

biomouse

biomorphic computer mouse concept

Name: _____

Class: _____

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Denotes information sheet

Denotes work sheet

Collate all sheets according to this contents page and place this on the front for presentation

assessment

Materials – Plastics

Design Catalyst

Graphics

Ergonomics

Making

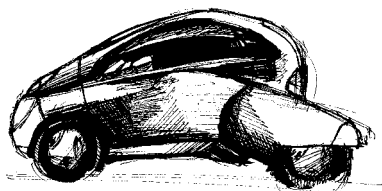
biomorphism

Information sheet

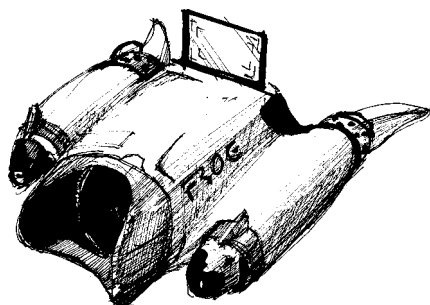
Nature has always been a great source of inspiration for designers. Gothic architects infused their cathedrals with natural forms, keeping stone masons very busy. They wanted to inspire worshippers with the wonders of the natural world, and it is easy to see how they did this - they used shapes directly from nature.



Today designers are also attracted to the natural world for inspiration, but the effect is much more subtle. Instead of objects looking just like natural forms they use soft curves to *remind* us of nature. Instead of a camera looking like a frog, it is given some frog-like characteristics. The style is very subtle and the reference to nature is not always obvious. It is worth having a closer look at the designed world to find objects that are designed with soft curves. You'll see cars, computers, cameras, and running shoes all influenced to some extent by biomorphism.



Matra Electric Car

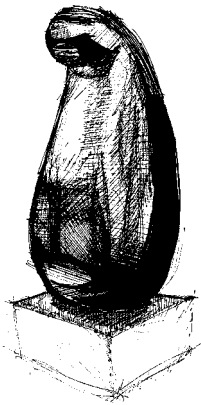


Luigi Colani, Camera design for Canon

Biomorphism is a current design style. Some of the earliest work in this style was the furniture design of Luigi Colani in the 60's. He later designed a range of cameras for Canon called the 'Five Systems'. The idea of soft, smooth shapes did not take off readily. The automotive industry was just beginning its infatuation with the box and the wedge, which took it happily through the 70's. By the late 80's, through advances in manufacturing and some innovative design work, car styling was transformed towards biomorphic ideals. Even Volvo has succumbed (although slowly). Biomorphism is more than just a fad or fashion. It seems to offer designers ever more opportunities.

Biomorphism has now gone beyond just the curve. Transparency, translucency, and feel are now also a part of the design language of biomorphism. These designs are now possible through the development of advanced injection moulding systems.

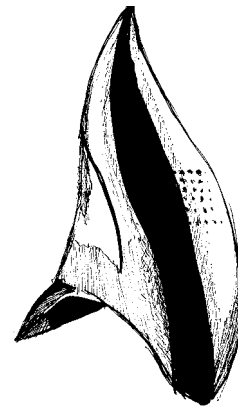
Biomorphism was perhaps pre-empted by Paul Greenhough in 1984 when he proposed that designers look towards nature for their inspiration just as the gothic architects had done, but with a few differences. He believed that it should be secular; that designers draw inspiration from some of the recent scientific discoveries regarding nature (especially fractal geometry); and that designers apply their ideas to everything, not just buildings. He didn't know what shape this new design style would take, but he knew that the recent discoveries of scientists could prove to be a rich source of inspiration for designers. We can now look back at what Greenhough was saying and find that he was on the brink of describing biomorphism.



