



SCIENCE

**Answer key for
learner's book**

Learner's book page 9

- Questions

- **Q1) They are chloroplasts. They are green because they contain chlorophyll. This is where photosynthesis happens, where food is made.**

Learner's book page 9

Q2)

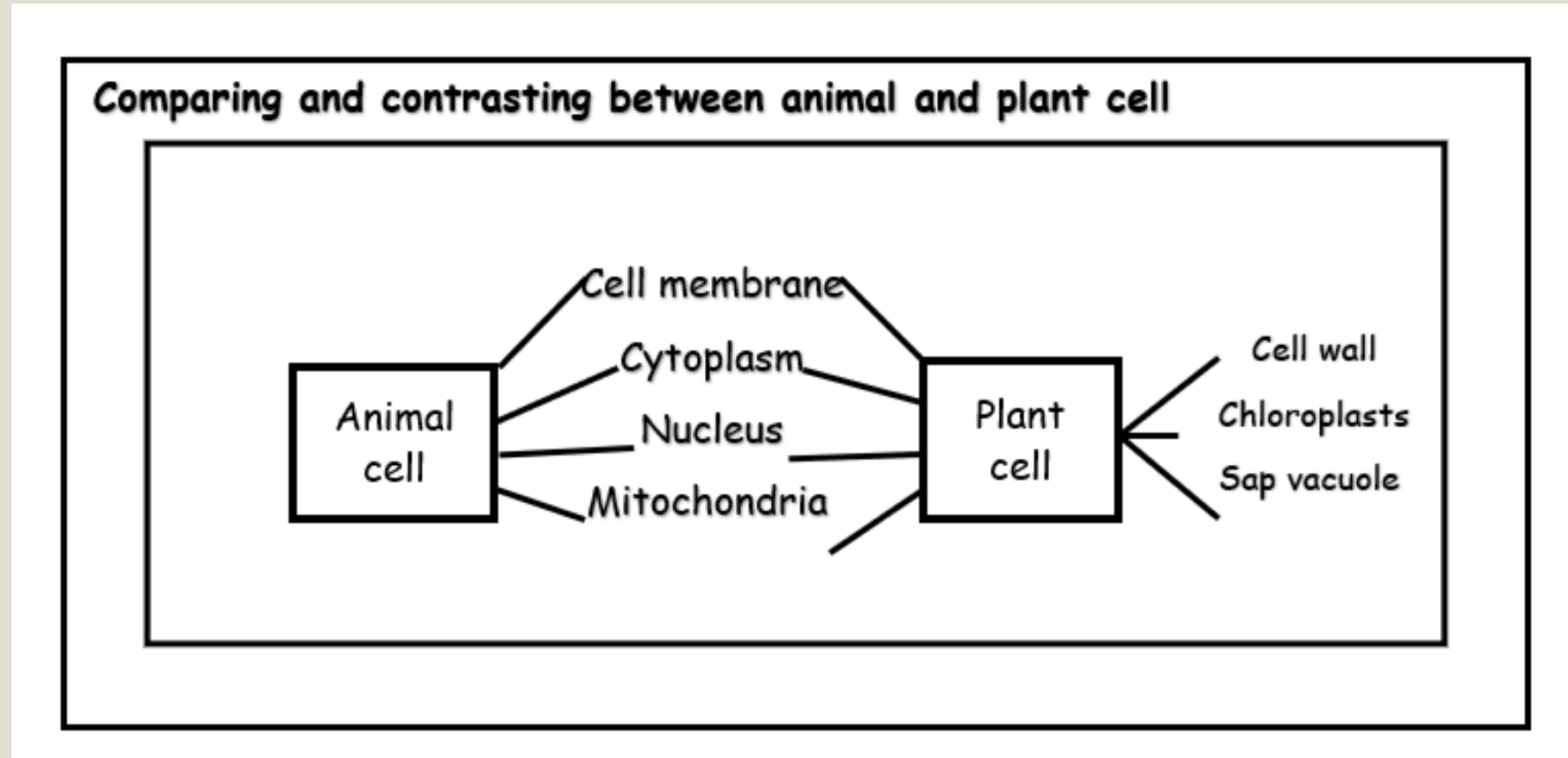
Cell wall	Cell membrane
A cell wall is on the outside of the cell	cell membrane is further in
made of cellulose, but a cell membrane is not.	Its not made of cellulose
Its strong and stiff,	Its flexible.
Its much thicker	Its like the thin skin of a soap bubble
helps to hold the plant cell in shape,	does not.
cell wall does not control what goes in and out the cell	control what goes in and out of the cell

