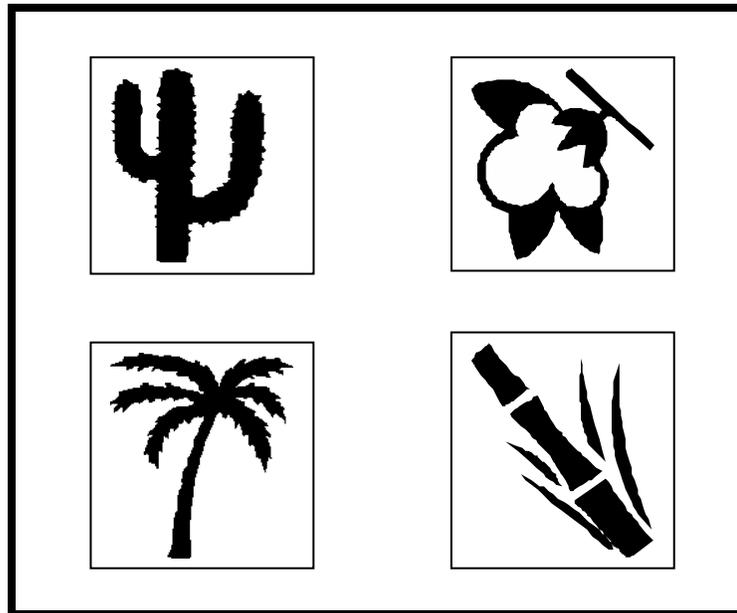


THE BIRMINGHAM
BOTANICAL
GARDENS
TURN OVER A NEW LEAF



**Investigating
Plants and
Environments**

Birmingham Botanical Gardens lends itself to the study of plants and environments with four glasshouses representing different climatic regions: tropical, sub-tropical, Mediterranean and desert. In addition, other environments such as alpine can be found outdoors.

You may wish to use these activities in the context of looking at plants and climates representative of a particular country or region, for example South America, Mediterranean Europe, St Lucia, Jamaica, India, Pakistan.

Description of Activities

What is each environment like?

Pupils can compare each climate using their senses and describe what each environment feels like. They can also measure and record environmental factors such as temperature, humidity, rainfall and soil moisture using a range of scientific equipment.

Worksheets A and B can be used to record observations and measurements. (Print off multiple copies if you want to study/experience more than one climate.)

The data can then be presented and compared in a variety of ways back at school (links to maths and computing).

Where in the world can we see these environments?

For each environment, pupils can plot onto a map of the world the countries of origin they find on the plant labels. Worksheet C has a map of the world that can be used, which also shows the location of the Equator and the Tropics of Cancer and Capricorn.

How are the plants arranged?

Looking at the arrangement of plants in the greenhouse is an ideal way of stimulating map work. This can be by locating the position of plants and marking them onto a plan or alternatively finding particular plants, which have already been marked on a plan. A plan of the glasshouses is attached (Worksheet D).

How are the plants adapted to their environment?

Basic understanding of plant adaptations can be developed through fun activities such as pupils imagining they are explorers. Observational awareness is heightened by pupils being allowed hands-on experience of plants in the glasshouses. Worksheet E can be used for pupils to sketch a plant from each glasshouse and identify how it is adapted to its environment. Another activity involves pupils filling in a Plant Passport so that the plant can be moved from one country to another (Worksheet F).

How are plants used by people?

Worksheet G can be used for pupils to record food and other economic plants that they find in the glasshouses. They can record not only the plant's name, but also the part of the plant used, country of origin and climate required. The location of these plants can be used to develop map skills.

The cultural use of plants can be explored through handling sessions. These use artefacts from around the world, including musical instruments. (Please contact the Education Team for more information or visit the website).

An interesting exercise is to ask pupils to imagine that they are marooned in a certain environment such as a desert. Can they find, for example, anything to eat or drink or materials to build a shelter? They could create a Survivor's Diary to record their ideas.

