Fungi and decomposition

Science, grade 6 - by Claude Opus 5.5 - status: written (unreviewed)

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Grade 6 Science — Fungi and decomposition

> **Unreviewed AI draft.** Written by Claude Opus 5.5 (an AI agent) on 2026-11-04. No teacher has checked it yet. Read it fully, adapt it to your class and local rules, and test any practical work yourself before using it with students.

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Big idea

Fungi are a separate kingdom of living things — not plants, not animals. Most of them feed by releasing digestive chemicals onto dead or living material and absorbing what dissolves. That habit makes them some of the world's main decomposers, returning nutrients to the soil, and it also explains why people use them (bread, medicine) and fear some of them (food spoilage, crop disease, poisonous mushrooms).

Outcomes

By the end of the unit, students can:

1. Give three ways fungi differ from plants (no photosynthesis; cell walls made of chitin, not cellulose; feed by absorbing food).
2. Name and recognise the three everyday forms of fungi: yeasts, moulds, mushrooms — and explain that a mushroom is only the reproductive part of a larger hidden network (mycelium).
3. Explain, using a simple diagram, how decomposers return nutrients from dead material to soil and then to plants.
4. Plan a fair test that changes one variable, keeps others the same, and records observations over several days.
5. Describe evidence that yeast is alive and produces a gas (carbon dioxide) when given sugar.
6. Give two ways fungi help people and two ways they harm people or crops.

Prior knowledge

- Living things need food and energy; plants make their own food using light.
- Basic idea of a food chain.
- Using a ruler and recording a table.

Lessons (about 50 minutes each)

#	Lesson	Practical?
1	What is a fungus?	Observation (shop mushrooms, hand lens)
2	Decomposers and the nutrient cycle	Leaf-litter observation
3	Mould on bread: a fair test	Set up sealed bags; observe for about 7 days
4	Yeast is alive: the balloon test	Yeast, sugar, warm water, balloons
5	Fungi and people + unit check	Discussion and written assessment

Lesson 3 needs follow-up of about 5 minutes on several later days to record the bags. You can run Lessons 4 and 5 during that week.

Materials (whole unit)

- Shop-bought mushrooms (e.g. button mushrooms), one per group; plastic knives; hand lenses; paper towels
- Trays or paper plates; a bag of leaf litter collected by the teacher from a garden or park (or a school compost heap)
- Bread without preservatives if possible (preservatives slow mould), water spray bottle, zip-seal plastic bags, sticky tape, permanent marker
- Dried baker's yeast (one 7 g sachet per group is plenty), sugar, warm (not hot) water about 35–40 °C, small plastic bottles (about 500 ml), balloons, funnel, measuring spoons, string or tape measure
- Student record sheets (tables are given in each lesson)

Assessment

- Ongoing: closing check questions at the end of each lesson (answers included).
- Lesson 3: the bread-mould record table and conclusion are a practical skills task.
- Lesson 5: a 10-question unit check with an answer guide and simple marking notes.

Sources

These are general references that a teacher can use to check facts. Links were checked to load on 2026-11-04.

- Wikipedia, "Fungus": https://en.wikipedia.org/wiki/Fungus
- Wikipedia, "Hypha": https://en.wikipedia.org/wiki/Hypha
- Wikipedia, "Mycelium": https://en.wikipedia.org/wiki/Mycelium
- Wikipedia, "Chitin": https://en.wikipedia.org/wiki/Chitin
- Wikipedia, "Decomposer": https://en.wikipedia.org/wiki/Decomposer
- Wikipedia, "Nutrient cycle": https://en.wikipedia.org/wiki/Nutrient_cycle
- Wikipedia, "Saccharomyces cerevisiae" (baker's yeast): https://en.wikipedia.org/wiki/Saccharomyces_cerevisiae
- Wikipedia, "Cellular respiration": https://en.wikipedia.org/wiki/Cellular_respiration
- Wikipedia, "Penicillin": https://en.wikipedia.org/wiki/Penicillin
- Wikipedia, "Alexander Fleming": https://en.wikipedia.org/wiki/Alexander_Fleming
- Wikipedia, "Mycorrhiza": https://en.wikipedia.org/wiki/Mycorrhiza
- Wikipedia, "Mushroom poisoning": https://en.wikipedia.org/wiki/Mushroom_poisoning
- Wikipedia, "Amanita phalloides" (death cap): https://en.wikipedia.org/wiki/Amanita_phalloides

A teacher should prefer their national curriculum documents and school science-safety guidance where these exist.