Sculpture, I Noguchi



Craig Harris uses the phases of the moon as inspiration for his Stack Light



Bianca M Radio, Studio Naco

Its hard not to wonder why biomorphism is successful as a design style. Why is it so prolific? These are good questions to ask because through design we can learn a little bit about our own culture. Since the late 90's biomorphic designs have sold very well, but it is more than just a marketing tool. We must ask why people are generally more attracted to objects that remind them of nature. The answer is that we all have an innate 'biophilia' – a desire to relate to the natural world. This is why we think that sunsets are beautiful, mountains inspiring and still water relaxing. With our ever growing cities and the numbers of us who see more buildings than trees, it is not surprising that we choose to surround ourselves with objects that remind us of nature. The interesting thing is that we can make this decision without realising it. Biomorphism can show us two things about design itself. The power of design is often in its subtlety; and we like to ascribe meanings to the objects we choose to surround ourselves with.



Craig Harris, Chair Pair, 2002

biomorphism

Homework questions

Name: _____ Class: _____ Mark: _____

1. What is the basic philosophy (or idea) behind Biomorphism? (2 marks)

2. What is the intention of the Gothic style. Find an example of Gothic architecture, name it and suggest TWO reasons why you chose it. (3 marks)

3. Find TWO examples of Isami Noguchi's work. Describe the pieces and express why you consider them to be biomorphic. (3 marks)

4. Who was the designer who worked for Canon during the 1980's and redesigned the camera range called the Five Systems. (1 mark)
-

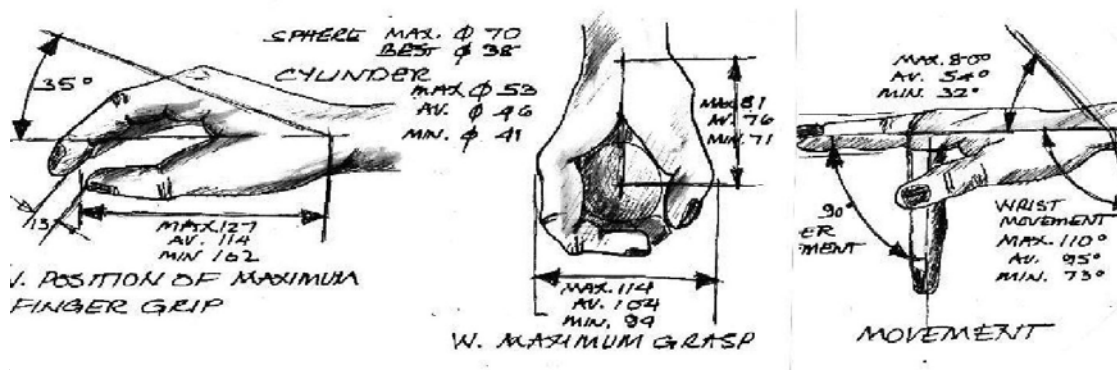
5. What natural starting point could have been used for the range of cameras this designer created. (1 mark)
-

6. What new technology assisted in the development of biomorphic design during the 1990's. (1 mark)
-

7. Marc Newson is an Australian designer who has used a biomorphic design philosophy to act as a design catalyst in his work.
Find ONE piece of his work that you consider to be biomorphic and briefly discuss the biomorphic elements that you see.
-
-

8. Phillipe Starck is another 20th Century designer who has been influenced by biomorphism. Find and TWO examples of his work. Label and date your image.

Anthropometrics is concerned with the measurement of the human form regardless of age or gender. Anthropometric data is used by statisticians to determine the mean or average measurement of humans. 'Anthro' is derived from the Greek, human and metrics, from the Greek to measure. Designers use this information to work out appropriate sizes for products such as chairs, cars, aircraft seating and clothes



Data relating to the hand

The word 'ergonomics' is derived from the Greek words 'ergon' (work) and 'nomos' (law). In the US the term Human Factors is often used. Ergonomics is concerned with the safe and comfortable use by humans of designed products or environments. Physical and psychological aspects are included in the study of ergonomics.