Another activity, called 'Starting the Day' (Worksheet H), takes everyday items used in the morning, examines their plant ingredients and where they come from.

Resources

The following scientific instruments are located in each glasshouse: thermometer, hygrometer (to measure percentage humidity), soil moisture meter, rain gauge.

In the glasshouses

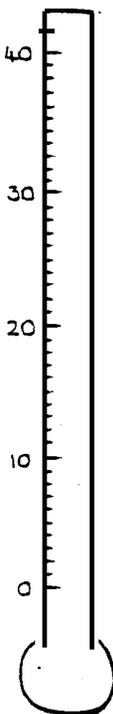
It feels

it smells

the colours are

the temperature

the plants



Worksheet B

Name: _____

Ring the words which could be used to describe the place you are in:

The climate is:

tropical sub-tropical Mediterranean desert

I think that it is:

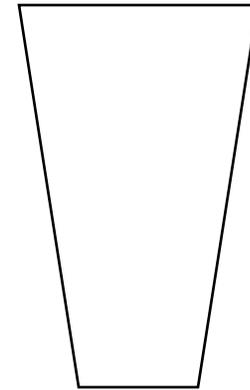
hot cold sticky crowded empty
green colourful dry wet damp
comfortable uncomfortable noisy quiet
beautiful ugly friendly unfriendly
bright dark interesting boring

Can you think of any other describing words?

temperature (°C)

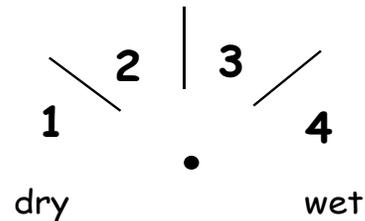


rainfall (mm)

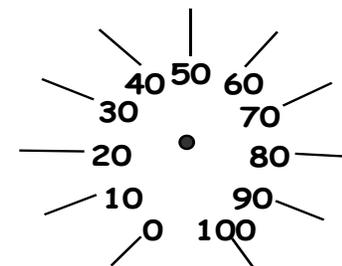


(Draw the top of the water and then write the height)

