with the parents of young children.

DESIGN BRIEF EXERCISE

I am going to design and make a small electronic game.

It will include a measure of skill (hand/eye coordination) and be fun to use.

It will contain an electronic circuit that will be battery powered.

The game will be safe and interesting to look at and help develop hand and eye coordination.

DESIGN PROBLEM

DESIGN BRIEF

NAME:

PROBLEM AND BRIEF

DATE:

NAME: _____

WHAT MAKES A GOOD PROBLEM AND BRIEF PRESENTATION SHEET?
EXERCISE

Using both columns, write down what is a good presentation achieving a high level AND what is a presentation that needs improving and scores a low level. The key words below, may help you write your answers. Cross out each word as you use it. Include your own words as well, for a high level to be awarded for this pupil assessed exercise.

PLEASE NOTE: YOUR ANSWERS WILL BE MARKED BY ANOTHER PUPIL.

GOOD

E.G. *The entire design problem and brief are **accurately** presented and easy to understand.*

NEEDS IMPROVING

E.G. *The design problem and brief lack overall **accuracy** and looks really untidy, showing a lack of drawing skill.*

~~ACCURACY~~

NEATNESS

IMAGES

COLOUR

PRINTING

GUIDELINES

CLIPART

DRAWINGS/SKETCHES

EYE CATCHING

IMPACT

MARKER NAME: _____

PUPIL LEVEL AWARDED.: _____

DESIGN PROBLEM

A LOCAL COMPANY MANUFACTURING GAMES FOR YOUNG CHILDREN, HAS FOUND THAT SALES OF ITS PRODUCTS ARE FALLING.

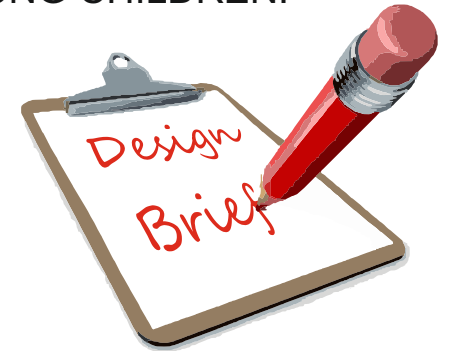
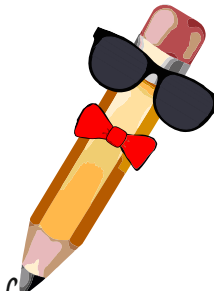
A RECENT SURVEY HAS SHOWN THAT THE GAMES THEY PRODUCE ARE TOO TRADITIONAL.

MANY ARE BASED ON BOARD GAMES AND CARD GAMES. PEOPLE DO NOT FIND THESE TYPES OF GAMES STIMULATING OR INTERESTING.

HOWEVER, THE SURVEY HAS FOUND THAT ELECTRONIC GAMES, THAT INVOLVE A DEGREE OF SKILL ARE LIKELY TO BE POPULAR, ESPECIALLY WITH THE PARENTS OF YOUNG CHILDREN.



Problem and brief



DESIGN BRIEF

I AM GOING TO DESIGN AND MAKE A SMALL ELECTRONIC GAME.

IT WILL INCLUDE A MEASURE OF SKILL (HAND/EYE COORDINATION) AND BE FUN TO USE.

IT WILL CONTAIN AN ELECTRONIC CIRCUIT THAT WILL BE BATTERY POWERED.

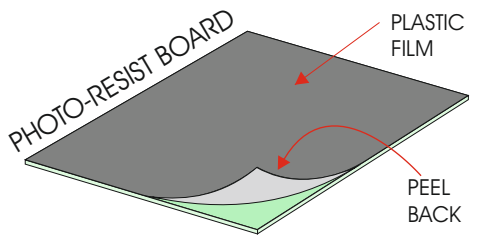
THE GAME WILL BE SAFE AND INTERESTING TO LOOK AT AND HELP DEVELOP HAND AND EYE COORDINATION.

NAME:

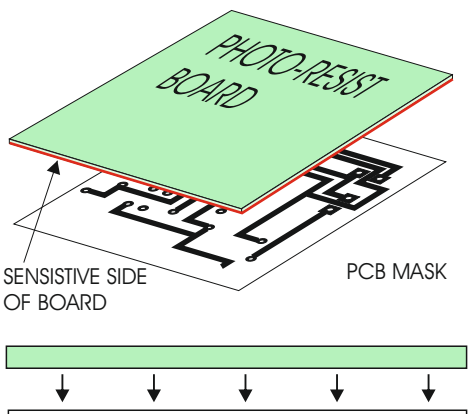
PROBLEM AND BRIEF

DATE:

SEQUENCE DRAWING - MANUFACTURING A PCB



PEEL BACK PROTECTIVE LAYER ON PHOTO-RESIST BOARD



PLACE PHOTO-RESIST BOARD ON TOP OF TRANSPARENCY

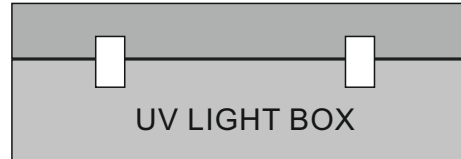
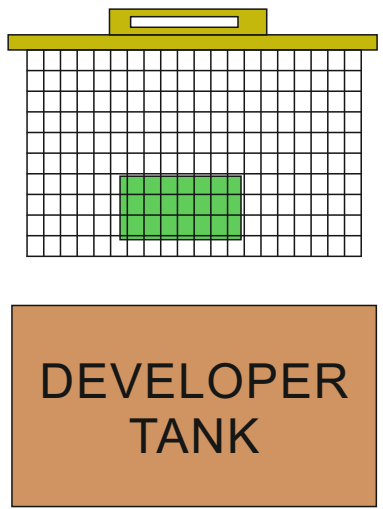
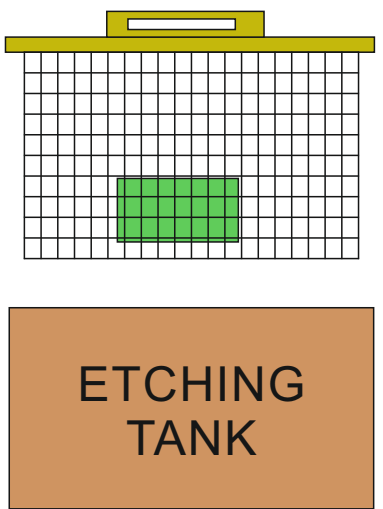