Physical aspects

Body posture

Movement – sitting, standing, lifting

Environmental factors – noise, lighting, climate, smell (olfactory)

Psychological aspects

Operation or function of products

Visual, audio + tactile responses

Proxemics + kinesthesia – physical positioning and spacing

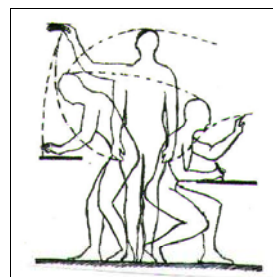
Kinesthesia



Body Posture



Body Movement



Designers are in a position of responsibility for creating good relationships between people and objects. Products require a sense of logic allowing for conditioned responses, the way people expect things to work from experience, and environments must create positive experiences when people interact with other people.

The computer mouse has become a desk-top necessity and computer companies are beginning to explore more interesting design possibilities. Nevertheless it could be said that most mouse designs are not very exciting.

Design Brief

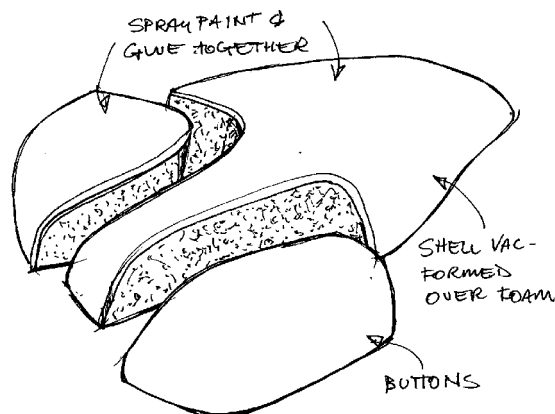
Design a new cordless computer mouse.

Design Parameters

- The mouse is to be comfortable to hold and use
- It is to be of an original design
- It must be biomorphic in form (refer to information sheet on page 3+4)
- Colour must be considered
- Part lines must be considered

Submission

- A set of concept sketches
 - A freehand orthogonal drawing with overall dimensions
 - A non-working model made using foam polystyrene when is then vacuum formed
 - A flow diagram of how you made you model
 - A rendered perspective of you final biomouse
- The design diary will assessed and given a mark.



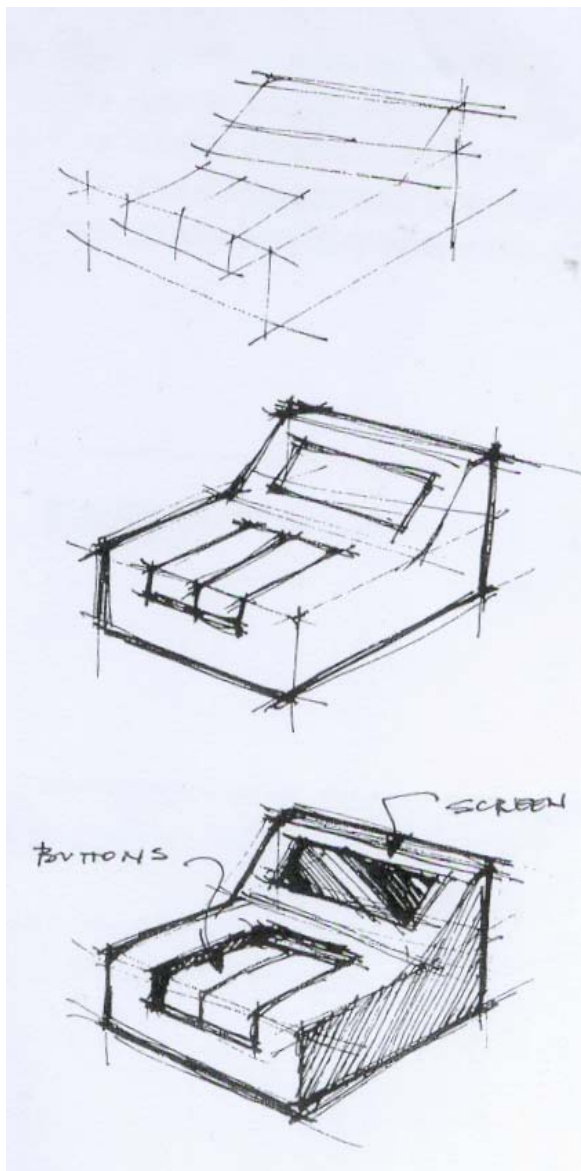
product reference

Homework sheet

Find pictures of 10 objects that might help you with your design ideas. They may be objects that already have a biomorphic style or natural forms that you can design from. Paste them below or cut and paste using a computer.

