

Design & Technology



DESIGN
TECHNOLOGY

C Johnston 2011

S2 Homework Booklet



DESIGN
TECHNOLOGY

Design & Technology

Name: _____

Class: _____

Teacher: _____

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2. Find the words below which are hidden in the grid.

E	F	Y	T	R	S	N	M	K	P	R
T	L	E	G	A	T	L	O	V	L	B
C	R	E	P	O	U	B	T	I	O	L
C	I	R	C	U	I	T	Y	H	B	U
U	V	J	I	T	O	P	U	T	A	B
R	C	S	T	U	R	O	A	Z	T	A
R	N	S	W	I	T	I	H	Z	T	T
E	B	G	S	W	I	T	C	H	E	T
N	U	F	G	J	K	M	Q	I	R	E
T	Z	C	H	I	L	H	P	R	T	R
R	E	Z	Z	U	B	N	O	S	T	Y

Battery

Bulb

Buzzer

Circuit

Current

Electricity

Switch

Voltage

3. Find 3 careers which a knowledge of Engineering Science would be useful to have?

Homework - Engineering Science 4

1. Below are three different types of renewable energy. List an advantage and a disadvantage for each of them.

Wind Power

Advantage _____

Disadvantage _____



Tidal Power

Advantage _____

Disadvantage _____



Homework	Date Due	On time	Late	Teacher Initials
Metalwork 3				
Metalwork 4				
Woodwork 3				
Woodwork 4				
Design & Manufacture 3				
Design & Manufacture 4				
Graphics 3				
Graphics 4				
Engineering Science 3				
Engineering Science 4				

Homework - Metalwork 3

1. When making the Trowel you used the following tools. What are their names?



A _____

B _____



C _____



D _____

2. Using the tools above, match them to their correct use.

Holding the material securely _____

Forming the blade _____

Marking where to drill _____

Bending the handle to shape _____

3. Match up the images with their correct name and use.

Transistor	To emit light	Restrict flow of current
Resistor	LED	Electronic switch

Name

Use







Homework - Engineering Science 3

1. What are the names of the symbols shown?



A _____



B _____



C _____

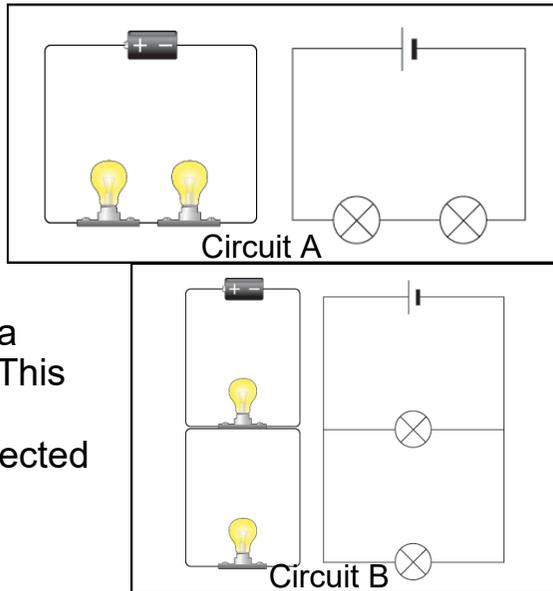


D _____

2. Complete the following sentences.

Circuit A is known as a _____ circuit. This means all of the components are connected in one loop.

Circuit B is known as a _____ circuit. This means that all of the components are connected in separate loops.



3. What did we use to cut away the excess material from the blade?

4. How did we join the handle and the blade of the Trowel together?

5. When finishing the edge of the blade, a sequence of processes were carried out. Arrange the following in the correct order.

- Emery cloth
- Cross filing
- Removing the burr
- Draw filing

1	_____
2	_____
3	_____
4	_____

Homework - Metalwork 4

1. What is meant by the term “non-renewable”?

2. Select the correct properties of Mild Steel from the list below.

- | | | |
|-------------------|----|--------------------|
| a) Light | or | Heavy |
| b) Easy to cut | or | Difficult to cut |
| c) Magnetic | or | Non-magnetic |
| d) Likely to rust | or | Not likely to rust |
| e) Ferrous | or | Non-ferrous |

3. Metals are split into two categories, pure metals and alloys. What is meant by each term and give 2 examples of each?

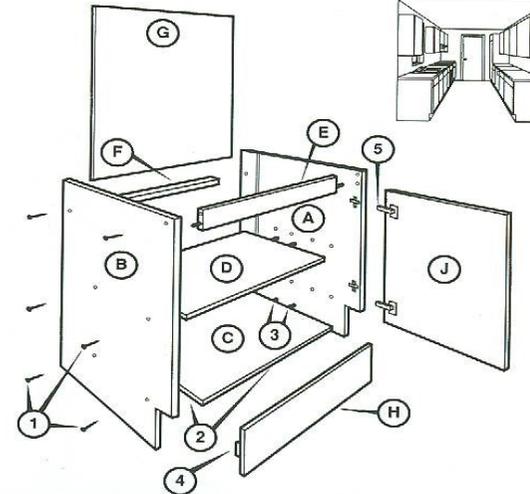
A pure metal is _____

An alloy is _____

Pure metals _____

Alloys _____

Diagram



Key

- A Right Hand End
- B Left Hand End
- C Bottom Shelf
- D Middle Shelf
- E Front Rail
- F Back Rail
- G Back Panel
- H Plinth
- J Door
- 1 Cross-axial Screw
- 2 Barrel Nut
- 3 Wood Dowel
- 4 Four Hole Block
- 5 90° Hinge



Barrel Nut

- 2 The barrel nut is hidden under shelves C and D and behind the front rail.