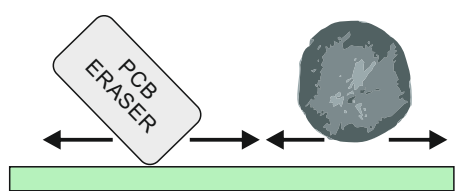
PHOTO-RESIST BOARD AND TRANSPARENCY IN LIGHT BOX



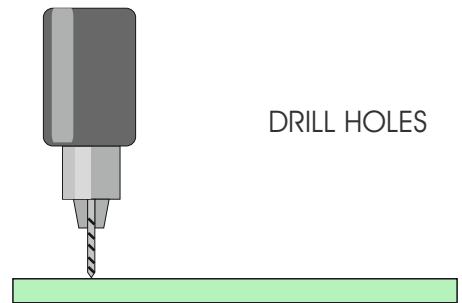
PLACE PHOTO-RESIST BOARD IN DEVELOPING TANK



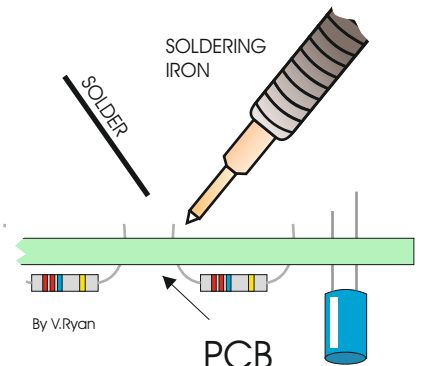
PLACE PHOTO-RESIST BOARD IN ETCHING TANK



WASH WITH WATER AND CLEAN COPPER TRACKS WITH PCB ERASER OR WIRE WOOL



DRILL COMPONENT HOLES IN PCB



PLACE COMPONENTS AND SOLDER

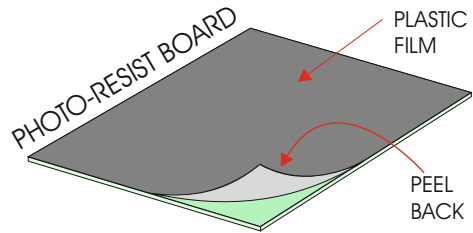
LEVEL 4	LEVEL 5	LEVEL 6	LEVEL 7
<p>LIMITED OR SIMPLE DESIGN PROBLEM AND BRIEF</p> <p>RATHER UNTIDY PRESENTATION</p> <p>LACK OF ACCURACY WHEN DRAWING</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>BOTH THE PROBLEM AND BRIEF HAVE BEEN PRESENTED CLEARLY.</p> <p>BOTH THE PROBLEM AND BRIEF SHOW UNDERSTANDING OF THE PROJECT.</p> <p>REASONABLE LAYOUT TO THE PAGE. CLEAR ARRANGEMENT OF WRITTEN CONTENT</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>GOOD LEVEL OF DETAIL IN BOTH THE PROBLEM AND BRIEF.</p> <p>A MORE INDIVIDUAL APPROACH IS TAKEN AND NOT JUST STATEMENTS TAKEN FROM THE SAMPLES.</p> <p>WORDS ARRANGED WITH SOME ACCURACY ON THE DESIGN SHEET</p> <p>COLOUR AND IMAGES INCLUDED. INTERESTING LAYOUT.</p>	<p>EXCELLENT AND INDIVIDUAL PROBLEM AND BRIEF.</p> <p>IMAGINATION USED AND APPLIED TO THE WRITTEN WORK AND PRESENTATION.</p> <p>VERY ACCURATE LAYOUT, WITH WORDS DISTRIBUTED WELL ON THE PAGE</p> <p>COLOUR AND IMAGES INCLUDED. VISUALLY PLEASING DESIGN SHEET</p>

Homework: Select one component, sketch / find image. Write information relating to the component.

Extension work:

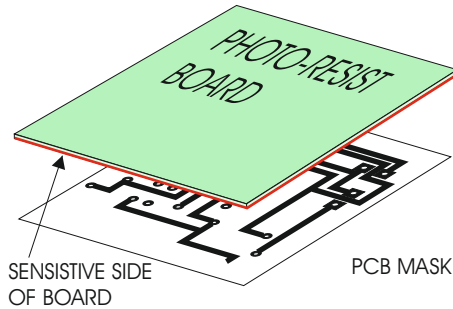
Ask relatives the types of games they find the most interesting and entertaining. Record the results and present using ICT.

SEQUENCE DRAWING - MANUFACTURING A PCB



PEEL BACK PROTECTIVE LAYER ON PHOTO-RESIST BOARD

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PLACE PHOTO-RESIST BOARD ON TOP OF TRANSPARENCY

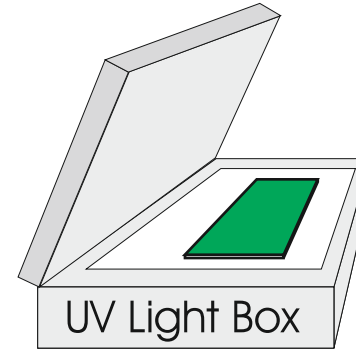
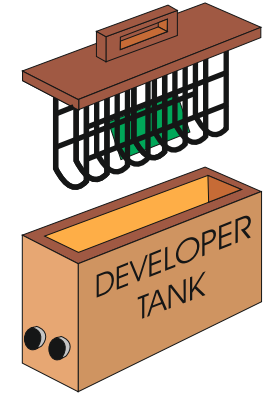
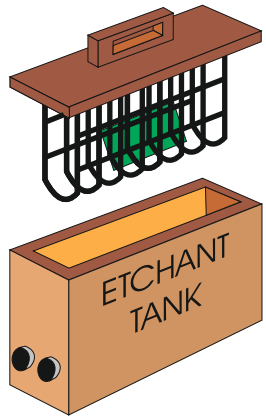


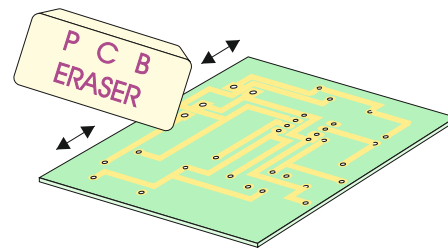
PHOTO-RESIST BOARD AND TRANSPARENCY IN LIGHT BOX



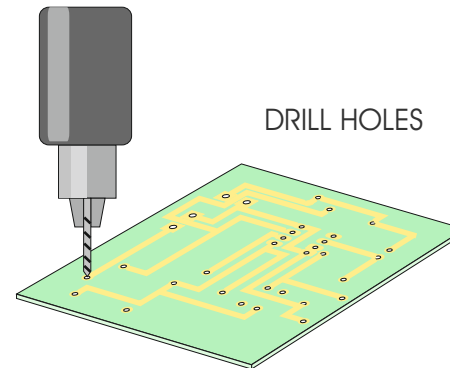
PLACE PHOTO-RESIST BOARD IN DEVELOPING TANK



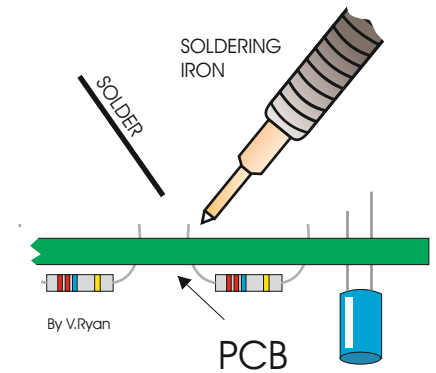
PLACE PHOTO-RESIST BOARD IN ETCHING TANK