Learner's book page 12

- Think like a scientist
- Looking at plant cells through a microscope

Q1) The onion cells are not green because they do not contain chloroplasts or chlorophyll.

Mind map



Learner's book page 15

- Questions

- **Q1)** A: plant cells; B: plant cells; C: animal cells.

A and B have cell walls and regular shapes,

C does not have cell walls and is irregular in shape.

Q2) 1-Remove the part of the model that represents the cell wall

2- Remove the parts representing chloroplasts.

3-Remove the part representing the sap vacuole

Learner's book page 19

Name cell	Function of the cell	Specialized structure	How this helps the cell to carry out its function
Red blood cell	Transports oxygen	1-has haemoglobin in its cytoplasm 2-is very small 3-has no nucleus	1-haemoglobin carries oxygen. 2-it can squeeze through tiny capillaries 3-more room for haemoglobin, so it can carry more oxygen
Neurone	Carries electrical signals from one part of the body to another	1-has a long axon 2-has dendrites	1-allows electrical signals to travel long distances very quickly 2-these pick up electrical signals from other nerve cells
Ciliated cell	Stops bacteria and dust getting into the lungs	has tiny, thread-like cilia along one edge	cilia wave in unison, sweeping mucus, in which bacteria and dust are trapped, away from the lungs

Learner's book page 19

◦ Questions

- **Q1)** Cell membrane, cytoplasm.
- **Q2)** They do not have cell walls or large sap vacuoles or Chloroplast .
- **Learner's book page 20**
- **Q3)** They are underground where they get no sunlight, so they cannot photosynthesis. There is therefore no need for them to have chloroplasts.
- **Q4)** Cell wall, cell membrane, cytoplasm.

Learner's book page 21

Name of cell	Function of cell	Specialised structure	How this helps the cell to carry out its function
Root hair cell	Absorbs water and mineral ions from the soil	has a long extension from one side	allows water to move easily from the soil into the cell
Palisade cell	Make food by photo-synthesis	has many chloroplasts containing chlorophyll	chlorophyll absorbs energy from sunlight which the plant uses to make food

Learner's book page 23

◦ Questions

- Q1) The ciliated epithelium tissue sweeps mucus, containing dust particles and bacteria, away from the lungs.
- Q2) **Everyday use:** She handed me a tissue to wipe my hands after lunch.
- **Scientific use:** Muscle tissue helps the body move by contracting and relaxing
- Q3) A group of similar cells is called a tissue.
- An organ is a structure made of many different tissues.
- An organ system is a group of organs that carry out a particular function
- . An organism is a living thing. It may contain many different organ systems, organs and tissues.

Learner's book page 26+27

Check your progress

1.1 a Ciliated cell

b Root hair cell

c Palisade cell

1.2 a A = cell membrane

B = cytoplasm

C = nucleus

D = mitochondrion

b It does not have a cell wall or a sap vacuole.

1.3 A: chloroplast, where photosynthesis takes place.

B: cell wall: holds the cell in shape.

