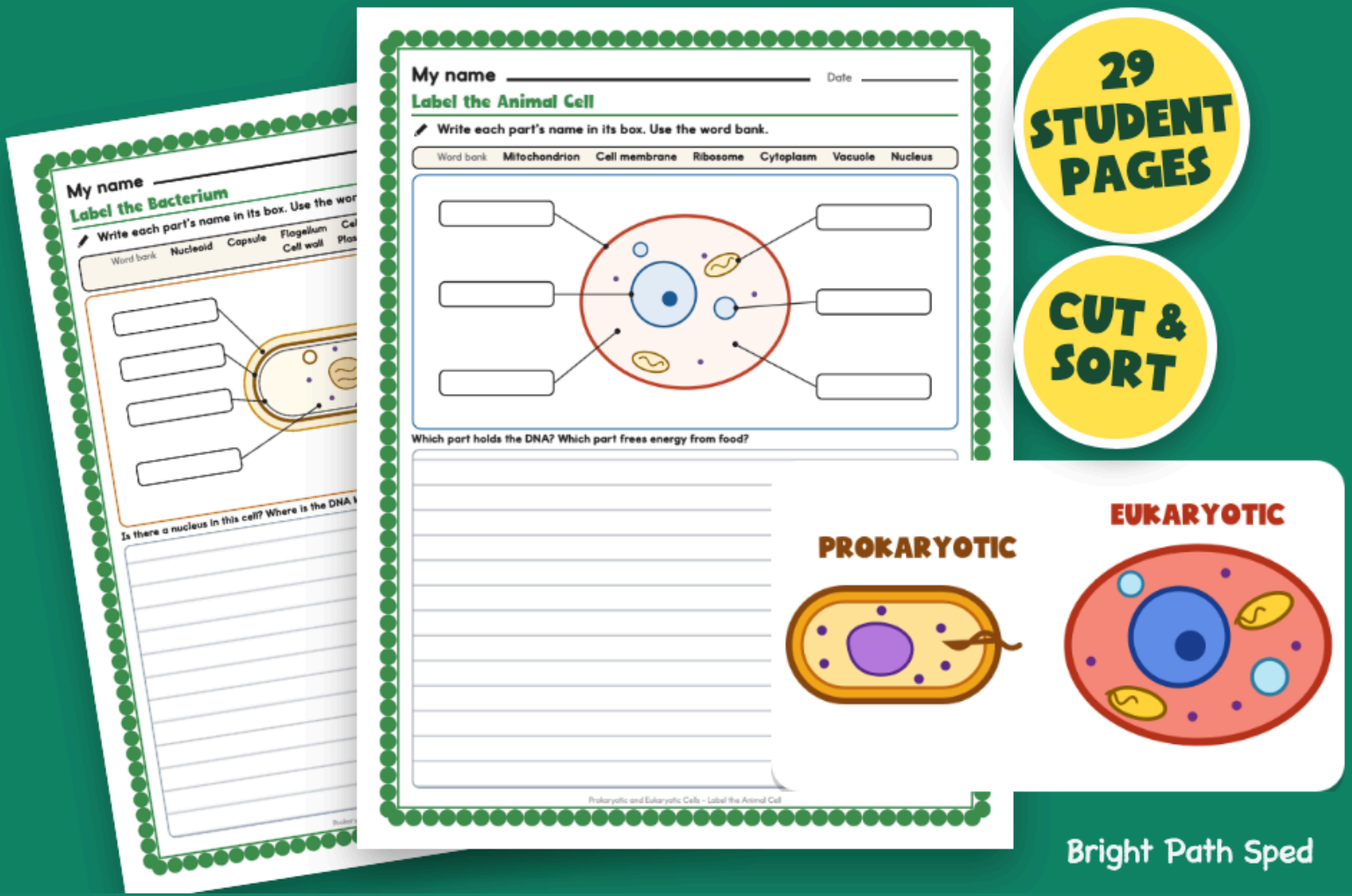
PROKARYOTIC AND EUKARYOTIC CELLS

COMPARE, SORT, LABEL - GRADES 6-8



Bright Path Sped

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This is a fillable PDF

- Open it in a PDF reader (Adobe Acrobat Reader, Preview, or your browser), click into a line or a box, type, and Save As.
- Every name line, answer box, check box and ruled box on the student pages is a type-in field, and so are the tracker and the other record pages. You can also print any page and write by hand. Print the cell size page to shade the bars in pencil.
- It works offline, with no account needed.