WASH WITH WATER AND CLEAN TRACKS WITH PCB ERASER



DRILL COMPONENT HOLES IN PCB

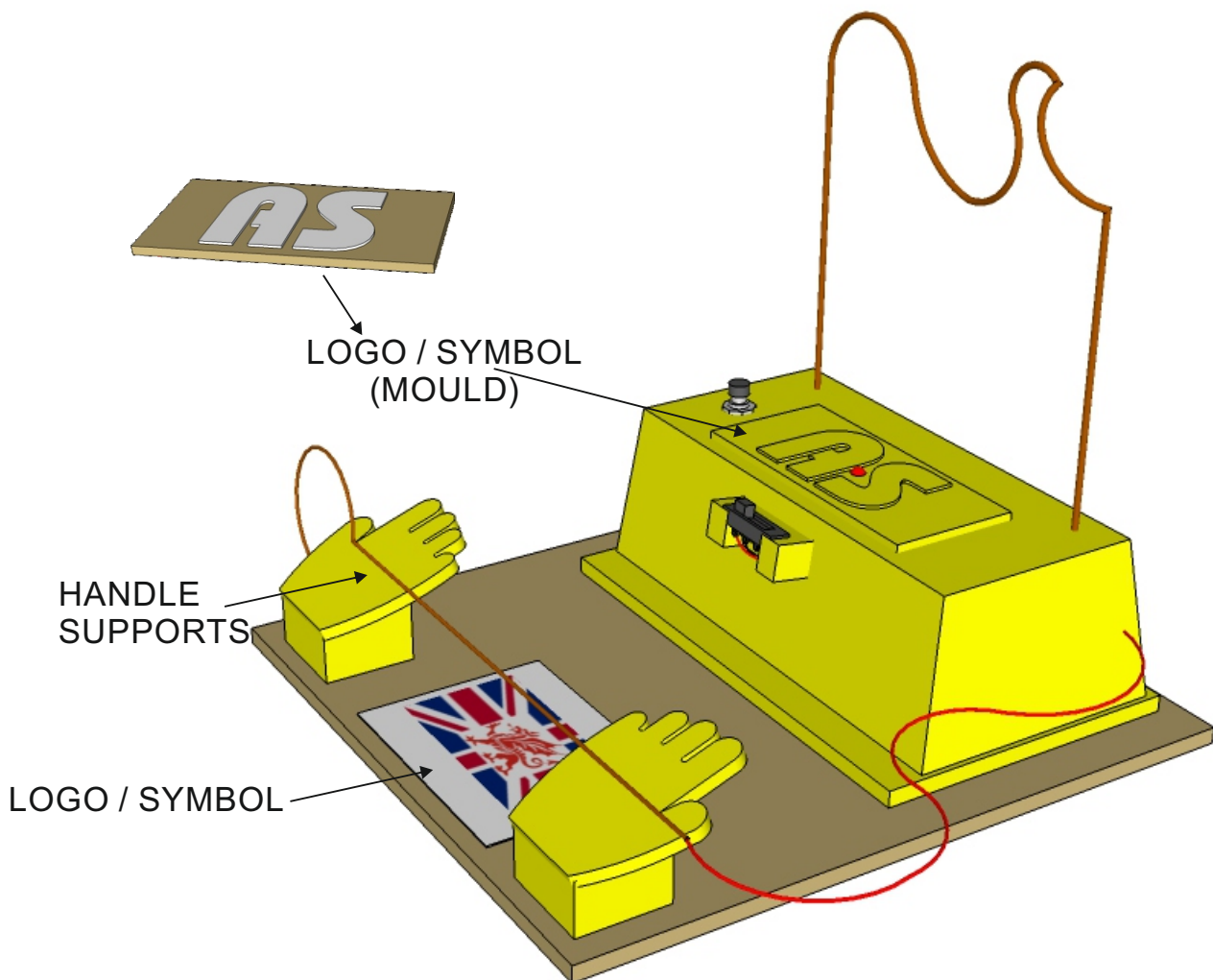


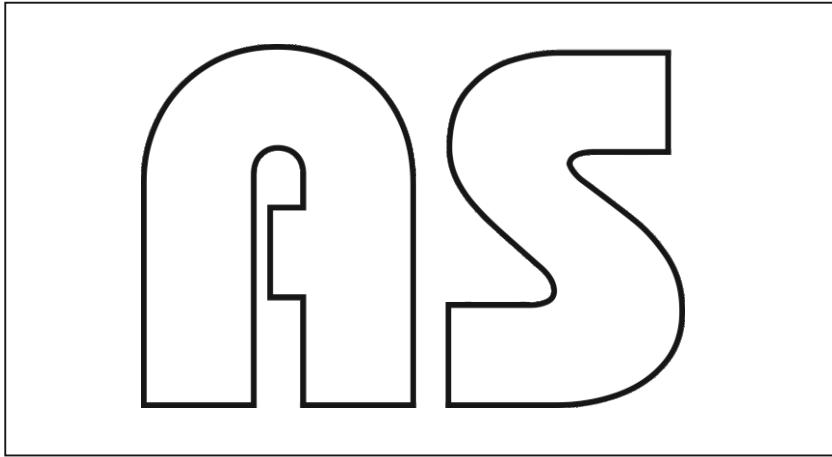
PLACE COMPONENTS AND SOLDER

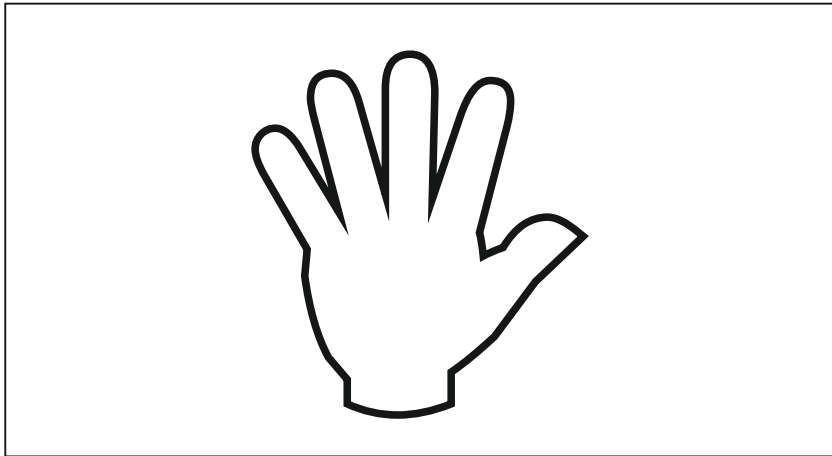
DESIGN WORK

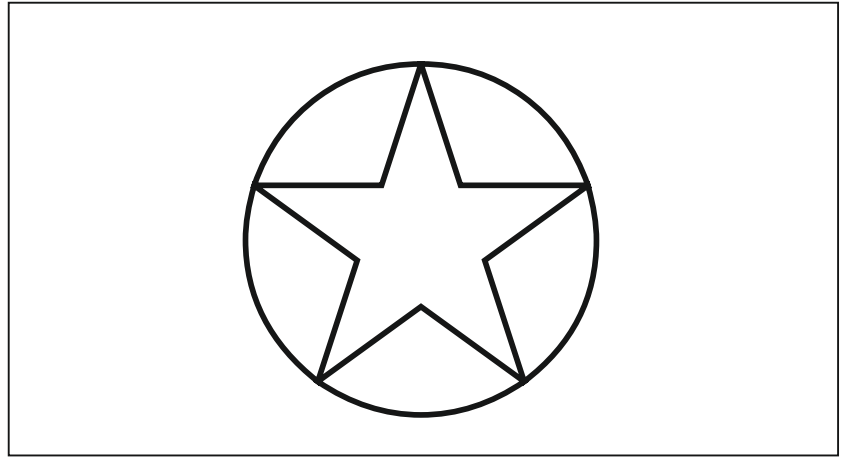
You are to design three important aspects of the product.

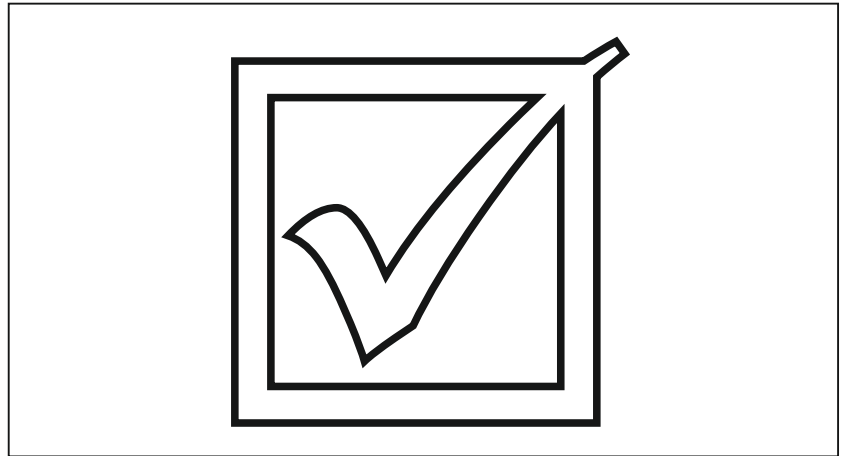