1.4 a Neurone

b It transmits electrical impulses.

c It has a long axon that allows the impulses to travel long distances very quickly.

d Nervous system

1.5 a Tissue

b Organ

c Organ system

Learner's book page 148

- 4.1
 - a It can move. It feeds. It respire. It can sense changes in its environment.
 - b Any two of: it excretes, it reproduces, it grows.
- 4.2
 - A class arachnids
 - B class insects
 - C class insects
 - D class myriapods
 - E class crustacea

Learner's book page 148

- 4.3
- a -She did not find red-crowned and yellow-crowned parakeets making nests together which suggest that they do not reproduce with each other.
- b- She should check more pairs of parakeets in the wild.
- 4.4
- Look for the following points:
- There is a series of pairs of statements.
- Each pair of statements is a contrasting pair.
- There are no more than four pairs of statements.

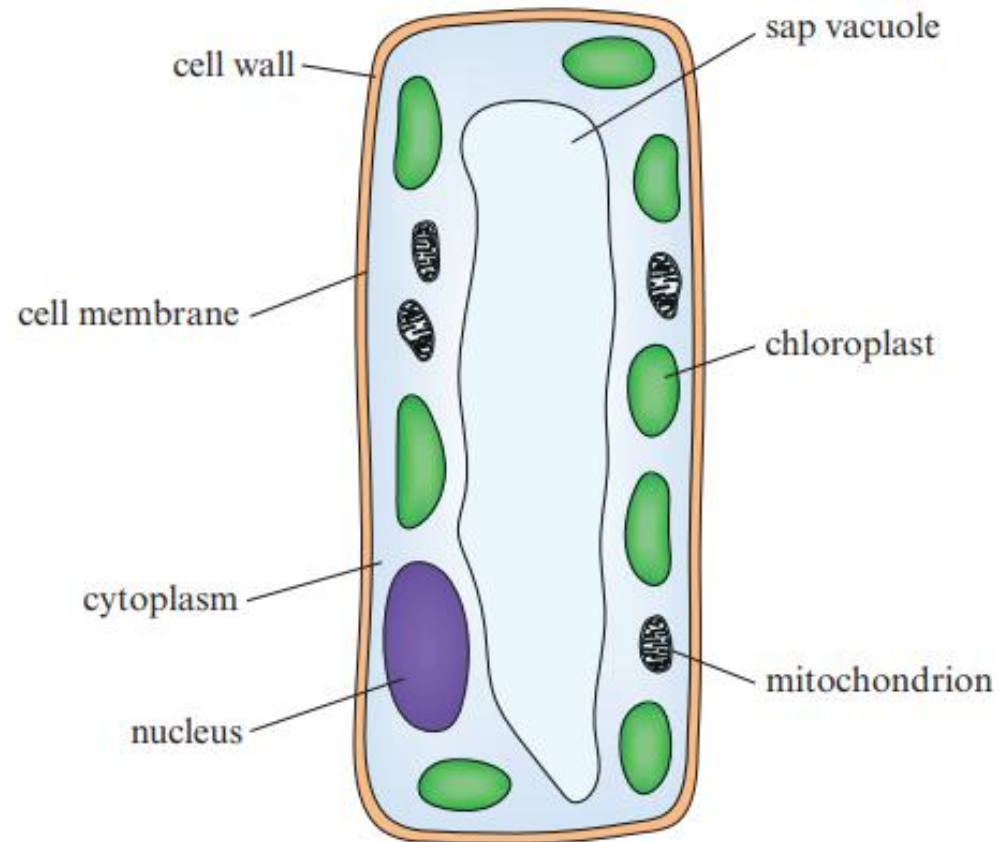


SCIENCE

**Answer key for
workbook**

Workbook page 1

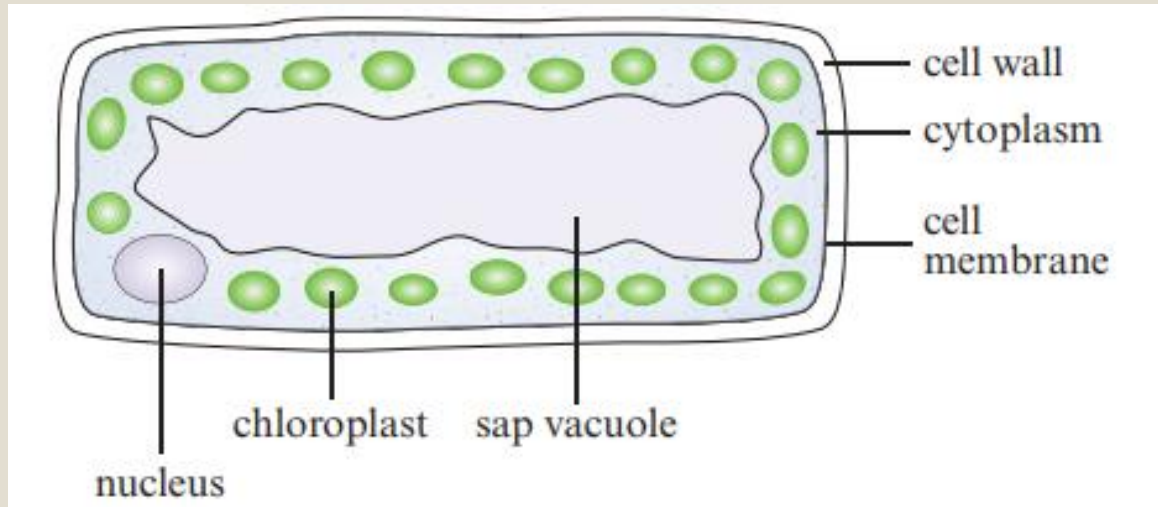
Exercise 1.1A Structure of a plant cell



Workbook page 3

- Q1) Use a ruler to draw the label lines.
- Make sure that each line connects the label to the part accurately

◦ Q2)



