

Cell Organelles

KEY IDEAS

Cells are the basic unit of all living things. **Organelles** are tiny structures inside a cell, each with its own job.

Both plant and animal cells have: cell membrane, cytoplasm, nucleus, mitochondria, endoplasmic reticulum, Golgi apparatus, vacuoles.

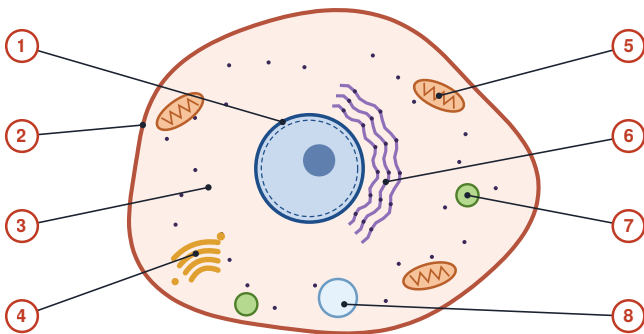
Plant cells also have: a cell wall, chloroplasts and one large central vacuole. **Animal cells** often have lysosomes.

A Label the animal cell · B Label the plant cell

8 marks (½ each)

Animal cell

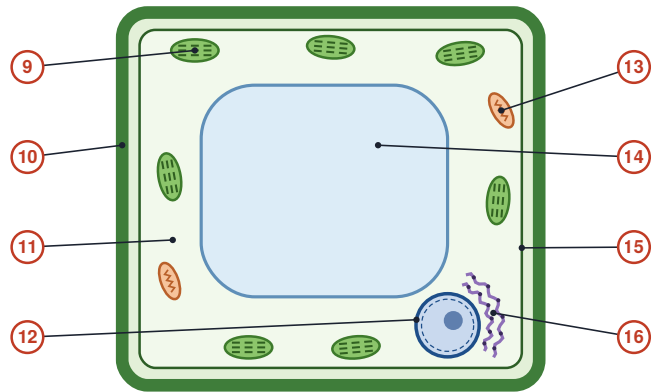
Word bank: cell membrane · cytoplasm · endoplasmic reticulum · Golgi apparatus · lysosome · mitochondrion · nucleus · vacuole



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|----------|----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |
| 5. _____ | 6. _____ |
| 7. _____ | 8. _____ |

Plant cell

Word bank: cell membrane · cell wall · central vacuole · chloroplast · cytoplasm · endoplasmic reticulum · mitochondrion · nucleus



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|-----------|-----------|
| 9. _____ | 10. _____ |
| 11. _____ | 12. _____ |
| 13. _____ | 14. _____ |
| 15. _____ | 16. _____ |

C What does it do?

4 marks (½ each)

Write the organelle that does each job.

Job	Organelle
17. Controls the cell's activities and holds its DNA	
18. Releases energy from food (cellular respiration)	
19. Uses sunlight to make food (photosynthesis)	
20. Controls what enters and leaves the cell	
21. Stores water, food and wastes	
22. Gives a plant cell a strong, rigid shape	
23. Sorts, packages and ships proteins	
24. Jelly-like fluid that holds the organelles	

D A cell is like a school**3 marks (½ each)**

	Part of a school	Organelle
25.	Principal's office, where decisions are made	
26.	Front doors with a security guard who checks who comes in	
27.	Cafeteria, where food gives everyone energy	
28.	Hallways that carry people and supplies around the school	
29.	Mail room that packs and sends things out	
30.	Caretaker who breaks down and recycles garbage	

E True or false?**3 marks (½ each)**

	Statement	T / F	If false, correct it
31.	Both plant and animal cells have a nucleus.		
32.	Animal cells have a cell wall.		
33.	Mitochondria are found only in animal cells.		
34.	Chloroplasts contain the green pigment chlorophyll.		
35.	The cytoplasm is a jelly-like fluid that fills the cell.		
36.	Animal cells have one large central vacuole.		

F Explain your thinking**8 marks (2 each)**

37. Muscle cells contain many more mitochondria than skin cells. Explain why.

38. The cells in a plant's roots have no chloroplasts. Explain why they don't need them.

39. A houseplant that hasn't been watered starts to wilt. Which organelle explains this, and how?

40. Predict what would happen to a cell if its nucleus were removed. Explain.

G Spot the mistake**4 marks (2 each)**

41. A student says, "Plant cells don't need mitochondria because they have chloroplasts." Explain the error.

42. A student says, "The cell wall controls what enters and leaves a plant cell." Explain the error.

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ANSWER KEY

KEY IDEAS

Cells are the basic unit of all living things. **Organelles** are tiny structures inside a cell, each with its own job.

Both plant and animal cells have: cell membrane, cytoplasm, nucleus, mitochondria, endoplasmic reticulum, Golgi apparatus, vacuoles.

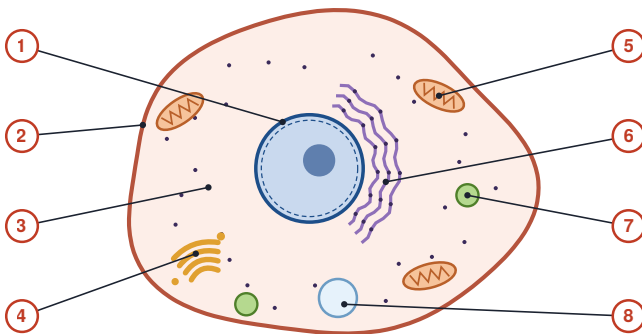
Plant cells also have: a cell wall, chloroplasts and one large central vacuole. **Animal cells** often have lysosomes.