1. The logo / symbol mould, that will be placed on the top of the mould when vacuum forming.
2. The holder for the handle / steel loop.
3. Design an image or use clip art for the base.







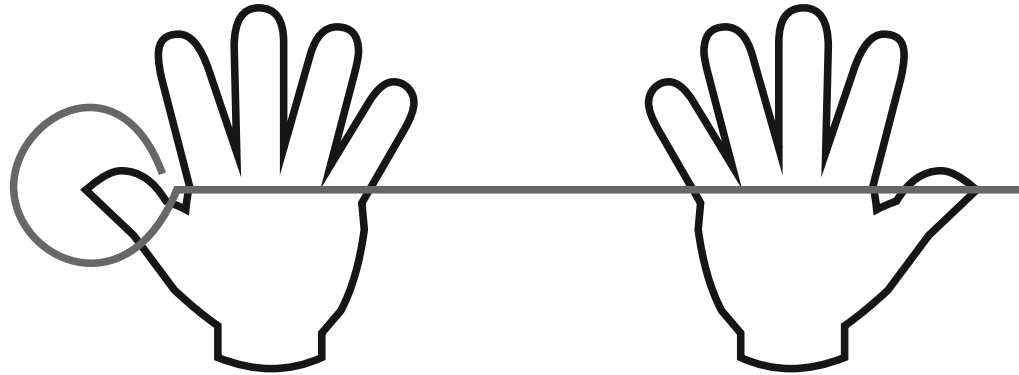




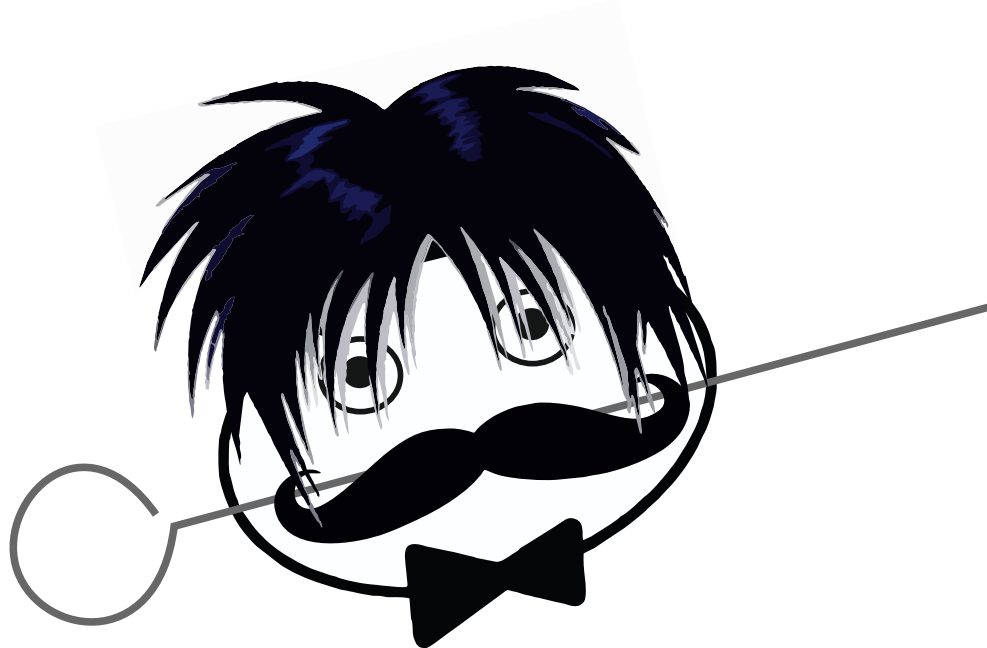
NAME:

LOGO DESIGN

DATE:



The hands support the steel handle / loop when it is not being used. The loop is held securely between the thumbs of each hand.



