STUDENT WORKSHEETS

WORKSHEET 1: BRASSICA CLASSIFICATION CHART

Name:

To complete the classification chart, use *Appendix 1: Brassica Vegetables Taxonomy,* and other independent research.

Vegetable	Kingdom	Family	Genus	Species	Key Characteristics
Cauliflower	Plantae	Brassicaceae	*Brassica*	*oleracea*	White curd, cross-shaped flowers.
Kale					
Brussels Sprouts					
Gai Lan					
Collard Greens					
Radish					
Rocket					

WORKSHEET 1: BRASSICA CLASSIFICATION CHART

Vegetable	Kingdom	Family	Genus	Species	Key Characteristics
Broccolini					
Broccoli					
Bok Choy					
Turnip					
Romanesco Broccoli					

APPENDIX 1:
BRASSICA VEGETABLES TAXONOMY

Brassica vegetables in Australia belong to the Brassicaceae family, commonly known as the mustard or cruciferous family. The genus *Brassica* is particularly important, with many commercially grown vegetables like cabbage, broccoli, cauliflower, and kale falling within this genus.

Name: Kale
Taxonomy: Kale, (*Brassica oleracea* var*. viridis*) also called leaf cabbage, belongs to a group of cabbage (*Brassica oleracea*) cultivars primarily grown for their edible leaves; it has also been used as an ornamental plant. Kale comes in different types, including curly kale (most common), Tuscan kale, red Russian kale, and baby kale, with leaves that can be green or purple, and smooth or curly in texture.

Name: Brussels sprouts
Taxonomy: The Brussels sprout *(Brassica oleracea* var. *gemmifera)* is a member of the Gemmifera cultivar group of cabbages, grown for its edible buds. The Brussels sprout is a single-stemmed, tall biennial growing to a height of around 1 metre.

Name: Gai lan
Taxonomy: Gai lan, kai-lan, Chinese broccoli, or Chinese kale (*Brassica oleracea* var. *alboglabra*) is a leafy vegetable with thick, flat, glossy blue-green leaves with thick stems, and florets similar to (but much smaller than) broccoli. A *brassica oleracea* cultivar, gai lan is in the group alboglabra (from Latin albus 'white' and glabrus 'hairless').

Name: Collard greens
Taxonomy: Collard is a group of loose-leafed cultivars of *Brassica oleracea*. Part of the Acephala (kale) cultivar group, it is also classified as the variety *Brassica oleracea* var. *viridis L.* Collard greens have a mild flavor, less bitter than kale, and can be eaten raw in salads or smoothies, or cooked in soups, stews, or as a side dish.

Name: Cauliflower
Taxonomy: Cauliflower (*Brassica oleracea subsp. botrytis*) is one of several vegetables cultivated from the species *Brassica oleracea* in the genus *Brassica*, which is in the Brassicaceae (or mustard) family. Cauliflower is a flowering plant whose leaves wrap around the stem to form a round, white part called the 'head'. This head is made up of tightly packed flower buds and is sometimes called a 'curd'.

Name: Radish
Taxonomy: The radish (*Raphanus sativus*) is a flowering plant in the mustard family, Brassicaceae. Its large taproot is commonly used as a root vegetable, although the entire plant is edible and its leaves are sometimes used as a leaf vegetable.

Name: Rocket
Taxonomy: Rocket, eruca, or arugula (*Eruca vesicaria subsp. sativa.*) is an edible annual plant from the *Eruca* genus in the family Brassicaceae used as a leaf vegetable for its fresh, tart, bitter, and peppery flavour.

Name: Broccolini
Taxonomy: Broccolini, Aspabroc, baby broccoli or tenderstem broccoli (*Brassica oleracea × Brassica rapa*), is a green vegetable similar to broccoli but with smaller florets and longer, thin stalks. It is a hybrid of broccoli and gai lan (which is sometimes referred to as 'Chinese kale' or 'Chinese broccoli'), both cultivar groups of *Brassica oleracea.*

Name: Broccoli
Taxonomy: Broccoli (*Brassica oleracea* var*. italica*) is an edible green plant in the cabbage family (family Brassicaceae, genus *Brassica*) whose large flowering head, stalk and small associated leaves are eaten as a vegetable. The main edible part is the dense cluster of flower buds (the 'head'). While usually green, some rare varieties have violet, yellow, or white heads. If left unharvested, the buds bloom into small yellow flowers.

Name: Bok Choy
Taxonomy: Bok choy is a type of Chinese cabbage (*Brassica rapa subsp. chinensis*) cultivated as a leaf vegetable to be used as food. Varieties do not form heads and have green leaf blades with lighter bulbous bottoms instead, forming a cluster reminiscent of mustard greens. Its name has as many different spellings—pak choi and bak choi are two of the most common—as it boasts different varieties. However, bok choy generally has a distinctive appearance: green, ruffled leaves contrast sharply with the smooth, juicy white stems that give the vegetable its name (bok is the Cantonese for 'white').