soil moisture

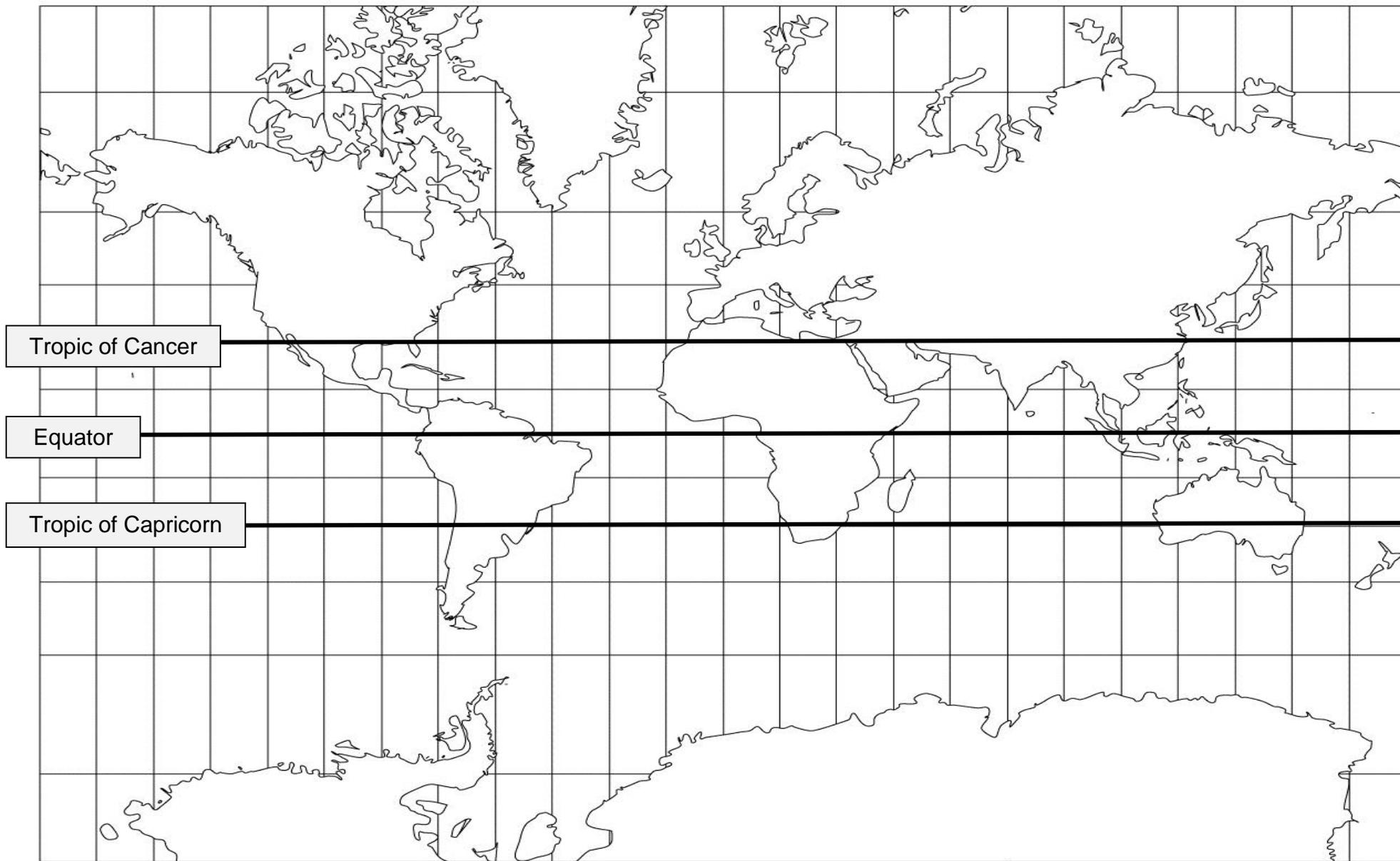