Print at 100 percent

Turn off fit to page and shrink to fit so the ruled lines stay 0.34 inch apart. Prokaryotic cells are orange and eukaryotic cells are blue, and every box also carries the words, so a black and white copy reads too.

Student work

A filled-in tracker, class grid or team note carries a real student's name. Keep it in the data folder.

Need help?

If a field will not behave or a page will not print the way you expect, use Ask a Question on the product page before leaving a review. A fix to the file ships as a free update from My Purchases.

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PREVIEW

Teacher Notes

The parts of a student page, the page types in order, and a few teaching notes.

The parts of a page

- **The color code.** Prokaryotic cells are orange and eukaryotic cells are blue on the reference pages, the Venn diagram, the sort mats and the keys.
- **The answer box.** A bordered box. Click it to type, or print and write in it. On a label page each box joins its part with a line.
- **The check box.** Prokaryotic or eukaryotic; yes or no; true or false; and the quiz choices.
- **The ruled work box.** Lines 0.34 inch apart, one idea to a line.
- **The cut lines.** Mat 1: 10 pieces, 5 across by 2 down, each 1.46 by 1.15 inches. Mats 2 and 3: 6 pieces in 3 across by 2 down, each 2.4 by 1.46 inches. Edge to edge.

Page type	What it looks like	What the student does
Two Kinds of Cells; Compare the Cells; Cell Words	3 pages, 6 items	Labeled bacterium and animal cell, a compare table and a plant cell, then six words to match.
Read: five short readings	5 pages, 25 items	What is a cell, prokaryotic cells, eukaryotic cells, plant and animal cells, cell sizes.
Worked Example	1 page, 3 items	Four steps on a mystery cell, then a Your Turn.
Which Kind of Cell? 1 and 2	2 pages, 16 items	Everyday examples, then clues.
Label the Bacterium, Animal Cell, Plant Cell; Find the Part	4 pages, 28 items	Type each part's name in a box joined to the part; then match jobs to lettered parts.
Compare tables; Venn; Cell Sizes	4 pages, 30 items	Fill in a table, check parts, sort facts in a Venn diagram, and use invented widths.
Fix It 1 and 2	2 pages, 10 items	True or false; rewrite each false statement.
Claim, Evidence, Reasoning 1 and 2	2 pages, 12 items	Four short scenarios with invented numbers.
Quiz; Short Answer; Exit Tickets	3 pages, 19 items	Ten choices, five written answers and four one-question tickets.

Two steps, marked by a shape

- **Circle.** Which Kind of Cell? 1 (page 14): everyday examples in a sentence.
- **Triangle.** Which Kind of Cell? 2 (page 15): short clues, no story to lean on.

Teaching notes

- Say it every day: **no nucleus means prokaryotic, a nucleus means eukaryotic**. Then ask where the DNA is kept.
- Students often think a bacterium has no DNA. The label pages and the Venn diagram show that both kinds have DNA, a membrane, cytoplasm and ribosomes.
- The diagrams are simplified on purpose, and real cells have more parts. Use your own words for the details your class needs.
- All numbers are invented and rounded for practice. No lab procedure is included, and nothing here is health advice.