Name: Turnip
Taxonomy: The turnip or white turnip (*Brassica rapa subsp. rapa*) is a root vegetable commonly grown in temperate climates worldwide for its white, fleshy taproot. Small, tender varieties are grown for human consumption, while larger varieties are grown as feed for livestock. The name turnip – used in many regions – may also be used to refer to rutabaga (or neep or swede), which is a different but related vegetable.

Name: Romanesco broccoli
Taxonomy: Romanesco broccoli (also known as broccolo romanesco, romanesque cauliflower, or simply romanesco) is in fact a cultivar of the cauliflower (*Brassica oleracea* var. *botrytis*), not broccoli (*Brassica oleracea* var*. italica*). It is one of two types of broccoflower. It is an edible flower bud of the species *Brassica oleracea*, which also includes regular broccoli and cauliflower. There are two main types of broccoflower. One is a green cauliflower, and the other is Romanesco broccoli.

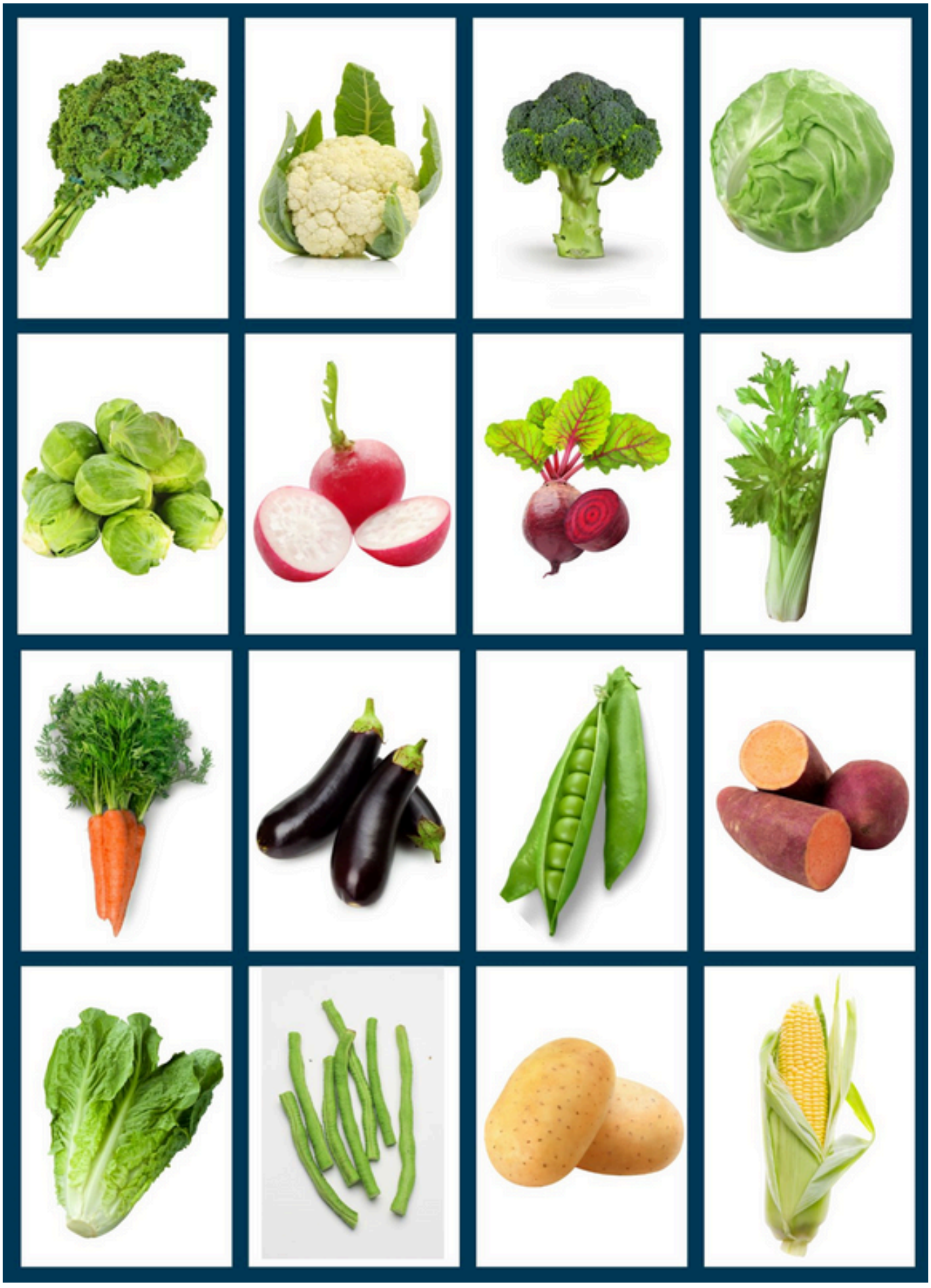
Name: Cabbage
Taxonomy: Cabbage (*Brassica oleracea* var. *capitata*), comprising several cultivars of *Brassica oleracea*, is a leafy biennial plant grown as an annual vegetable crop for its dense-leaved heads. Cabbage forms a dense, round or oval head made up of thick, overlapping leaves. These leaves can be green, white (pale green), red, or purple. The leaf edges vary from smooth to wavy or crinkled, depending on the variety.