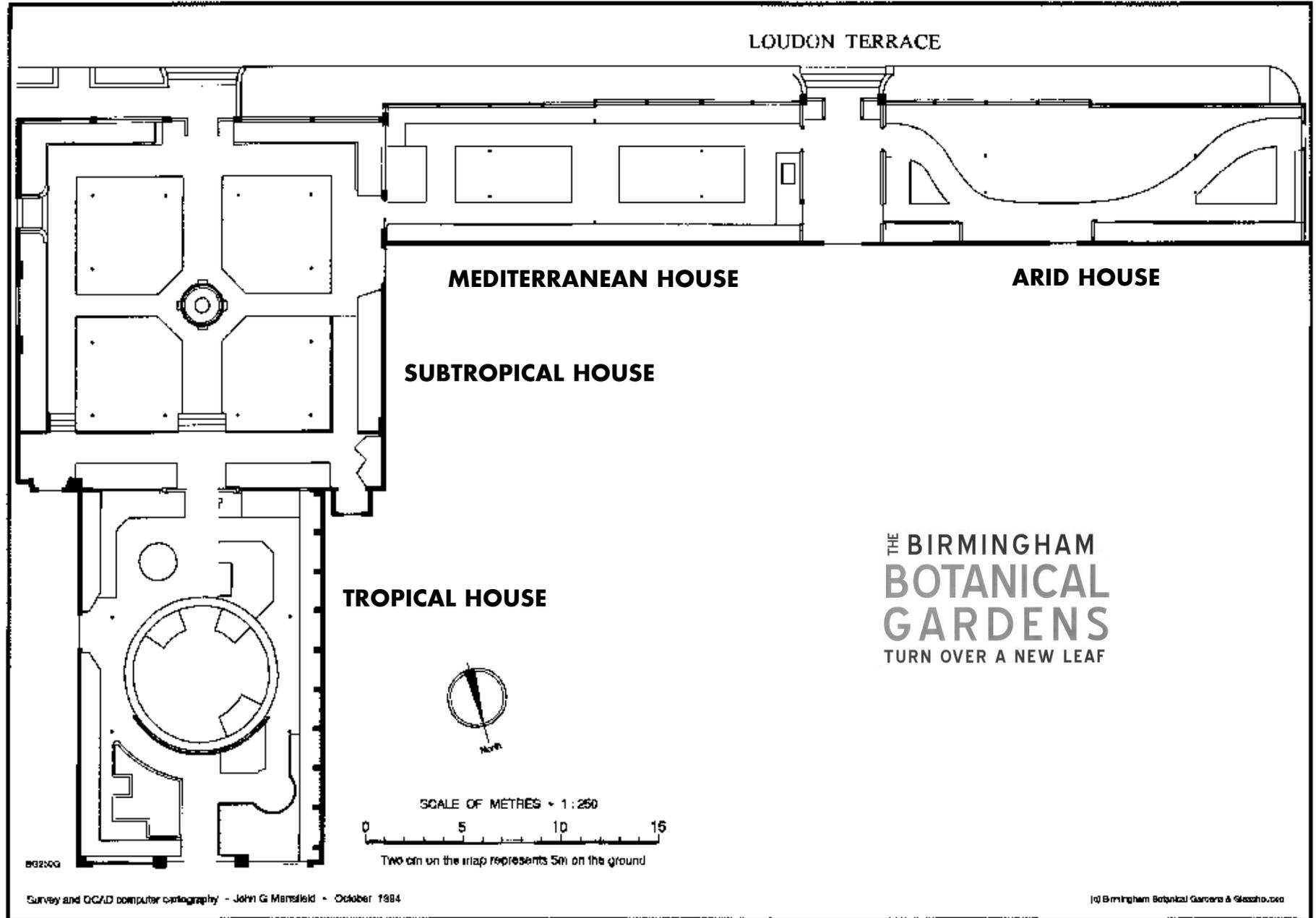
humidity (%)