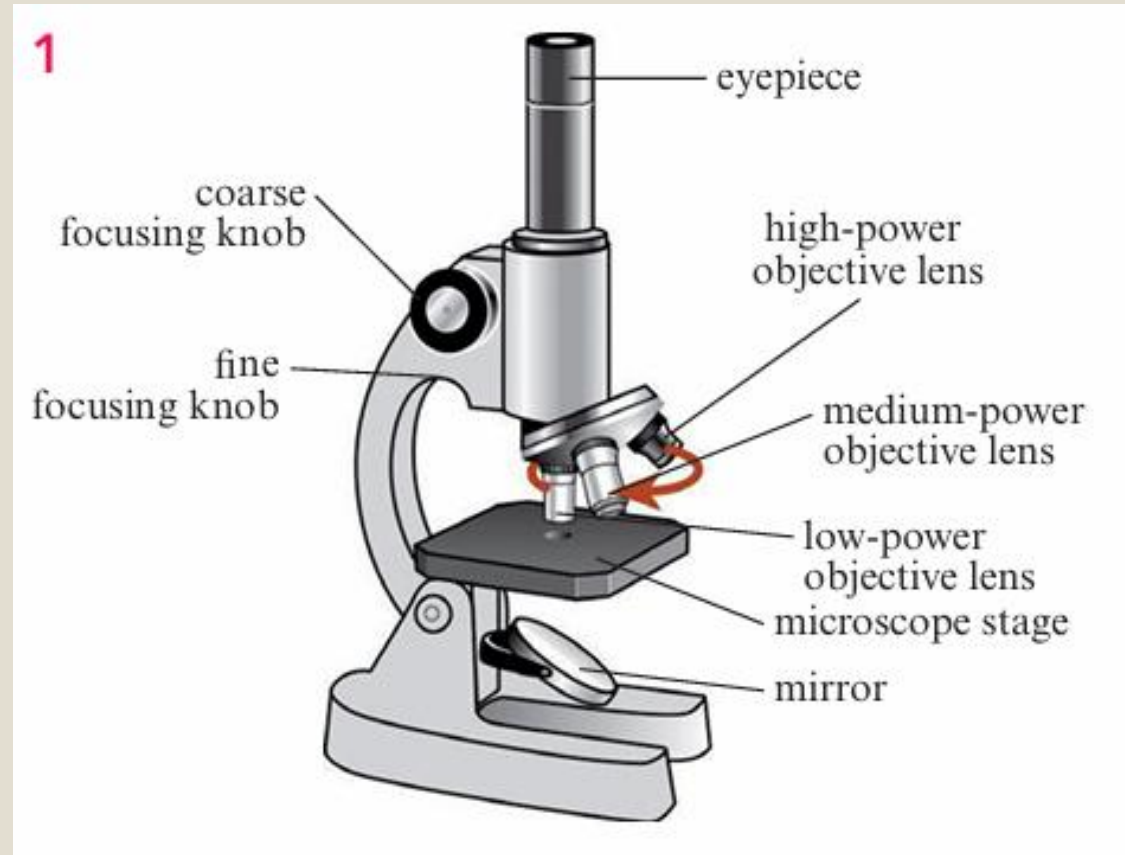
Workbook page 4

- **Exercise 1.1C Different plant cells**

- Q1) Plant cell A has chloroplasts, but plant cell B does not.
- Plant cell A is rectangular, but plant cell B is hexagonal.
- Plant cell A has a larger sap vacuole than plant cell B

- Q2)Plant cell A comes from a leaf. This is because it has chloroplasts, which contain chlorophyll that absorbs energy from light for photosynthesis. Photosynthesis takes place in leaves. Plant cells that are not in the light do not contain chloroplasts

Workbook page 5



Workbook page 6

- **Q2)** 1-She has not placed the part of the slide containing cells over the hole in the stage.
- 2- She has not focused the microscope correctly.
- 3- She has not adjusted the mirror so that light passes through the slide.

Workbook page 6

- **Q3)** 1-Use clean slides and covers slides.
- 2-adjust the light properly.
- 3- start with the lowest magnification.

Workbook page 7

- Q1) a- Red blood cells contain a substance called **haemoglobin**. This helps them to carry **oxygen** around the body.