The mustache supports the steel handle / loop when it is not being used. The loop is held securely in the 'dips' of the mustache.

NAME:

HANDLE HOLDER

DATE:

MOULD DESIGN

LEVEL 4	LEVEL 5	LEVEL 6	LEVEL 7
<p>LIMITED DESCRIPTION / NOTES</p> <p>SENTENCES SET OUT ON PAGE BUT VERY UNTIDY</p> <p>BASIC DRAWINGS AND POSSIBLY WITHOUT COLOUR</p> <p>OVERALL PRESENTATION LACKING.</p> <p>UNTIDY PRESENTATION</p>	<p>REASONABLE DESCRIPTION / NOTES.</p> <p>SENTENCES SET OUT ON PAGE TO A REASONABLE STANDARD.</p> <p>BASIC DRAWINGS AND POSSIBLY WITHOUT COLOUR , WITH LIMITED IMAGINATION.</p> <p>PRESENTATION CLEAR BUT LACKING IMPACT SUCH AS USE OF COLOUR AND CLIP ART.</p> <p>AVERAGE PRESENTATION.</p>	<p>GOOD DESCRIPTION / NOTES</p> <p>SENTENCES SET OUT ON PAGE TO A GOOD AND ACCURATE STANDARD.</p> <p>GOOD IMAGINATIVE DRAWINGS, WITH COLOUR AND IMAGINATION. CLIP ART INCLUDED.</p> <p>PRESENTATION ACCURATE AND CLEAR.</p>	<p>VERY GOOD DESCRIPTION / NOTES.</p> <p>SENTENCES SET OUT ON PAGE TO A VERY GOOD AND ACCURATE STANDARD.</p> <p>IMAGINATIVE DRAWINGS, WITH COLOUR. CLIP ART INCLUDED, CLEAR ARRANGED ON THE PAGE.</p> <p>PRESENTATION VERY ACCURATE AND CLEAR.</p>

Homework: Complete ideas sheet.

Extension work: Collect images to be used / added to the ideas sheet.

MOULD MANUFACTURE

LEVEL 3	LEVEL 4	LEVEL 6	LEVEL 6
<p>POORLY MANUFACTURED</p> <p>ROUGH EDGES</p> <p>INACCURATE AND UNLIKELY TO COME OUT OF THE PLASTIC AFTER VACUUM FORMING</p> <p>LITTLE SKILL AND LACK OF BASIC TECHNIQUES</p>	<p>REASONABLE LEVEL OF MANUFACTURED</p> <p>REASONABLY SMOOTH EDGES</p> <p>POSSIBILITY OF THE MOULD COMING OUT OF THE PLASTIC AFTER VACUUM FORMING</p> <p>SOME SKILLS AND BASIC TECHNIQUES DISPLAYED.</p>	<p>GOOD LEVEL OF MANUFACTURED</p> <p>SMOOTH EDGES WITH NO ROUGHNESS AT ALL</p> <p>MOULD VERY LIKELY TO COME OUT OF THE PLASTIC AFTER VACUUM FORMING</p> <p>RANGE OF SKILLS AND TECHNIQUES DISPLAYED.</p>	<p>VERY GOOD LEVEL OF MANUFACTURED</p> <p>VERY SMOOTH EDGES WITH NO ROUGHNESS AT ALL</p> <p>MOULD WILL COME OUT OF THE PLASTIC AFTER VACUUM FORMING</p> <p>RANGE OF SKILLS AND TECHNIQUES DISPLAYED.</p>

Homework: Complete ideas sheet.

Collect information and images regarding vacuum forming. Present as an information sheet.

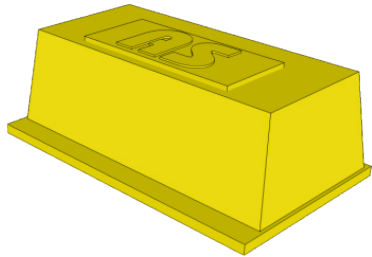
SEQUENCE DRAWING - VACUUM FORMING

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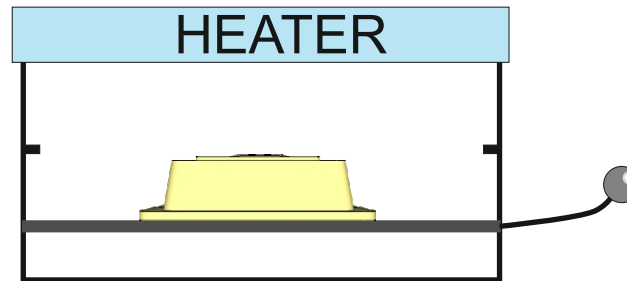
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1.



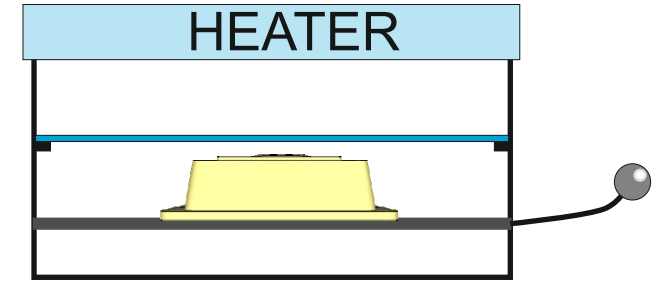
A SUITABLE MOULD / FORMER IS CAREFULLY MANUFACTURED

2.



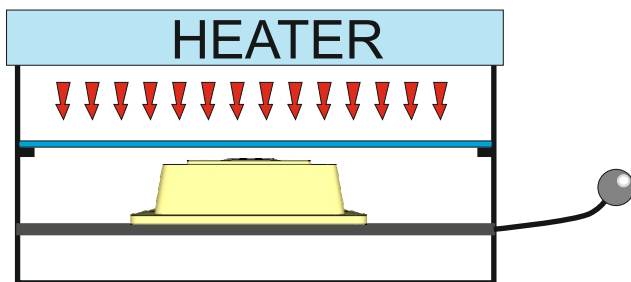
THE MOULD IS PLACED IN THE VACUUM FORMER

3.