Worksheet C

Name: _____





Worksheet E

Name: _____

Tropical House

Draw a plant with **coloured leaves** to absorb sunlight, or a **drip tip** to direct rainwater towards the roots.

Name of plant:

Sub-tropical House

Draw a plant with **large leaves** to absorb lots of sunlight.
(Remember to show the veins!)

Name of plant:

Mediterranean House

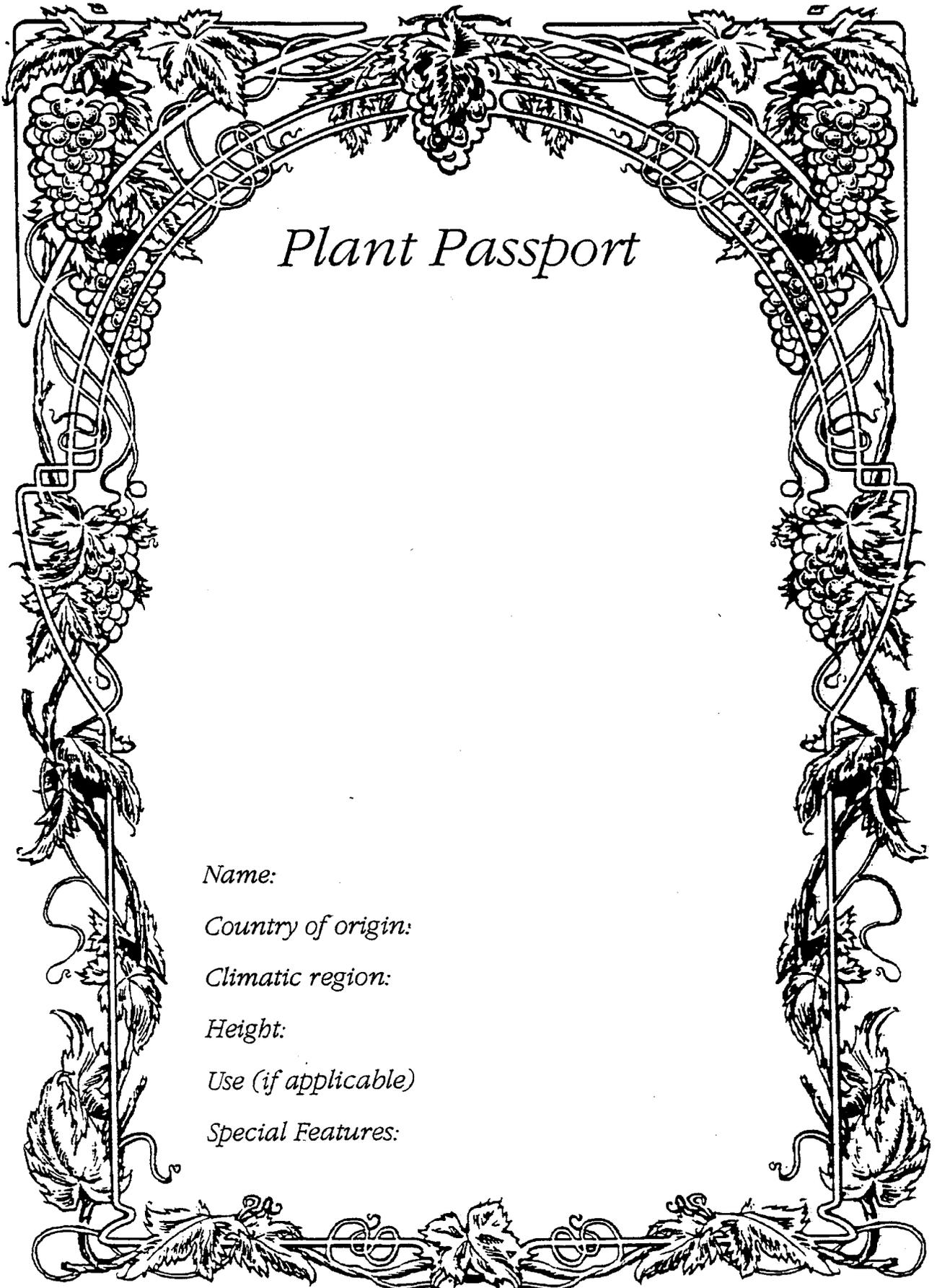
Draw a **citrus fruit** with a **thick, rough, bumpy skin** to protect it from the heat of the sun.

Name of plant:

Arid House

Draw a **cactus** with a **fat stem** to store water, and **spikes** to protect it from predation by animals.

Name of plant:



Plant Passport

Name:

Country of origin:

Climatic region:

Height:

Use (if applicable)

Special Features:

Worksheet G

Name: _____

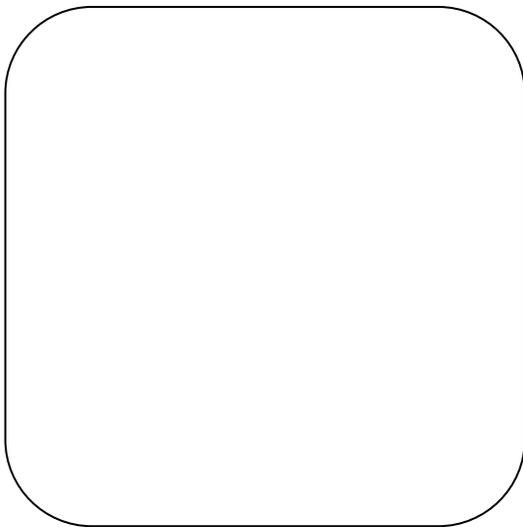
Write the names of any useful plants that you find in the glasshouses. Next to the name of the plant, add information such as: the country of origin (check the black labels), the climate in which it grows (e.g. tropical) and the part of the plant used (e.g. stem, leaf, roots).