Known gaps and cautions

- **Simplifications (labelled for teachers):** "Fungi absorb their food" is true of nearly all fungi but hides variety. The yeast balloon test is mostly fermentation (respiration without much oxygen), which makes carbon dioxide and a little alcohol; at grade 6 we call it

"respiration" and mention the distinction only in teacher notes. "Kingdom" is used as a simple grouping; modern classification is more complicated.

- **Safety:** mould spores can trigger allergies and asthma. The bread bags stay sealed for the whole experiment and are thrown away sealed. Students never pick or taste wild mushrooms or fungi — some deadly species look like edible ones. An adult prepares the warm water. Check for yeast, wheat/gluten and mushroom allergies before practical lessons.
- Not aligned to any official standard yet. Times are estimates.
- No images are included; teachers will want photos or real specimens of mushrooms, bracket fungi and mould.

Lesson 1: What is a fungus?

Time: 50 minutes

Unit overview · Next: Lesson 2

Goal

Students can give three ways fungi differ from plants and name the three everyday forms of fungi (outcomes 1 and 2).

Materials

- One shop-bought button mushroom per group of 3–4, on a paper towel; plastic knife; hand lens
- Board or slide with three pictures: a loaf of bread rising (yeast), a mouldy orange (mould), a toadstool in a forest (mushroom)
- Optional: a slice of old mouldy bread sealed inside a clear zip bag and taped shut, for looking at only

Steps

1. **Opening (5 min).** Hold up a mushroom. Ask: "Is this a plant? Vote with your hands." Write the vote on the board and say we will vote again at the end.

2. **Main activity (30 min).**

3. Look closely (12 min). Groups cut their mushroom from top to bottom and use the hand lens. They draw it and label: **cap**, **stem (stalk)**, **gills** under the cap. Ask them to look for anything green (there is none) and for roots (there are none — any white threads at the base are hyphae).
4. Teacher explains (8 min). Fungi are their own kingdom of life. Key points, written on the board:
    - Fungi have **no chlorophyll**, so they cannot make food from light.
    - They **feed by absorbing**: they release digestive chemicals (enzymes) onto food outside their body, then soak up the dissolved food.
    - Their bodies are made of tiny threads called **hyphae**. A big tangled network of hyphae is a **mycelium**, usually hidden in soil, wood or food.
    - Their cell walls are made of **chitin** — the same tough material found in insect shells — not cellulose like plants.
    - A mushroom is only the **fruiting body**: the part that makes and releases **spores** (like seeds, but a single cell). Most of the fungus is the mycelium underground.

5. Three forms (10 min). Show the three pictures. Students copy and complete this table:

Form	What it looks like	Example
Yeast	Single cells, too small to see one alone	Baker's yeast that makes bread rise
Mould	Fuzzy threads on food	Green-blue mould on old bread or oranges

Form	What it looks like	Example
Mushroom	Fruiting body above ground	Button mushroom, toadstool, bracket fungus on a tree

6. **Discussion questions (10 min).**
7. "Why can a mushroom grow in a dark cupboard but a bean plant can't?" — Example answer: the mushroom doesn't use light to make food; it absorbs food from what it grows on. The bean plant needs light for photosynthesis.
8. "If you pick a mushroom, have you killed the fungus?" — Example answer: usually not; the mycelium underground is still alive, like picking an apple doesn't kill the tree.
9. "Why do you think fungi grow on dead logs and old food?" — Example answer: that is their food; they digest it and absorb it.
10. **Closing check (5 min).** Vote again: plant or not? Then:
11. Q1. Give two differences between fungi and plants. — Any two: no chlorophyll/can't photosynthesise; absorb food; chitin walls (not cellulose); made of hyphae; reproduce by spores (plants also can, e.g. ferns, so accept this only alongside another difference).
12. Q2. What is the name of the network of threads that makes up most of a fungus? — Mycelium (threads = hyphae).