A Label the animal cell · B Label the plant cell

8 marks (½ each)

Animal cell

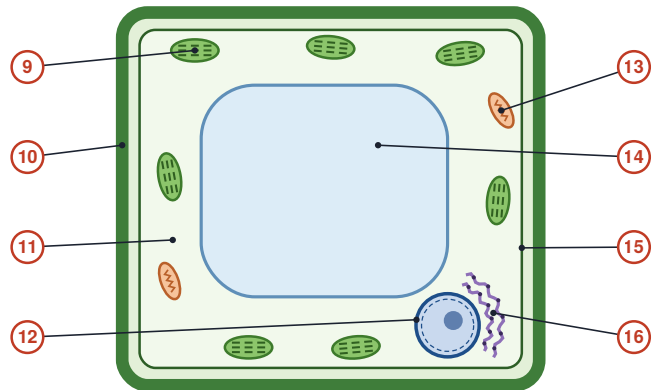
Word bank: cell membrane · cytoplasm · endoplasmic reticulum · Golgi apparatus · lysosome · mitochondrion · nucleus · vacuole



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|-------------------------|---------------------------------|
| 1. <u>nucleus</u> | 2. <u>cell membrane</u> |
| 3. <u>cytoplasm</u> | 4. <u>Golgi apparatus</u> |
| 5. <u>mitochondrion</u> | 6. <u>endoplasmic reticulum</u> |
| 7. <u>lysosome</u> | 8. <u>vacuole</u> |

Plant cell

Word bank: cell membrane · cell wall · central vacuole · chloroplast · cytoplasm · endoplasmic reticulum · mitochondrion · nucleus



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|--------------------------|----------------------------------|
| 9. <u>chloroplast</u> | 10. <u>cell wall</u> |
| 11. <u>cytoplasm</u> | 12. <u>nucleus</u> |
| 13. <u>mitochondrion</u> | 14. <u>central vacuole</u> |
| 15. <u>cell membrane</u> | 16. <u>endoplasmic reticulum</u> |

C What does it do?

4 marks (½ each)

Write the organelle that does each job.

Job	Organelle
17. Controls the cell's activities and holds its DNA	nucleus
18. Releases energy from food (cellular respiration)	mitochondria
19. Uses sunlight to make food (photosynthesis)	chloroplasts
20. Controls what enters and leaves the cell	cell membrane
21. Stores water, food and wastes	vacuole
22. Gives a plant cell a strong, rigid shape	cell wall
23. Sorts, packages and ships proteins	Golgi apparatus
24. Jelly-like fluid that holds the organelles	cytoplasm

D A cell is like a school**3 marks (½ each)**

	Part of a school	Organelle
25.	Principal's office, where decisions are made	nucleus
26.	Front doors with a security guard who checks who comes in	cell membrane
27.	Cafeteria, where food gives everyone energy	mitochondria
28.	Hallways that carry people and supplies around the school	endoplasmic reticulum
29.	Mail room that packs and sends things out	Golgi apparatus
30.	Caretaker who breaks down and recycles garbage	lysosome

E True or false?**3 marks (½ each)**

	Statement	T / F	If false, correct it
31.	Both plant and animal cells have a nucleus.	True	—
32.	Animal cells have a cell wall.	False	Only plant cells (and some others, like fungi) have a cell wall.
33.	Mitochondria are found only in animal cells.	False	Plant cells have mitochondria too.
34.	Chloroplasts contain the green pigment chlorophyll.	True	—
35.	The cytoplasm is a jelly-like fluid that fills the cell.	True	—
36.	Animal cells have one large central vacuole.	False	Plant cells do; animal cells have small vacuoles or none.

F Explain your thinking**8 marks (2 each)**

37. Muscle cells contain many more mitochondria than skin cells. Explain why.

Muscles do a lot of work and need lots of **energy**. Mitochondria release energy from food through cellular respiration, so more mitochondria supply more energy.

38. The cells in a plant's roots have no chloroplasts. Explain why they don't need them.

Roots grow underground where there is **no sunlight**. Chloroplasts need light to make food, so they would be useless there. Roots get food made in the leaves.

39. A houseplant that hasn't been watered starts to wilt. Which organelle explains this, and how?

The **central vacuole** loses water and shrinks, so it no longer pushes outward against the cell wall. The cells go limp and the plant droops.

40. Predict what would happen to a cell if its nucleus were removed. Explain.

The cell could no longer **control its activities** or divide, because the nucleus holds the DNA instructions. It would eventually die.

G Spot the mistake**4 marks (2 each)**

41. A student says, "Plant cells don't need mitochondria because they have chloroplasts." Explain the error.

Plant cells have **both**. Chloroplasts **make** food (sugar) from sunlight; mitochondria **release the energy** stored in that food.

42. A student says, "The cell wall controls what enters and leaves a plant cell." Explain the error.

That's the **cell membrane**. The cell wall gives the cell support and shape, and lets most substances pass straight through.