 Food and Drink	 Medicine	 House & Home

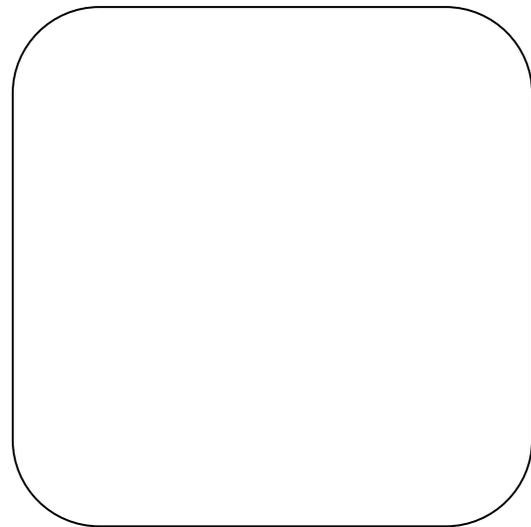
Starting the Day the Botanical Way

Did you know that in the time between getting up and going to school you use many plants without even knowing it?

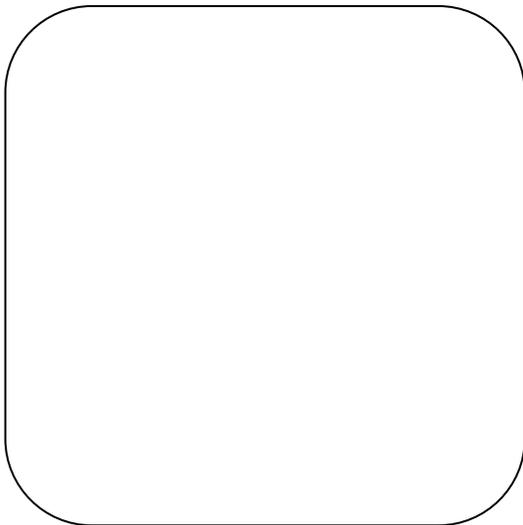
Explore the glasshouses to find and draw these useful plants. Read the information on the white labels and look out for these symbols:



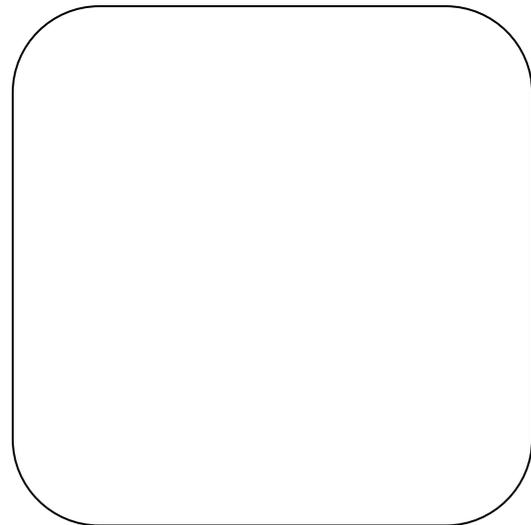
A plant we use in
the bathroom



A plant we eat
for breakfast



A plant we drink
for breakfast



A plant we wear
to school

Starting the Day the Botanical Way

SUGGESTED ANSWERS

Toiletries:

Soap Citrus fruit oils (Mediterranean House)
Shampoo Olive oil (Mediterranean House)
Shower/bath gel *Aloe vera* (Arid House)

Toothpaste Peppermint (Herb Garden)
Cinnamon (Sub-Tropical House)

Breakfast:

Spreads Olive oil (Mediterranean House)
Yellow colour using dye from annatto (Tropical House)

Marmalade Orange, lemon and lime (Mediterranean House)

Grapefruit Grapefruit (Mediterranean House)

Drinks Citrus juice, e.g. orange (Mediterranean House)
Tropical juice, e.g. pineapple (Sub-Tropical House)
Coffee (Tropical House)
Tea (Sub-Tropical House)

Coco-pops Rice (Sub-Tropical House)
Cocoa (Tropical House)
Sugar from sugar cane (Sub-Tropical House)

Getting dressed:

Shirt or blouse Fabric from cotton (Sub-Tropical House)
Starch from taro or cassava (Tropical House)