2. An exploded drawing of a kitchen unit is shown. Study the drawing and refer to the key to answer the following questions.

A) In the drawing, what are the names given to parts **B**, **H** and **F**?

Part **B** _____

Part **H** _____

Part **F** _____

B) Name the two types of fixings used to secure the shelves to the ends of the unit.

Fixing 1 _____

Fixing 2 _____

C) How many of part **1 (cross-axial screws)** are required to construct the kitchen unit?

Answer _____

Homework - Graphics 4

1. Signs are widely used to communicate information with little use of words. For the following sign types state their colours and sketch another example.

A) Beside the pillar drill in the workshop you would find a **mandatory sign** telling you to wear goggles.



Colour of sign: _____



B) **Warning signs** are found when very serious hazards are present.

Colour of sign: _____



C) **Prohibition signs**, like the no smoking signs, tell you when not to do things.



Colour of sign: _____



D) Safe condition signs tell you where first aid boxes are.

Colour of sign: _____



4. Metal comes in a variety of shapes and sizes. The following types of metals and their names have been mixed up, match up the following to the correct name.









- | | |
|------------|----------------|
| Square bar | L-section tube |
| Round bar | Hexagonal tube |

5. List 4 different methods of joining metal.

Homework - Woodwork 3

1. When making the Trinket Box you used the following tools. What are their names?



A _____



B _____



C _____



D _____

2. Using the tools from above, match them to their correct use.

- Measuring _____
- Drawing lines parallel to an edge _____
- Cutting Straight Lines _____
- Supporting the work piece _____

3. Different colours create different moods and feelings. What do the following colours make you feel?

Red _____

Green _____

Blue _____

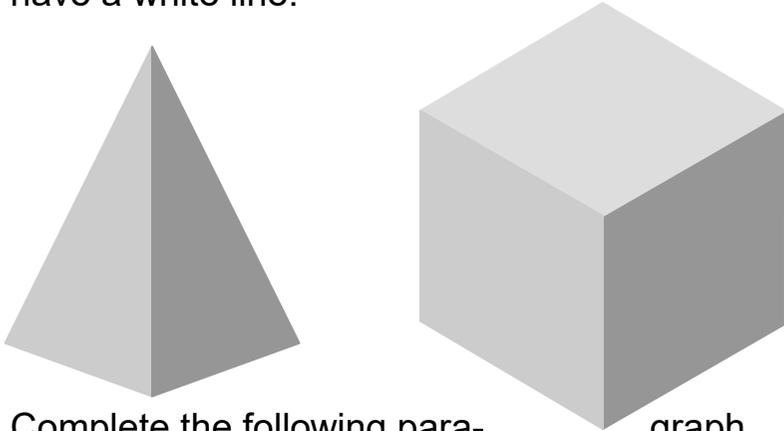
Yellow _____

Purple _____

Orange _____

Homework - Graphics 3

1. Below are marker rendered shapes which have some detail missing. Indicate the edges which should have a black line and those which should have a white line.



2. Complete the following paragraph about colour theory using the word bank.

Word Bank			
colours	greens	oranges	receding
further	closer	cold	opposite

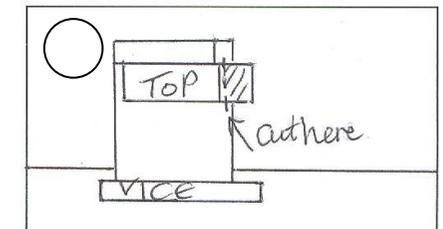
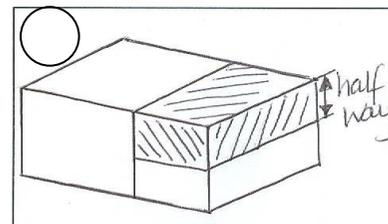
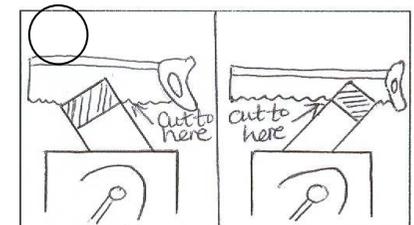
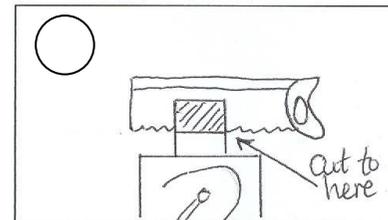
Reds, yellows and _____ are warm colours. They are also known as advancing _____ because they appear to be _____ to the viewer than other colours. Blues, _____ and violets do exactly the _____. They give feelings of being _____ and are known as cool colours. They also appear to be _____ away and are known as _____ colours.