Name: Kohlrabi
Taxonomy: Kohlrabi (*Brassica oleracea* var. *gongylodes*), also called German turnip or turnip cabbage, is a biennial vegetable, a low, stout cultivar of wild cabbage. Kohlrabi can be eaten raw as well as cooked. Kohlrabi stems are surrounded by two distinct fibrous layers that do not soften appreciably when cooked. It has a texture similar to that of a broccoli stem, but with a flavour that is sweeter.

Name: Watercress
Taxonomy: Watercress or yellowcress (*Nasturtium officinale*) is a species of aquatic flowering plant in the cabbage family, Brassicaceae. Watercress can grow up to 60 centimetres in length. The stems are hollow and float in water. Watercress has a fresh, peppery, slightly bitter flavor with a spicy scent. The taste softens when cooked. It is commonly used fresh in salads, sandwiches, and garnishes, or lightly cooked in soups and dishes.

Name: Rapini
Taxonomy: Rapini (also known as Broccoli Rabe (or Raap or Raab), is a green cruciferous vegetable, with the leaves, buds, and stems all being edible; the buds somewhat resemble broccoli. It is a common vegetable in the cuisines of Southern Italy (in particular Bari and Sicily), Galicia, China, and Portugal. Rapini is classified scientifically as B*rassica rapa var. ruvo* but it's taxonomy is very difficult. Rapnin has had various other designations, including *Brassica rapa ruvo, Brassica rapa rapifera, Brassica ruvo, Brassica campestris ruvo*.

APPENDIX 2:
VEGETABLE SAMPLES



APPENDIX 3:
BRASSICA VEGETABLES

APPENDIX 4:
SAMPLE DICHOTOMOUS KEY

Here's an example of a dichotomous key for identifying common vegetables:

1a. Green leafy parts visible — go to 2
1b. No leafy parts visible; does not have soft green leaves — go to 4
2a. Leaves are wide, flat, and form a loose bundle — Lettuce
2b. Leaves are not wide, flat, or do not form a loose bundle — go to 3
3a. Leaves are thick, dark green, and tightly crinkled — Kale
3b. Leaves are not thick, dark green, or do not appear tightly crinkled — Spinach
4a. Vegetable has rough or dirty surface suggesting it grew underground — go to 5
4b. Vegetable does not have a rough or dirty surface; does not appear to have grown underground — go to 7
5a. Shape is long, narrow, and pointed at one end — Carrot
5b. Shape is not long, narrow, or does not taper to a point — go to 6
6a. Surface has dry, papery layers and strong smell — Onion
6b. Surface does not have dry, papery layers and does not have a strong smell — Turnip
7a. Shape is long and straight with pale green ribs or grooves along its length — Celery
7b. Shape is not long and straight, and does not have pale green ribs or grooves — go to 8
8a. Shape is long and cylindrical with smooth, dark green skin — Cucumber
8b. Shape is not long and cylindrical, or does not have smooth, dark green skin — go to 9
9a. Shape is short and rounded with shiny red, green, or yellow skin — Capsicum
9b. Shape is not short and rounded, or does not have shiny red, green, or yellow skin — Pea

This dichotomous key demonstrates how to identify common vegetables (onion, carrot, kale, lettuce, cucumber, and capsicum) using a series of paired, mutually exclusive choices. Each step narrows down the possibilities until a specific vegetable is identified.

To adapt a dichotomous key for different types of vegetables, follow these steps:

Selection of Characteristics

Choose vegetable characteristics focusing on observable traits such as:

- Colour
- Shape
- Size
- Leaf structure

Preliminary Research Phase

1. Identify complete set of specimens (refer to the appendix).
2. Document comprehensive characteristics.
3. Determine unique distinguishing features.

KEY DEVELOPMENT FRAMEWORK

Characteristic Selection Criteria

Observable: Must be easily visible/measurable.

Distinctive: Creates clear differentiation.

Consistent: Applies across specimen group.

Structural Template

1a. Primary Distinguishing Characteristic

Option 1: [Description]

Option 2: [Opposing Description]

2a. Secondary Characteristic (Option 1 Path)

Sub-option 1: [Description]

Sub-option 2: [Opposing Description]

Recommended Development Process

1. Create initial draft.
2. Test with multiple specimens.
3. Refine and validate.
4. Peer review.
5. Final documentation.

Technical Considerations

- Use clear, concise language.
- Ensure mutually exclusive choices.
- Provide definitive endpoint identification.
- Include visual reference if possible.

Quality Checklist

✓ Two options to choose from at every step

✓ Steps follow a clear and sensible order

✓ Covers all possible options or cases

✓ Uses easy-to-understand words

✓ Correctly identifies the vegetable