Vocabulary

- fungus (plural fungi): a living thing that is not a plant or animal and feeds by absorbing food
- hypha (plural hyphae): one tiny thread of a fungus
- mycelium: the network of hyphae that makes up most of a fungus
- spore: a tiny cell a fungus releases to make a new fungus
- chitin: a tough material in fungus cell walls (also in insect shells)
- fruiting body: the part that makes spores, e.g. a mushroom

Differentiation

- Extra support: give a pre-drawn mushroom outline to label; give the table with the "Example" column filled in.
- Extra challenge: fungi are more closely related to animals than to plants. Ask students to list ways a fungus is like an animal (doesn't photosynthesise, eats other things, has chitin like insects) and ways it is not (doesn't move, has cell walls).

⚠ Safety

- Use shop-bought mushrooms only. No one eats anything in this lesson. Wash hands afterwards.
- Never pick or taste wild mushrooms. Some deadly species (such as the death cap) look similar to edible ones, and even experts use careful identification.
- The mouldy-bread bag, if used, stays sealed and is thrown away sealed.
- Ask about mushroom allergies beforehand.

Teacher notes

- Misconception: "Mushrooms are plants because they grow in the ground and don't move." Answer: so do many things; what matters is how they get food and what they are made of.
- Misconception: "Mould is dirt." Answer: mould is a living fungus growing on the food.
- Misconception: "Spores are seeds." Answer: similar job, but a spore is a single cell with no stored food and no baby plant inside.
- Simplification: "kingdom" is a useful grouping for this age; modern biology classifies living things by relatedness in a more complicated tree.

Lesson 2: Decomposers and the nutrient cycle

Time: 50 minutes

Unit overview · Previous: Lesson 1 · Next: Lesson 3

Goal

Students can explain, with a diagram, how decomposers return nutrients from dead material to the soil and to plants (outcome 3).

Materials

- A bag of leaf litter collected by the teacher (top layer of fallen leaves and the darker, crumbly layer underneath), from a garden, park or compost heap
- Trays or paper plates, plastic spoons, hand lenses, disposable gloves
- Sorting sheet with three columns: "Fresh leaves", "Partly broken down", "Crumbly soil-like"

Steps

1. **Opening (5 min).** Ask: "Every autumn, trees drop millions of leaves. Why aren't forests buried metres deep in old leaves?" Collect ideas without correcting yet.

2. **Main activity (30 min).**

3. Leaf-litter sort (15 min). Each group gets a spoonful-sized pile of litter on a tray. Wearing gloves, they sort pieces into the three columns. With the hand lens, they look for: white or yellow threads (fungal hyphae), small animals (woodlice, worms, mites), holes and skeleton-like leaves where only the veins remain. They record what they find in words and sketches.
4. Teacher explains (10 min). Draw the cycle on the board as a loop:
    1. A plant takes **nutrients** (such as nitrogen and phosphorus) from the soil and grows.
    2. The plant (or an animal that ate it) dies, or drops leaves.
    3. **Decomposers** — mainly fungi and bacteria — digest the dead material. Small animals like worms and woodlice help by breaking it into smaller pieces (they are often called detritivores).
    4. Digestion releases the nutrients back into the soil.
    5. New plants take them up. The loop starts again. Explain that fungi are especially good at breaking down tough wood and leaves, which many other living things cannot digest.

5. Students draw (5 min). Each student draws the cycle with at least five labelled arrows.

6. **Discussion questions (10 min).**

7. "Back to the opening question: why aren't forests buried in leaves?" — Example answer: fungi, bacteria and small animals break the leaves down into soil every year.
8. "What would happen to a forest if all the decomposers disappeared?" — Example answer: dead material would pile up; nutrients would stay locked inside it; the soil would run out of nutrients and new plants would struggle to grow.

9. "Which column had the most fungal threads, and why?" — Example answer: usually the partly broken down layer, because fungi are actively digesting it there. (Accept any answer backed by what the group saw.)

10. **Closing check (5 min).**

11. Q1. What is a decomposer? — A living thing that breaks down dead material and returns nutrients to the soil (e.g. fungi, bacteria).
12. Q2. Put in order: plant grows / leaf falls / fungi digest leaf / nutrients in soil. — Plant grows → leaf falls → fungi digest leaf → nutrients in soil → (plant grows again).

