



CLASS 8 SCIENCE · 2026-27

Cells and microorganisms

Biology

34

QUESTIONS

30

MINUTES

3

EXERCISES

This belongs to _____ Date _____

WHAT YOU'LL GET GOOD AT

- Names each cell part and states what it does
- Lists the three parts a plant cell has that an animal cell does not
- Names the microorganism responsible for a given use or disease
- Explains a food preservation method by the condition it removes

Take your time, and have a go at every one. If you get stuck, look at the orange box — Ollie has already done one for you.

Cells and microorganisms

Biology · 34 questions · tick each box as you finish

Exercise 1 of 3 · 11 questions Name the part, then say what it does.



WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

The cell wall - rigid, outside the cell membrane, and what gives a plant cell its fixed shape. Naming it is a mark; saying what it does is the answer. The three things a plant cell has and an animal cell does not are worth learning as a set: cell wall, plastids, and a large central vacuole. That set answers a great many questions on its own.

1) The part that controls all the activities of the cell

2) The outermost covering of a plant cell

3) The jelly-like substance between the nucleus and the cell membrane

4) The green plastid found in plant cells

5) The large fluid-filled space in a plant cell

6) The thin covering that surrounds every cell and controls what enters and leaves

7) The tiny structures that release energy from food

8) The threads inside the nucleus that carry information from parents to offspring

9) The small dense body inside the nucleus

10) The organelle where proteins are made

11) The plastids that give flowers and fruits their colour

Exercise 2 of 3 · 12 questions Name the microorganism, and say what type it is.

WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

Curd is made by *Lactobacillus*, which is a bacterium. Both halves are marked: the name and the type. Children who write 'bacteria' without the name lose the more valuable half, and the names in this chapter are few enough to know properly - *Lactobacillus*, *Rhizobium*, *Plasmodium*, *Penicillium*, yeast.

1) Turns milk into curd

2) Makes bread rise and is used in brewing

3) Fixes nitrogen in the root nodules of leguminous plants

4) Causes malaria

5) Causes tuberculosis

6) Penicillin, the first antibiotic, is obtained from it

7) Causes the common cold

8) Causes cholera

9) Causes ringworm

10) Causes dengue, and is spread by a mosquito

11) Causes food to spoil in the open

12) Causes rust disease in wheat

Exercise 3 of 3 · 11 questions Answer in two or three sentences.

WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

Salt preserves food because microorganisms need moisture to grow, and salt draws the water out. Notice the shape - the method, the condition it removes, and the result. Every preservation method in this chapter answers the same way: what does the microbe need, and which method takes it away? Once a child sees that, five separate methods become one idea.

1) Why does salting or sugaring preserve food?

2) What is pasteurisation, and why is the milk cooled quickly afterwards?

3) Why are leguminous plants often grown in rotation with other crops?

4) Give one reason why a plant cell has a fixed shape and an animal cell does not.

5) Why should antibiotics not be taken for a common cold?

6) Why does milk turn sour faster in summer than in winter?

7) Why is a vaccine given before a person falls ill rather than after?

8) Why is nitrogen fixation important, since nitrogen is already in the air?

9) What is the difference between a plant cell and an animal cell?

10) Why does bread left in a damp place grow mould?

11) Why are dead organisms broken down rather than piling up?

**All done? How did that feel?**

Colour in a star. Three stars means you could teach it to someone else.



Tricky · Getting there · Easy now



Answer key

For grown-ups

Cells and microorganisms · keep this page back until your child has finished.

1. Name the part, then say what it does.

- 1) The nucleus. It controls the cell's activities and carries the genetic material.
- 2) The cell wall. It is rigid, gives the plant cell its fixed shape, and lies outside the cell membrane.
- 3) The cytoplasm. It holds the other cell organelles and is where many cell activities take place.
- 4) The chloroplast. It contains chlorophyll and is where photosynthesis happens.
- 5) The vacuole. It stores water and dissolved substances and helps keep the cell firm.
- 6) The cell membrane. It is selectively permeable, so it lets some substances through and keeps others out.
- 7) The mitochondria. They release energy during respiration, which is why they are called the powerhouse of the cell.
- 8) The chromosomes. They carry the genes that pass characteristics from one generation to the next.
- 9) The nucleolus. It lies inside the nucleus and takes part in making ribosomes.
- 10) The ribosome. It builds proteins from the instructions the cell gives it.
- 11) The chromoplasts. They contain coloured pigments other than green.

2. Name the microorganism, and say what type it is.

- 1) Lactobacillus - a bacterium.
- 2) Yeast - a fungus. It carries out fermentation, producing carbon dioxide which makes the dough rise.
- 3) Rhizobium - a bacterium. It lives in the root nodules of legumes and converts atmospheric nitrogen into a form the plant can use.
- 4) Plasmodium - a protozoan, carried by the female Anopheles mosquito.
- 5) A bacterium. Tuberculosis is a communicable bacterial disease.
- 6) Penicillium - a fungus, from which Alexander Fleming obtained penicillin.
- 7) A virus. Viruses reproduce only inside a living host cell.
- 8) A bacterium (Vibrio cholerae). It spreads mainly through contaminated water.
- 9) A fungus. It grows on the skin and is spread by contact.
- 10) A virus, carried by the Aedes mosquito, which acts as the carrier rather than the cause.
- 11) Bacteria and fungi. They multiply on exposed food and break it down.
- 12) A fungus. It attacks the wheat plant and reduces the crop.

3. Answer in two or three sentences.

- 1) Because microorganisms need moisture to grow. Salt and sugar draw water out of the food and out of the microbes themselves, so they cannot multiply and the food does not spoil.
- 2) The milk is heated to about 70°C for around fifteen to thirty seconds and then chilled quickly. The heating kills the microorganisms present, and the quick cooling prevents any that survive from multiplying again.
- 3) Because Rhizobium bacteria in their root nodules fix atmospheric nitrogen into the soil. That restores nitrogen the previous crop removed, so less fertiliser is needed for the next one.
- 4) Because a plant cell has a rigid cell wall outside its cell membrane, which holds the shape. An animal cell has only the flexible cell membrane, so its shape can change.
- 5) Because a cold is caused by a virus, and antibiotics act on bacteria rather than viruses. Taking them unnecessarily also helps bacteria become resistant to them, which makes them less useful when they are genuinely needed.
- 6) Because bacteria multiply much faster in warm conditions. The higher temperature speeds up their growth, so the milk sours sooner.
- 7) Because a vaccine works by making the body produce antibodies in advance. Those antibodies are then ready if the real disease-causing microbe ever arrives.
- 8) Because plants and animals cannot use nitrogen gas directly. It has to be converted into compounds such as nitrates before a plant can take it in and make protein.
- 9) A plant cell has a rigid cell wall, chloroplasts and a large central vacuole; an animal cell has none of these and only a cell membrane around it.
- 10) Because mould spores are present in the air and need warmth, moisture and food to grow. Damp bread provides all three.
- 11) Because bacteria and fungi act as decomposers. They break down dead matter and return its nutrients to the soil, where plants can use them again.

WHILE YOUR CHILD WORKS

- Diagrams are marked on labels. A rough cell with seven correct labels beats a beautiful one with three.
- Insist on the name of the organism, not just its type. 'Bacteria' is the cheaper half of the answer.
- For preservation, ask 'what does the microbe need, and what is being removed?' Five methods collapse into one idea.

**Spotted a gap while marking?**

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