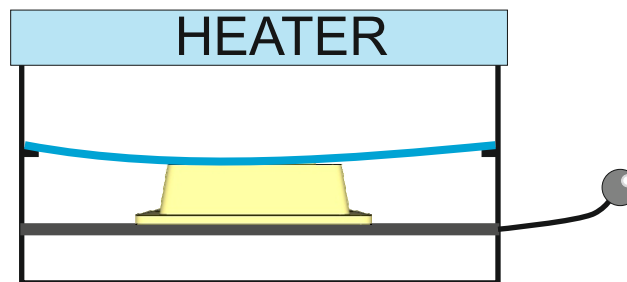
PLASTIC SHEET IS PLACED ABOVE THE MOULD AND CLAMPED SECURELY.

4.



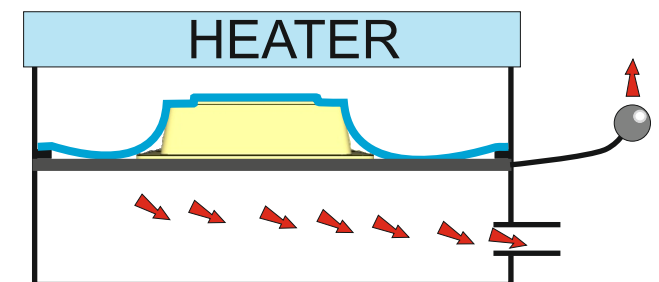
THE ELECTRIC HEATER IS TURNED ON TO WARM THE PLASTIC SHEET.

5.



THE PLASTIC BECOMES FLEXIBLE WHEN HEATED

6.



THE AIR IS PUMPED OUT OF THE AREA BELOW THE PLASTIC AND MOULD.

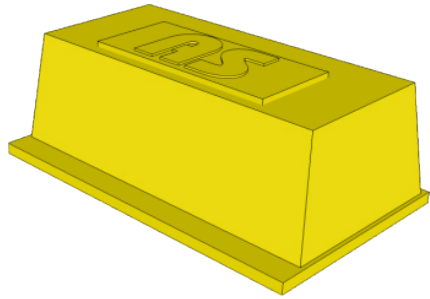
NAME:

VACUUM FORMING

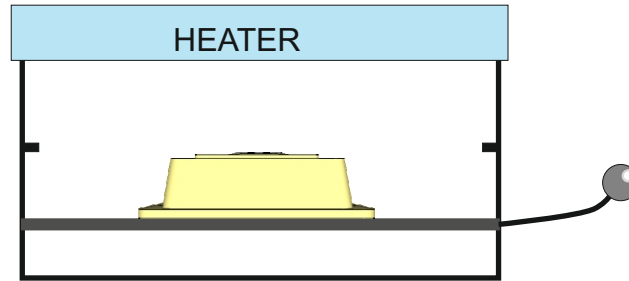
DATE:

VACUUM FORMING STARTER

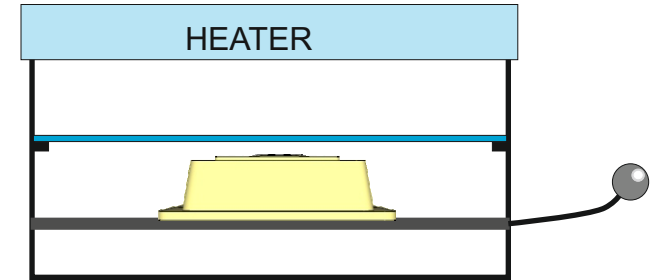
Study the vacuum forming cards carefully. Put them in the correct order. Prepare to talk about each of the stages.



A SUITABLE MOULD / FORMER IS CAREFULLY MANUFACTURED



THE MOULD IS PLACED IN THE VACUUM FORMER

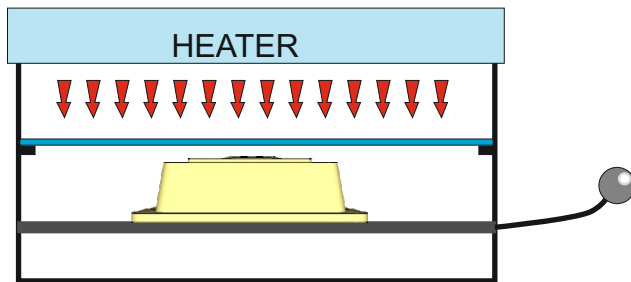


PLASTIC SHEET IS PLACED ABOVE THE MOULD AND CLAMPED SECURELY.