Vocabulary

- decomposer: a living thing that breaks down dead material, e.g. fungi and bacteria
- detritivore: a small animal that eats dead material, e.g. worm, woodlouse
- nutrient: a substance living things need to grow, e.g. nitrogen
- leaf litter: the layer of fallen leaves and bits on the ground

Differentiation

- Extra support: provide the cycle diagram with blank labels and a word bank.
- Extra challenge: add the Sun and photosynthesis to the diagram, showing that energy flows through (and leaves as heat) while nutrients go round in a cycle.

⚠ Safety

- Teacher collects the litter beforehand from a place without dog waste, broken glass or sprayed chemicals.
- Gloves on; no hands near faces; wash hands afterwards. Return small animals outside after the lesson.
- Students with asthma or mould allergy should be told in advance; keep the room ventilated and don't shake the litter.

Teacher notes

- Misconception: "Things rot because they get old." Answer: rotting is done by living decomposers. Without them (e.g. in very cold, dry or airless places) things last a very long time.
- Misconception: "Decomposers are bad/dirty." Answer: without them, ecosystems would stop working.
- Misconception: "Plants eat soil." Answer: plants take small amounts of dissolved nutrients and water from soil; most of their body mass comes from carbon dioxide in the air, via photosynthesis.
- Simplification: we show one tidy loop; real nutrient cycles have many branches.

Lesson 3: Mould on bread — a fair test

Time: 50 minutes to set up, then about 5 minutes on 4–5 later days to observe

Unit overview · Previous: Lesson 2 · Next: Lesson 4

Goal

Students plan and run a fair test that changes one variable, keeps others the same, and records observations over several days (outcome 4).

Materials (per group)

- 2 slices of the same bread, from the same loaf (bread without preservatives grows mould faster; note the type used)
- 2 zip-seal plastic bags, clear sticky tape, permanent marker
- Water spray bottle (or a teaspoon of water)
- A ruler or a clear grid sheet with 1 cm squares to lay over the bag
- Record sheet (table below)
- Shared places with different conditions: a warm spot (e.g. on a shelf in the classroom) and a cold spot (a fridge with no food in it, or bags inside a second sealed container - see Safety)

Steps

1. **Opening (5 min).** Ask: "Why do we keep bread in a bag, and why does it go mouldy faster in summer?" Collect ideas. Tell students that mould grows from spores already floating in the air and sitting on the bread — we don't need to add any.

2. **Main activity (30 min).**

3. Choose one question (8 min). Each group chooses ONE of these to test:
    - A. Does moisture affect how fast mould grows? (dry slice vs. slice sprayed with 5 sprays of water)
    - B. Does temperature affect how fast mould grows? (warm shelf vs. fridge; both slices sprayed the same)
4. Plan a fair test (10 min). Students fill in:
    - The one thing we change (independent variable): _____
    - What we measure (dependent variable): how much of the slice is covered with mould
    - Things we keep the same (control variables): at least three, e.g. same bread, same size slice, same type of bag, same amount of water (in B), same light, same days
    - Prediction: "I think ____ will grow mould faster because ____."

5. Set up (12 min). Spray/prepare slices as planned. Place each slice in its own bag, squeeze out most air, seal the zip and **tape it shut**. Label each bag with group name, condition and date. Put bags in their places. **Bags are never opened again.**

6. **Discussion questions (10 min).**

7. "Why do we test only one thing at a time?" — Example answer: if we change two things and one slice gets mouldier, we can't tell which change caused it.

8. "Why do we use bread from the same loaf?" — Example answer: different breads have different ingredients and preservatives, which could change the result; keeping it the same keeps the test fair.

9. "How could we make our result more trustworthy?" — Example answer: repeat with more slices for each condition and compare; other groups doing the same test also helps.

10. **Closing check (5 min).**

11. Q1. In test B, what is the independent variable? — Temperature (warm vs. cold).
12. Q2. Name two control variables. — Any two: same bread/loaf, same slice size, same water, same bag type, same light, same time.

Observation days (about 5 minutes each, e.g. days 2, 3, 5, 7)

Without opening the bags, students lay the 1 cm grid over each bag and count squares that are at least half covered by mould. They also note colours (white, green, blue-green, black) and smell is **not** tested.