- b- Red blood cells are smaller than most cells. This helps them to squeeze through the small blood vessels called **capillaries**.

Workbook page 8

- Q2) a- Root hair (cell)
- B- It has a cell wall and a large sap vacuole.
- c -Absorb water and mineral ions from the soil.
- D- It has a long extension that makes it easy for water to move into from the soil.

Workbook page 9

structure	Ciliated cell	Palisade cell
Cell wall		✓
Chloroplast		✓
Cilia	✓	
Nucleus	✓	✓
Cytoplasm	✓	✓
Cell membrane	✓	✓
Sap vacuole		✓

Workbook page 10

- Ciliated cells have many tiny cilia on one surface. These can wave in a ripple-like movement, which moves mucus over their surfaces. The mucus traps bacteria and dust, and the cilia sweep this away from the lungs.
- Palisade cells have many chloroplasts. This is where photosynthesis happens, so palisade cells are adapted to carry out photosynthesis and make food for the plant

Workbook page 11

Exercise 1.4A Identifying cells, tissues, organs and organ systems

Words

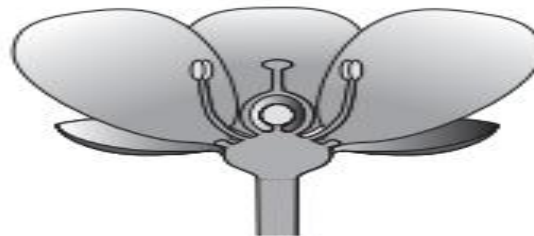
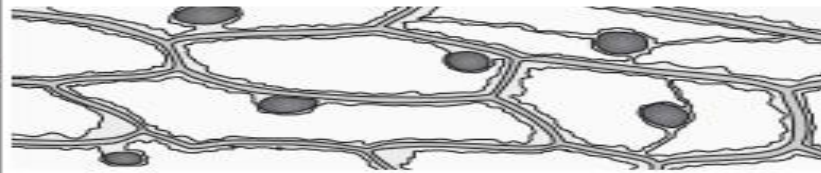
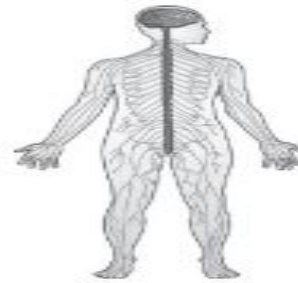
cell