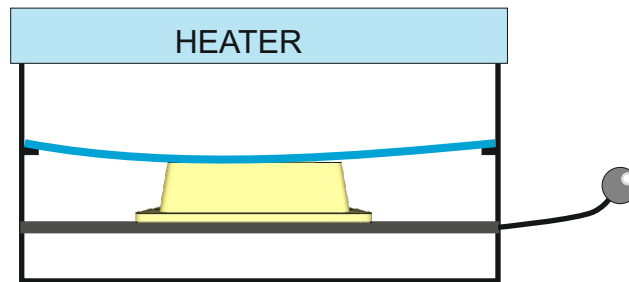
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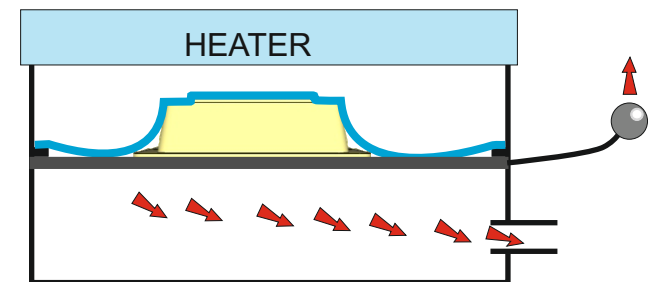
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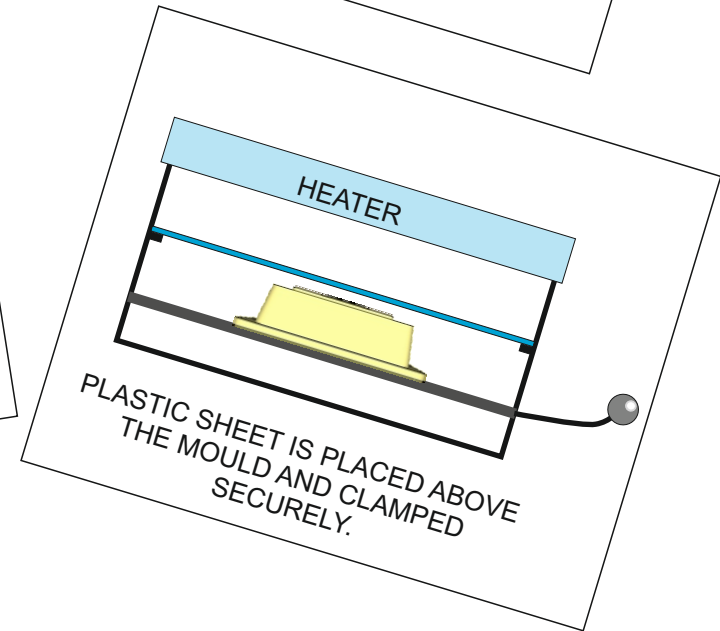
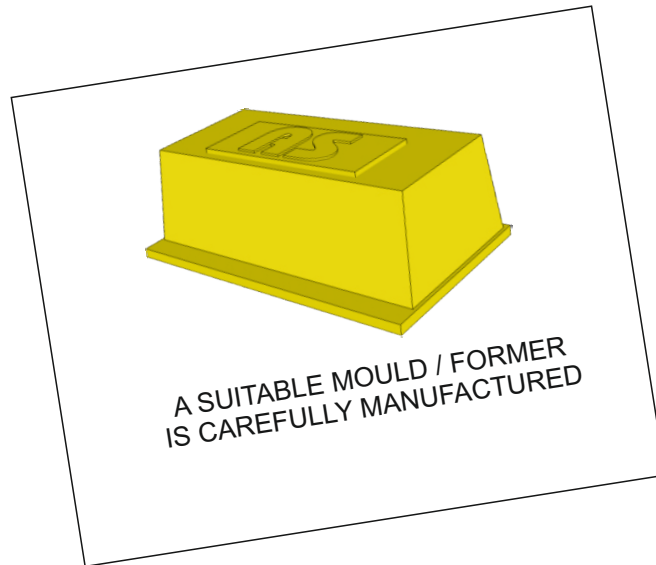
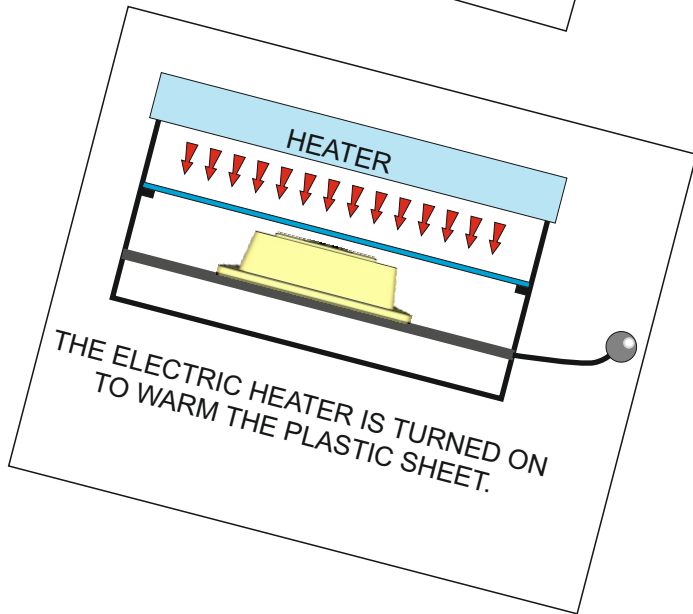
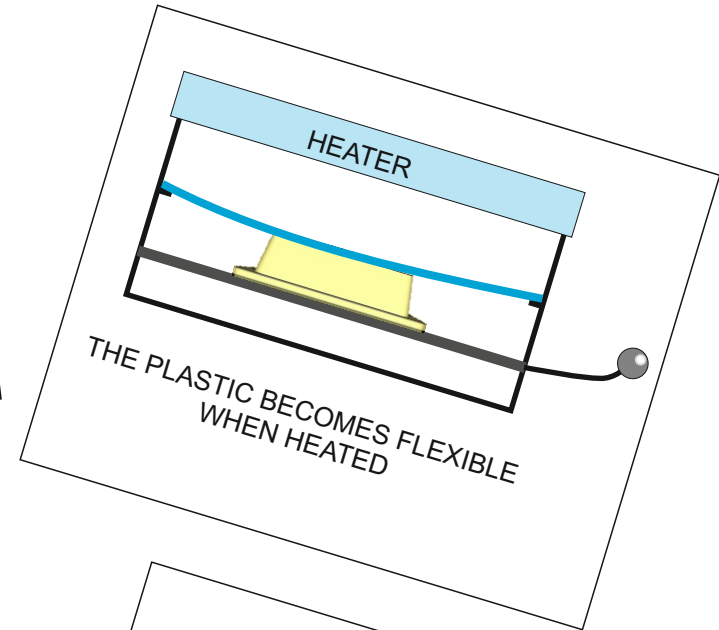
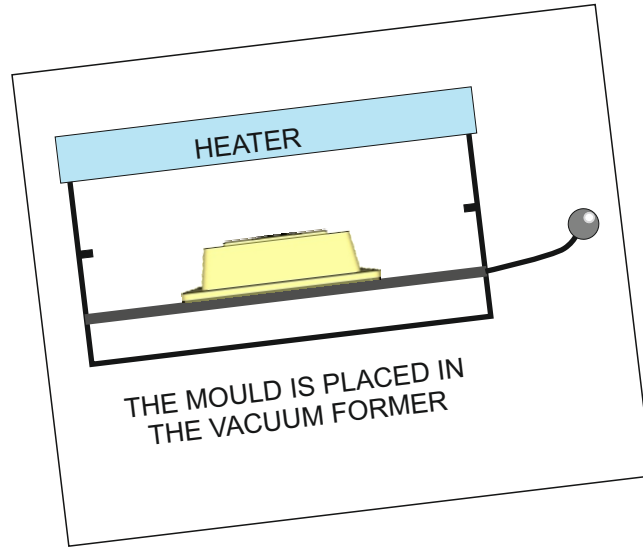
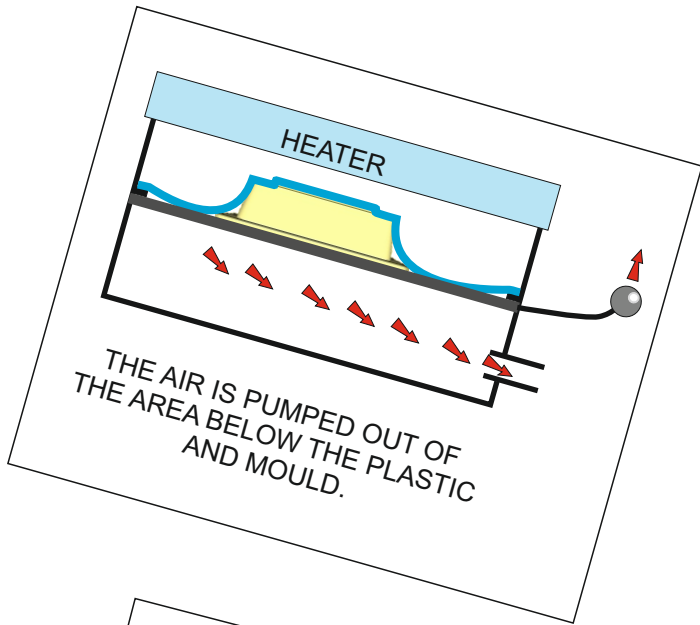
THE ELECTRIC HEATER IS TURNED ON TO WARM THE PLASTIC SHEET.