Day	Condition 1: squares with mould	Colours seen	Condition 2: squares with mould	Colours seen
0	0	—	0	—
2				
3				
5				
7				

Conclusion (final observation day, 15 min)

Students draw a simple line graph (day on the bottom axis, squares with mould on the side axis, one line per condition) and write:

- "The ____ slice grew mould faster. This supports / does not support my prediction."
- "One reason this might happen is ____."
- "One way our test might not have been fair is ____."

Expected results (for the teacher): moist, warm bread usually grows visible mould within about 3–7 days; dry bread and bread in a fridge grow it much more slowly. Results vary a lot with bread type and room temperature, and no-growth results are still valid data — use them to discuss.

Vocabulary

- variable: anything that can change in an experiment
- independent variable: the one thing we choose to change
- dependent variable: what we measure
- control variables: things we keep the same to make the test fair
- prediction: what we think will happen and why

Differentiation

- Extra support: give the plan with the control variables partly filled in; let students count squares with a partner.
- Extra challenge: test three levels (dry / 3 sprays / 6 sprays) or add a third location (dark cupboard) and explain whether light matters.

⚠ Safety

- **Bags stay sealed and taped for the whole experiment and are thrown away sealed** in the general rubbish (put inside a second bag). Mould spores can trigger allergies and asthma; opening the bags releases them.
- Students with mould allergy or asthma record data from photos of the bags (taken by the teacher or a classmate) instead of handling or sitting near the bags.
- Don't put bags with mould in a fridge that holds food unless it is a dedicated fridge or the bags are inside a second sealed container; check your school's rules.
- Wash hands after handling the bags.

Teacher notes

- Misconception: "The mould came from inside the bread / was created by the water." Answer: spores were already on the bread and in the air; water and warmth let them grow.
- Misconception: "Just scrape off the mould and the rest is fine." Answer: hyphae grow through the food, beyond what you can see; general advice is to throw mouldy bread away.
- Many groups will forget that a fridge is also dark. Use this to discuss a hidden second variable — a great learning moment.
- Simplification: counting covered squares is a rough measure; that's fine for this age and worth discussing as a limitation.

Lesson 4: Yeast is alive — the balloon test

Time: 50 minutes

Unit overview · Previous: Lesson 3 · Next: Lesson 5

Goal

Students describe evidence that yeast is alive and produces a gas (carbon dioxide) when it has sugar (outcome 5).

Materials (per group)

- 2 small clean plastic bottles (about 500 ml), labelled A and B
- 2 balloons (stretch them a few times first so they inflate easily)
- 1 sachet (7 g) dried baker's yeast, split into two equal halves
- 2 teaspoons of sugar
- Warm water at about 35–40 °C (comfortably warm to touch, not hot) — **prepared by an adult**
- Funnel, measuring jug, teaspoon, string and ruler (or tape measure)
- Optional for the class demo: a slice of bread to show the holes made by gas

Steps

1. **Opening (5 min).** Show a slice of bread and ask: "Where do the holes in bread come from?" Then show the dry yeast: "This is a fungus. Is it alive? How could we find out?"

2. **Main activity (30 min).**

3. Set up (10 min). In both bottles, use the funnel to put half the yeast and 100 ml warm water. In bottle A **only**, add 2 teaspoons of sugar. Swirl gently. Stretch a balloon over each bottle's neck. Bottle B (no sugar) is the **control**.
4. Predict (3 min). Students write which balloon will inflate more and why.

5. Observe (15 min). Every 5 minutes, measure around the widest part of each balloon with string and ruler, and note bubbles or foam in the bottle. Record in a table:

Time (min)	A (sugar): balloon size (cm)	A: bubbles?	B (no sugar): balloon size (cm)	B: bubbles?
0				
5				
10				
15				

6. Teacher explains (2 min). Yeast cells use sugar as food to release energy. One waste product is a gas, **carbon dioxide**, which fills the balloon. In bread dough, the same gas makes bubbles that become the holes. Using food to release energy is something all living things do.

Expected result (for the teacher): bottle A foams and its balloon usually starts to inflate within 10–20 minutes; bottle B changes little. If the room is cold or the water was too hot, results may be slow — keep the bottles somewhere warm and check again at the end of the lesson.