Concept sketches are done in the *ideas stage* of the design process.

- Concept sketches are always freehand and drawn quickly.
- Use a fineliner (not pencil).
- Never scribble or cross out, what you think are, bad ideas.
- Show various views perspective, orthogonal, sectional and detail views)
- Use colour
- Use your fineliner in the following way



1. Construct your overall shape,

- Light lines are drawn quickly
- Start with a box and then modify it
- Lines are long
- Some lines will be incorrect

2. Firm in the correct lines

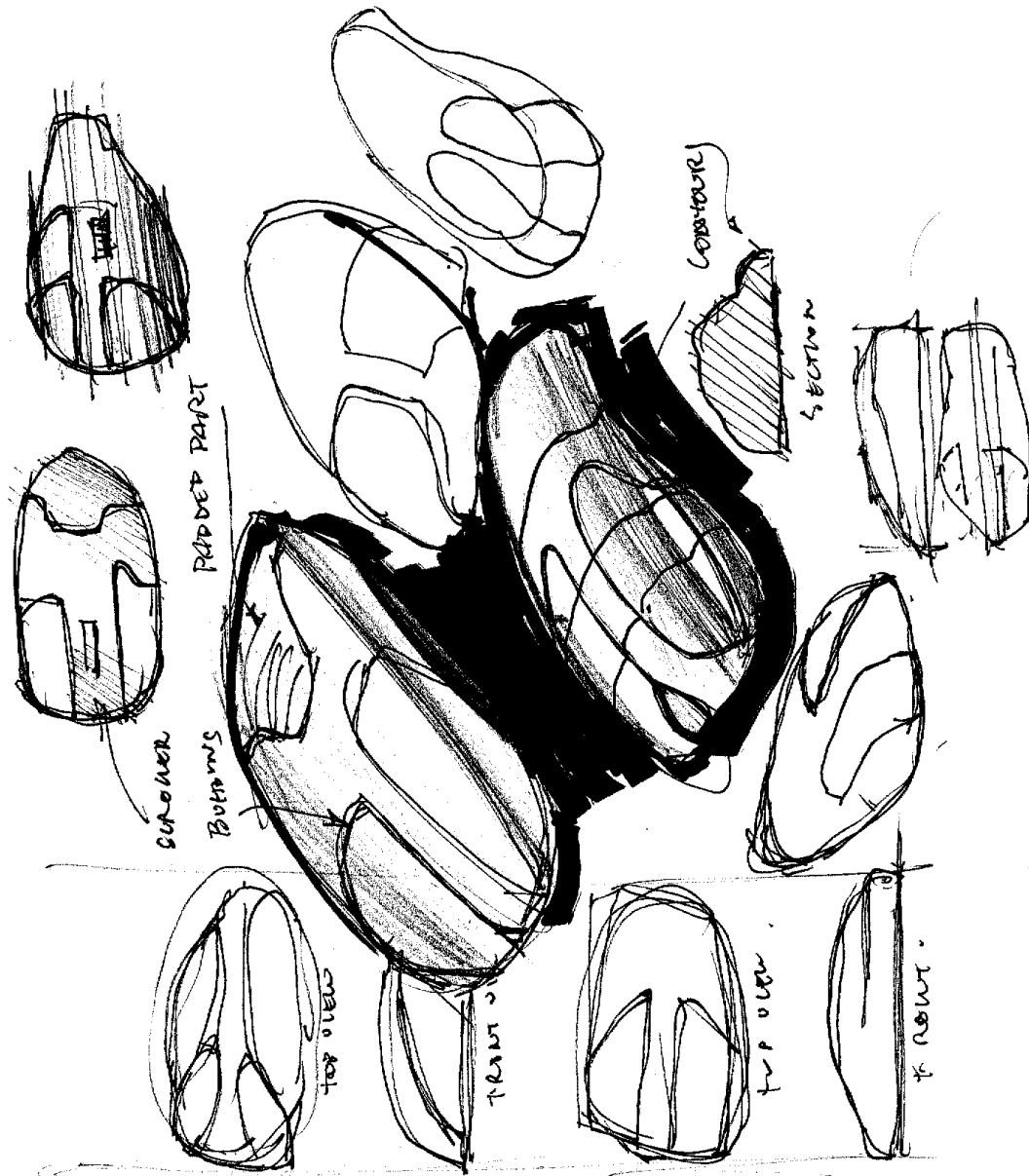
- Go over them more slowly
- Lines are long
- Make an outline extra dark