THE PLASTIC BECOMES FLEXIBLE WHEN HEATED



THE AIR IS PUMPED OUT OF THE AREA BELOW THE PLASTIC AND MOULD.



POINTS TO CONSIDER



When writing your evaluation, consider including the points written below.

You need to add more points of your own.

Your evaluation will be divided into two sections, good points and improvement points. Which side will they be on?

DEGREE OF DIFFICULTY

AESTHETICS - HOW IT LOOKS

LOGO / SYMBOL

QUALITY OF MAKING

WHAT DO OTHER PEOPLE THINK ? 'QUOTES'

ARE YOU HAPPY WITH THE MATERIALS YOU USED? WOULD YOU CHANGE THE MATERIALS ?

ARE YOU HAPPY WITH THE COLOUR SCHEME? WHAT COLOURS WOULD YOU CHANGE ?

HOW ACCURATE IS THE CIRCUIT / SOLDERING?

DOES THE CIRCUIT WORK ?

DOES THE GAME WORK ?

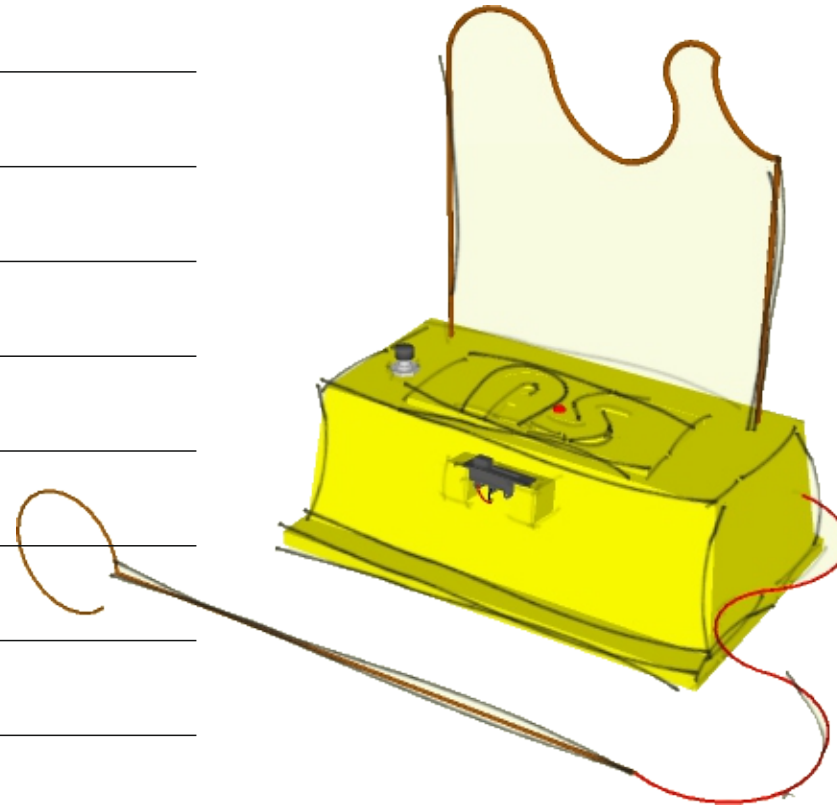
GOOD POINTS

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IMPROVEMENTS

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NAME:

EVALUATION

DATE:

FINAL EVALUATION

LEVEL 3	LEVEL 4	LEVEL 6	LEVEL 6
<p>POORLY MANUFACTURED ROUGH EDGES INACCURATE AND SIMPLE LOGO. LITTLE SKILL AND LACK OF BASIC TECHNIQUES POOR SOLDERING</p>	<p>REASONABLE LEVEL OF MANUFACTURE REASONABLY SMOOTH EDGES REASONABLY ACCURATE LOGO, LIMIT DETAIL. SOME SKILLS AND BASIC TECHNIQUES DISPLAYED. REASONABLE SOLDERING.</p>	<p>GOOD LEVEL OF MANUFACTURE SMOOTH EDGES WITH NO ROUGHNESS AT ALL ACCURATE AND DETAILED LOGO RANGE OF SKILLS AND TECHNIQUES DISPLAYED. GOOD SOLDERING.</p>	<p>VERY GOOD LEVEL OF MANUFACTURE VERY SMOOTH EDGES WITH NO ROUGHNESS AT ALL VERY ACCURATE AND DETAILED LOGO. RANGE OF SKILLS AND TECHNIQUES DISPLAYED. VERY GOOD SOLDERING</p>

LEVEL 4	LEVEL 5	LEVEL 6	LEVEL 7
<p>LIMITED OR SIMPLE DESIGN EVALUATION</p> <p>RATHER UNTIDY PRESENTATION</p> <p>LACK OF ACCURACY WHEN DRAWING</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>THE EVALUATION HAS BEEN PRESENTED CLEARLY.</p> <p>THE EVALUATION SHOWS AN UNDERSTANDING OF THE PROJECT.</p> <p>REASONABLE LAYOUT TO THE PAGE. CLEAR ARRANGEMENT OF WRITTEN CONTENT</p> <p>SOME COLOUR AND SHADE ADDED</p>	<p>GOOD LEVEL OF DETAIL IN THE EVALUATION.</p> <p>A MORE INDIVIDUAL APPROACH IS TAKEN AND NOT JUST STATEMENTS TAKEN FROM THE SAMPLES.</p> <p>WORDS ARRANGED WITH SOME ACCURACY ON THE DESIGN SHEET</p> <p>COLOUR AND IMAGES INCLUDED. INTERESTING LAYOUT.</p>	<p>EXCELLENT AND INDIVIDUAL EVALUATION.</p> <p>IMAGINATION USED AND APPLIED TO THE WRITTEN WORK AND PRESENTATION.</p> <p>VERY ACCURATE LAYOUT, WITH WORDS DISTRIBUTED WELL ON THE PAGE</p> <p>COLOUR AND IMAGES INCLUDED. VISUALLY PLEASING DESIGN SHEET</p>