1. **Discussion questions (10 min).**
2. "What is the evidence that yeast is alive?" — Example answer: it used food (sugar) and produced a gas; dead things don't do that. With no sugar, little happened.
3. "Why did we have bottle B?" — Example answer: to show that the sugar made the difference, not just the water or the yeast on its own.
4. "What might happen if we used boiling water?" — Example answer: it would kill the yeast, so no gas would be made. (Teacher can demonstrate this safely as an extension.)
5. **Closing check (5 min).**
6. Q1. What gas filled the balloon? — Carbon dioxide.
7. Q2. What does yeast use as food in this test? — Sugar.
8. Q3. How does this explain the holes in bread? — Yeast in the dough makes carbon dioxide bubbles, which get trapped and leave holes when the bread is baked.

Vocabulary

- yeast: a fungus made of single cells, used in baking
- carbon dioxide: a gas made when living things use food for energy
- control: the part of an experiment where we leave out the thing being tested, so we can compare
- respiration: the process of using food to release energy (not the same as breathing)

Differentiation

- Extra support: pre-labelled bottles; a results table with time already filled in; sentence starters ("Balloon A got bigger because…").
- Extra challenge: plan a follow-up test: does the amount of sugar, or the water temperature, change how fast the balloon inflates? Identify the variables.

⚠ Safety

- An adult prepares and pours the warm water; it must not be hot enough to scald (aim for 35–40 °C).
- Check for yeast allergy. Nothing is tasted. Bottles can be emptied down a sink with running water afterwards; wash hands.
- Balloons: check for latex allergy and use latex-free balloons if needed.
- Bottles must have the balloon only on top — never seal a bottle with a cap during this experiment, because gas pressure builds up.

Teacher notes

- Misconception: "Respiration means breathing." Answer: breathing moves air in and out of lungs; respiration is the chemical process in cells that releases energy from food. Yeast respires but has no lungs.

- Misconception: "The sugar fizzed like a fizzy drink." Answer: sugar in water without yeast doesn't produce gas — add a third bottle with sugar and water only, no yeast, if students raise this.
- Simplification: in a balloon-sealed bottle, yeast mostly carries out **fermentation** (respiration with little oxygen), which makes carbon dioxide and a small amount of alcohol. At this level calling it respiration is fine; older students can learn the difference.

Lesson 5: Fungi and people + unit check

Time: 50 minutes (25 min lesson, 25 min unit check)

Unit overview · Previous: Lesson 4

Goal

Students give two ways fungi help people and two ways they harm people or crops (outcome 6), then show what they have learned across the unit.

Materials

- Six "fungus fact cards" (text below), printed, one set per group
- A large two-column sheet per group: "Helpful" / "Harmful"
- Unit check, one copy per student

Steps

1. **Opening (3 min).** Ask: "Are fungi our friends or our enemies?" Quick show of hands.
2. **Main activity (15 min).** Groups read the six cards and sort them into Helpful / Harmful (some can go in both). Then each group writes one sentence per card on why.
3. **Card 1 — Bread and food.** Baker's yeast makes bread rise. Fungi are also used to make soy sauce, some cheeses (the blue veins in blue cheese are a mould) and other foods.
4. **Card 2 — Penicillin.** In 1928, the scientist Alexander Fleming noticed that a mould growing on one of his dishes had stopped bacteria growing around it. The substance it made, penicillin, became one of the first antibiotics — medicines that kill bacteria — and has saved a very large number of lives.
5. **Card 3 — Mycorrhizae (my-co-RYE-zee).** The hyphae of many fungi join with plant roots. The fungus helps the plant take up water and nutrients such as phosphorus; the plant gives the fungus sugars it made by photosynthesis. Most land plants have partnerships like this.
6. **Card 4 — Crop and tree diseases.** Some fungi attack living plants. Rusts and mildews damage crops such as wheat; fungal diseases have killed huge numbers of trees in some countries.
7. **Card 5 — Food spoilage.** Moulds grow on bread, fruit and other food, making it unsafe or unpleasant to eat. Some moulds produce poisons.
8. **Card 6 — Poisonous mushrooms.** A few wild mushrooms are deadly. The death cap can look like edible mushrooms and causes many of the world's deaths from mushroom poisoning. This is why nobody should eat a wild mushroom unless an expert has identified it — and even then, many people simply don't.
9. **Discussion questions (5 min).**
10. "Which card surprised you most?" — Any answer with a reason.