3. Shade in a chosen vertical face

- Use light, fast diagonal lines

4. Annotate by adding notes on various aspects of your design

- Words help people understand your ideas





PROJECT NAME: **BIOMOUSE**

NAME: _____

CLASS: _____

THIS SHEET

DESIGN STAGE: _____

DATE: _____

CONCEPT SKETCHES -1

NAME:	CLASS:	PROJECT NAME: BIOMOUSE
DATE:	DESIGN STAGE:	THIS SHEET CONCEPT SKETCHES -2

biomouse

Working with blue styrofoam (bsf) and polystyrene (ps)

Using the information from the demonstration fill in the following table. Listen carefully particularly regarding any safety issues.

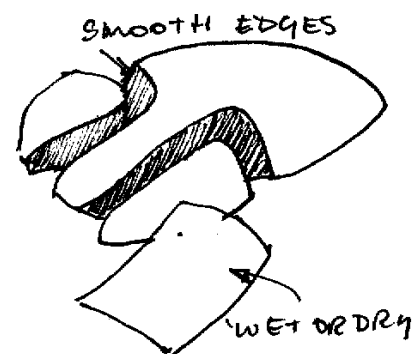
	Equipment	Use	Safety
Marking out bsf			
Marking out ps			
Cutting bsf			
Cutting ps			
Shaping bsf			
Forming ps			
Finishing bsf			
Finishing ps			

Just before the biomouse is glued together, it will need to be painted. For this auto spray are the best choice. They cover well, dry quickly and provide a professional finish to you model.

1. Smoothing.

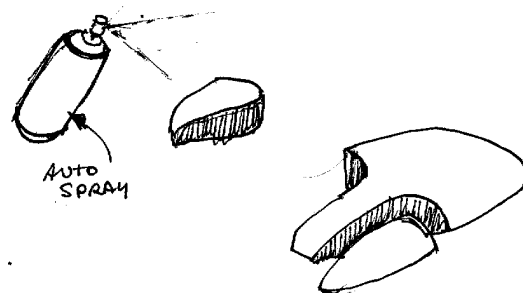
Ensure all the rough edges have been removed after cutting the buttons and that any marker pen lines have been removed.

Fine 'wet and dry' paper is useful to to "key" the surface ready for the paint.



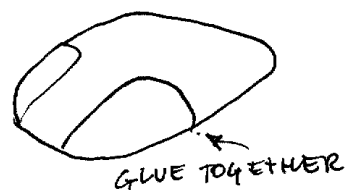
2. Painting

The biomouse might need two coats of lightly applied paint. Spray each part separately. Always Keep the spray can moving when spraying. Spray at 20-30cm from the work. Only do very light coats. Avoid getting paint on the foam.