3. What was the name of the woodworking joint you used to make the Trinket Box?

4. Draw a picture of the woodworking joint from above in the box.



5. When making the Trinket Box, a sequence of processes were carried out. Number the following pictures in the order you completed them in the circles provided.



Homework - Woodwork 4

1. Below are descriptions of different types of wood. What type of wood matches the descriptions?

- Is a relatively cheap wood used in the building trade and for furniture. It is pale in colour, quite easy to cut and shape, and machines relatively well. Wood type: _____
- Is quite expensive and is used for good quality furniture and hardwood windows. It is light brown in colour. Wood type: _____
- This is an expensive material and is used for making quality, expensive furniture. Wood type: _____
- A hardwood that contains oils which means it is resistant to decay. This is often used to make garden furniture or for wood block flooring. Wood type: _____

2. Which of the above wood type is the odd one out and why?

3. Which material would be the most suitable to use to make the following products?

<u>Product</u>	<u>Description</u>	<u>Material</u>
Key tag	Light-weight, easy to shape	_____
Mug tree	Easy to turn on a lathe	_____
Spatula	Does not melt or heat up	_____
Trowel	Light-weight, can be painted	_____

4. Complete the following paragraph using the words below.

Ergonomics is the study of how people use and interact

children	five	hearing	objects	safer	sizes
----------	------	---------	---------	-------	-------

with _____ in their surroundings. The application and understanding of ergonomics has created designs which are easier to use, _____ and more efficient. Humans interact with objects and their surroundings using their senses. There are _____ senses (each gives a different type of feedback about the design) sight, touch, _____, taste and smell.

Anthropometrics is the study of human _____, proportion and range of movements. Information about men, women and _____ of all ages has been gathered and presented in the form of tables of anthropometric data. Some of the most commonly used data when designing are: height, eye level, hand size, reach, etc.

Homework - Design & Manufacture 4

1. What do the following terms mean?

Brittle _____

Ductile _____

Malleable _____

Elastic _____

2. For each of the properties below give 2 examples of suitable materials.

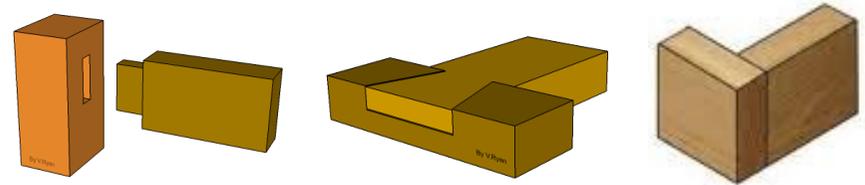
Brittle _____

Ductile _____

Malleable _____

Elastic _____

3. You have already come across a Rebate Joint when making your trinket box, can you name the 3 woodworking joints shown below?



4. Wood needs to be finished to prevent the material from deteriorating. Other than varnish what 4 other finishes can be applied to wood?

Homework - Design & Manufacture 3

1. Match up the following steps of the Design Process with the correct description.

Evaluation Problem Ideas Investigation
 Sequence of Operations Design Specification

A statement which tells the designer what is to be designed	_____
Finding out as much as possible about the product	_____
Stating what the product has to do	_____
Generating a range of solutions for the product	_____
Different stages involved in making the product	_____
How well the product has met the specification	_____

2. When making your clock you drilled a hole for the clock mechanism using the pillar drill. Complete the diagram using the following words.

Chuck Key

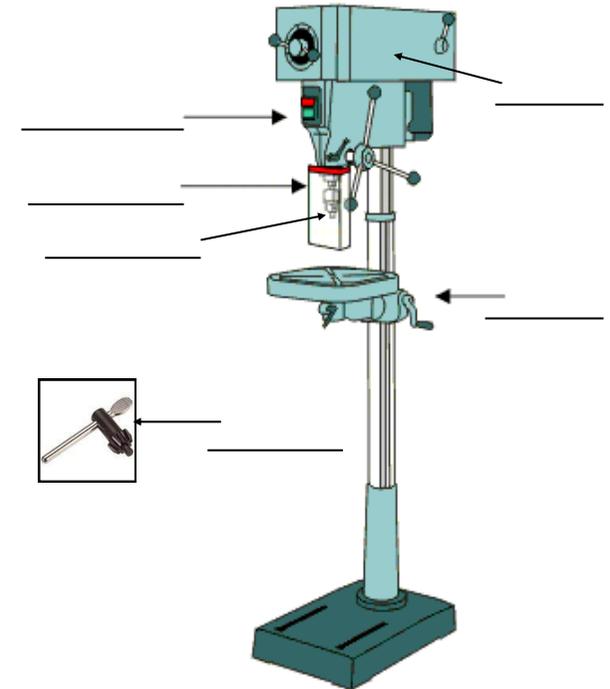
Chuck

Guard

Motor

On/off switch

Table



3. Which type of adhesive would you use to join the following materials together?

Tensile cement	Epoxy	PVA wood glue
----------------	-------	---------------

Wood to wood _____

Metal to plastic _____

Plastic to plastic _____