11. "Is one fungus 'good' or 'bad'?" — Example answer: it depends on where it is. Mould on bread is a problem in the kitchen, but the same kind of fungus breaking down fallen leaves in a forest is useful.

12. **Closing check (2 min).**

13. Q1. Name one medicine that came from a fungus. — Penicillin.
14. Q2. How does a mycorrhizal fungus help a plant? — It helps the plant take up water and nutrients (and gets sugar in return).

✓ Unit check (25 min)

1. Give **two** ways a fungus is different from a plant. (2 marks)
2. What is a mycelium? (1 mark)
3. A mushroom is the _____ body of a fungus; it releases _____. (2 marks)
4. Name the three everyday forms of fungi and give one example of each. (3 marks)
5. Explain what decomposers do and why forests need them. (2 marks)
6. Draw a nutrient cycle with at least four labelled stages, including decomposers. (3 marks)
7. Ali tests whether bread goes mouldy faster in a warm place or in a fridge. He puts white bread in the warm place and brown bread in the fridge. Is this a fair test? Explain. (2 marks)
8. In the balloon test, bottle A (yeast, sugar, warm water) blew up its balloon and bottle B (yeast, warm water, no sugar) did not. What does this show? (2 marks)
9. Give one way fungi help people and one way fungi harm people or crops. (2 marks)
10. Your friend finds a mushroom in the park that looks like the ones in the shop and wants to cook it. What would you say, and why? (1 mark)

Total: 20 marks.

Answer guide

1. Any two of: cannot photosynthesise / no chlorophyll; feed by absorbing food (digest outside the body); cell walls made of chitin, not cellulose; body made of hyphae. (1 each)
2. A network of fungal threads (hyphae), usually hidden in soil, wood or food. (1)
3. Fruiting (1); spores (1).
4. Yeast — e.g. baker's yeast; mould — e.g. mould on bread/oranges; mushroom — e.g. button mushroom, toadstool, bracket fungus. (1 per correct form with example)
5. They break down dead material (1) and return nutrients to the soil so new plants can grow; without them dead material would pile up and soil would lose nutrients (1).
6. Award up to 3: plant grows using nutrients from soil; plant/leaf dies or falls; decomposers (fungi/bacteria) break it down; nutrients return to soil. Arrows must form a loop for full marks.
7. No (1). He changed two things — temperature and type of bread — so he can't tell which caused any difference; he should use the same bread in both places (1).
8. Yeast needs sugar (food) to produce gas (1); the gas (carbon dioxide) is evidence yeast is alive / respiring (1).
9. Help: e.g. bread, penicillin, decomposition, mycorrhizae (1). Harm: e.g. food spoilage, crop/tree disease, poisonous mushrooms, allergies (1).
10. Don't eat it — some poisonous mushrooms look like edible ones and can be deadly; only experts can identify them safely (1).

Marking notes: accept clear answers in the student's own words. For question 6, a clear drawing with labels is better than a neat one.

Vocabulary

- antibiotic: a medicine that kills bacteria
- mycorrhiza (plural mycorrhizae): a partnership between a fungus and plant roots
- spoilage: food going bad
- poisonous: can harm or kill if eaten

Differentiation

- Extra support: read the cards aloud; allow the unit check to be answered orally or with a word bank (hyphae, spores, fruiting, decomposer, carbon dioxide, sugar, chitin).
- Extra challenge: research one more fungus (e.g. the fungus used to make a meat substitute, or a fungus that grows on insects) and add a seventh card.

⚠ Safety

- No specimens handled in this lesson. Repeat the rule: never pick or taste wild mushrooms.

Teacher notes

- Misconception: "Antibiotics kill viruses." Answer: they act on bacteria, not viruses such as colds and flu.
- Misconception: "Fleming invented penicillin." Answer: he discovered the mould's effect; other scientists (notably Howard Florey and Ernst Chain's team) later found how to purify and produce it as a medicine.
- Simplification: "Most land plants have mycorrhizal partnerships" is accurate as a general statement; exact percentages vary by source and group of plants.