tissue

organ

organ
system

Diagrams



Workbook page 72+73

- Exercise 4.1B Characteristics of living organisms
- 1 Sensitivity
- 2 Respiration
- 3 Movement
- 4 Excretion
- 5 Nutrition
- 6 Reproduction
- 7 Growth

Workbook page 73

- Not all living things show these characteristics all of the time
- an elephant, for example, is alive but does not reproduce all the time
- apples do not show sensitivity (but they are respiring, and they contain seeds that will grow into a complete living thing)
- seeds do not move (but will eventually grow into a plant that can move parts of its body).

Workbook page 74+75

- Q1) Viruses are very **small**. Viruses are not made **of cells**. Viruses can only **replicate** when they are inside a living cell.
- Q2) a -They can replicate.
- b -They can only replicate inside a living cell and they are unable to carry out any of the other characteristics of living organisms

Workbook page 76

White rhinoceroses and Indian rhinoceroses belong to different **species**. This means that they cannot **reproduce** with each other to produce **fertile** offspring.

White rhinoceroses and Indian rhinoceroses do not look **exactly** the same as one another. Indian rhinoceroses have one **horn** but white rhinoceroses have two **horns**

Workbook page 81+82+83+84

- **Exercise 4.4A Using a key to identify a fruit**

- Fruit B is sycamore.

- **Exercise 4.4B Using a key to identify four fish**

- 1) a-1a

- b -Basking shark (its eye is above the front end of its mouth)

- 2)a-1b

- b -Sea bream (it has short spines on its top fin).

- 3) Greenland shark

- 4)1a , 2b

Workbook page 85+86

- **Exercise 4.4C Using a key to identify tree species, using their leaves**
- 1) Leaf A is hazel
- 2) 1b, 2a, 3b
- 3) Leaf B: 1a, rowan
- Leaf C: 1b, 2a, 3a, 4b, cherry Leaf
- D: 1b, 2a, 3a, 4a, willow
- Leaf E: 1b, 2b, maple

Workbook page 87

- **Topic 4.5 Writing keys Exercise**
- **4.5 Making a key to identify plant species from their leaves**

1-Shape – one whole shape, or divided into three parts, or with several ‘fingers’.

2- Edge (the proper biological term is the margin) – smooth or jagged.