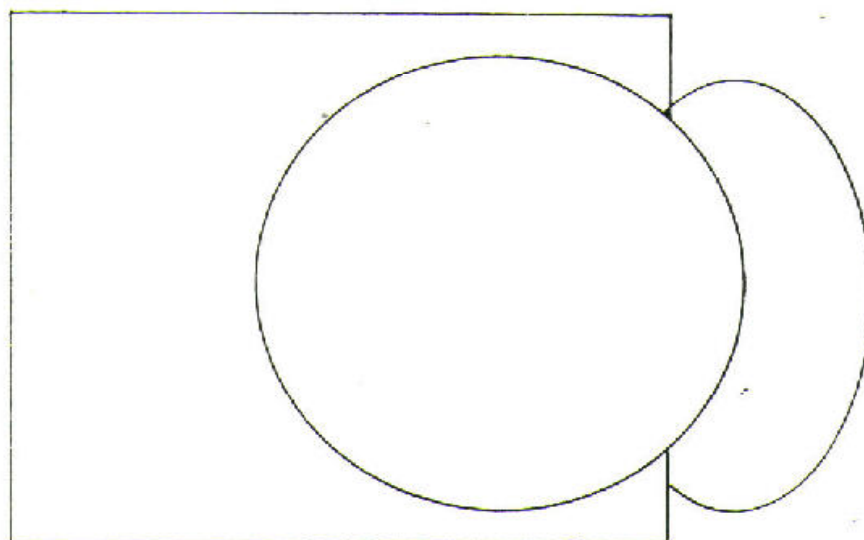


3. Joining

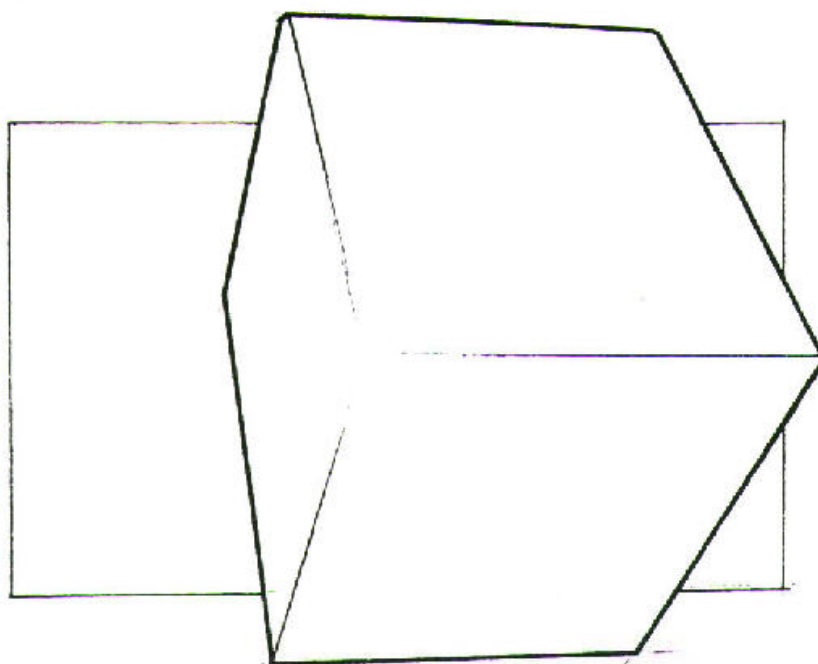
Glue parts together with PVA glue. Allow 24 hours to dry.