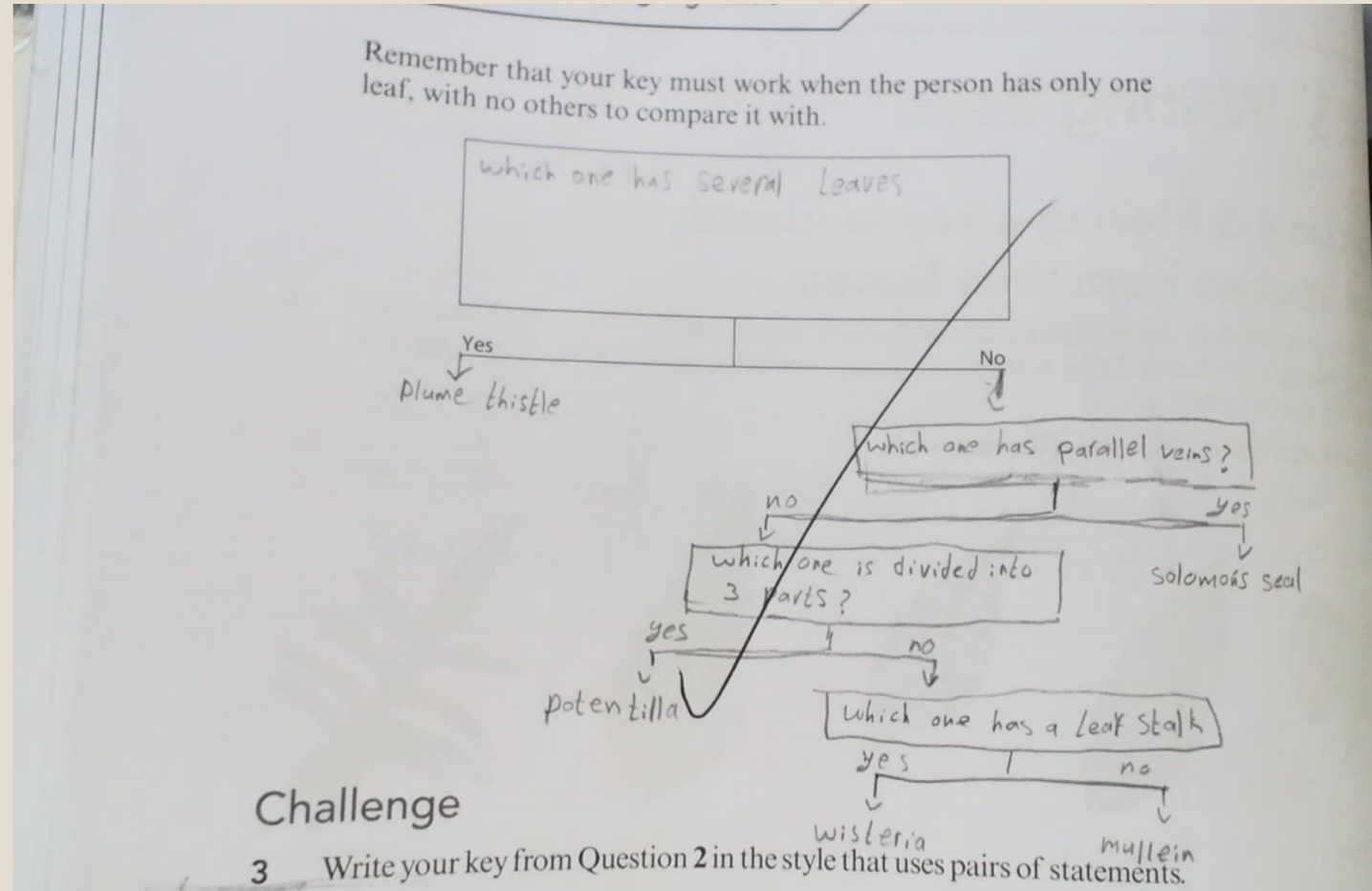
3-Veins – form a network, or run parallel to the midrib.

4-Texture – smooth or rough.

5-Stalk – some have a leaf stalk and some do not.

6-Size – some are larger than others

Workbook page 88



Workbook page 88

1a-which one has several leaves....Plume thistle
B-which one doesn't have several leaves Go to 2

2a-Does it have long stalkWisteria
B-Which one doesn't have long stalkGo to 3

3a-Does it have parallel veins.....Solomon's seal
B-Doesn't have parallel veinsGo to 4

4a-Does it have rough edgesPotentilla
B-Doesn't have rough edgesMullein

Challenge

3 Write your key from Question 2 in the style that uses pairs of statements.

1a which one has several leaves --- plume thistle

b- which one has one leaf --- Go to 2

2a- which one has parallel veins --- Solomon's Seal

b- which one is not parallel veins --- Go to 3

3a- which one is divided into 3 parts --- potentilla

b- which one is not divided into 3 parts --- Go to 4

4a- which one has a leaf stalk --- wisteria

b- which one doesn't have a leaf stalk --- mullein