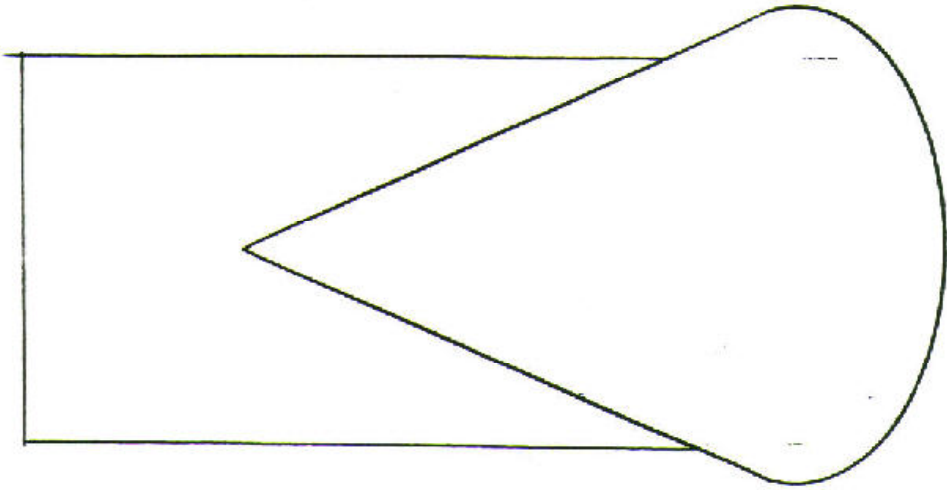
SPHERE



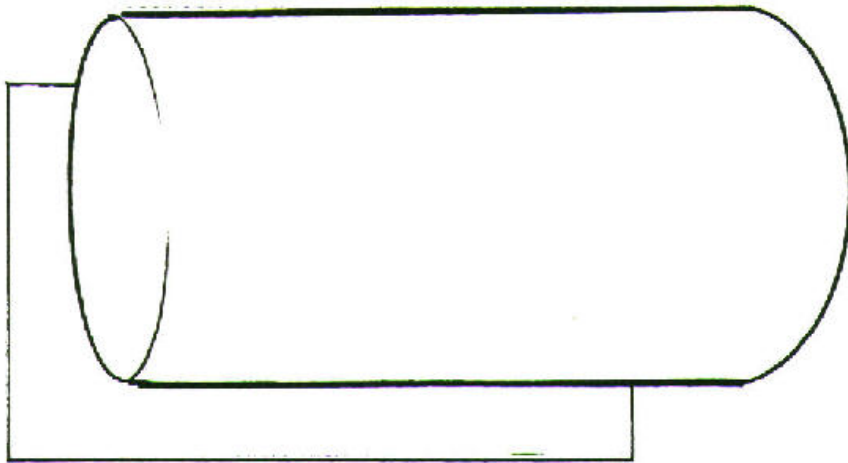
CUBE



CONE



Cylinder





design&technology

PROJECT NAME: **BIOMOUSE**

CLASS:

THIS SHEET **PERSPECTIVE RENDERING**

DESIGN STAGE:

NAME:

DATE:



PROJECT NAME: **BIOMOUSE**

CLASS:

NAME:

THIS SHEET

DESIGN STAGE:

DATE:

ORTHOGONAL DRAWING

Flow diagram

Number	Name of making stage
	Illustration showing all equipment you will use. Label all equipment. Draw what your object looks like at each stage. Use fineliner and colour.
	Explanation of making stage

1

2

5

4

3

21

biomouse

Answer the questions in the spaces provided.

1. List, using point form, all the tools and equipment that you have used during the biomouse project

2. Which tool and equipment have you found the most difficult to use? Briefly discuss any problems.

3. What is the purpose of a freehand sketch?

4. How is an orthogonal drawing useful?

5. What can a rendered perspective of the biomouse tell other people about your ideas?

6. What is the main function of a non-working model?

7. Which type of drawing have you had the most difficulty with? Why do you think this was the case?

8. At which stage of the design process would you use the following drawing techniques?

Concept sketches

Freehand orthogonal drawings

Accurate orthogonal drawing

Non-working model

9. What is a design brief and why is it helpful to a designer?

10. How was the design style of biomorphism useful to you during the ideas stage of the project?

11. What other design styles can you think of that might be helpful in the future whilst you are designing?

12. Develop some more design ideas for the improvement in you design that you would include if you could design and make another biomouse. Use a good concept sketch style, *construct firm shade and annotate.*

biomouse

Photo

Take a digital photo of your biomouse and glue it neatly in the space below.