PREVIEW

Preview - Bright Path Sped

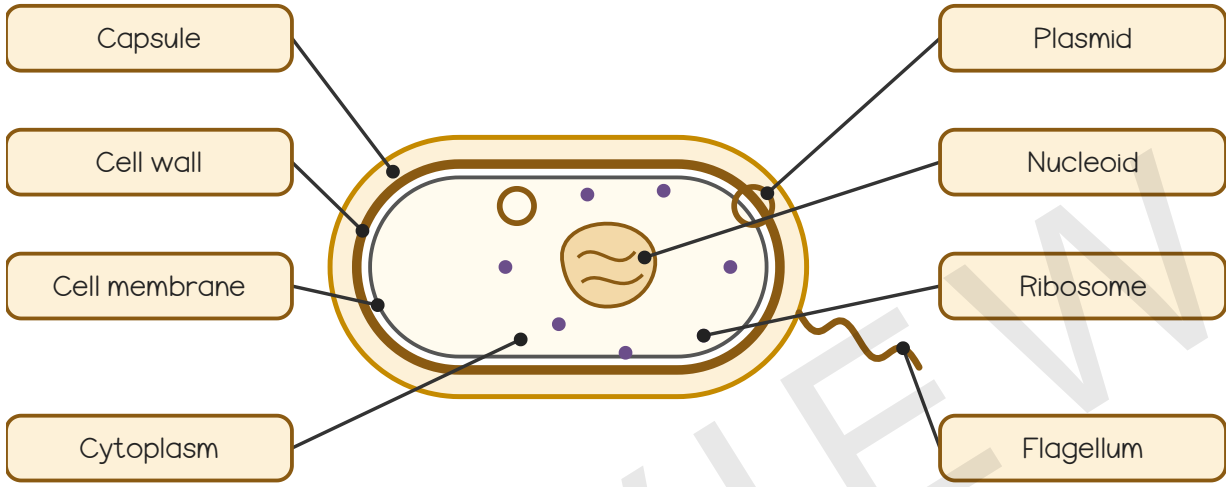
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Two Kinds of Cells

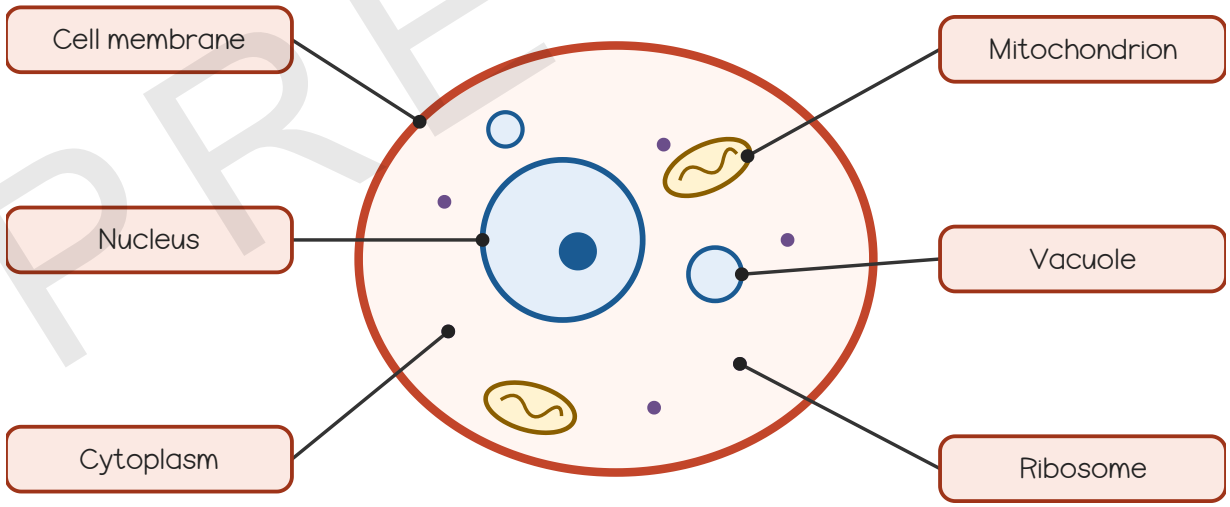
Read about the two kinds of cells. Keep this page next to you.

Every living thing is made of cells. There are two kinds.

A prokaryotic cell: a bacterium (no nucleus)



A eukaryotic cell: an animal cell (has a nucleus)



Both kinds have DNA, a cell membrane, cytoplasm and ribosomes. A **nucleus** holds the DNA in a eukaryotic cell. A prokaryotic cell keeps its DNA in the **nucleoid**.

PREVIEW

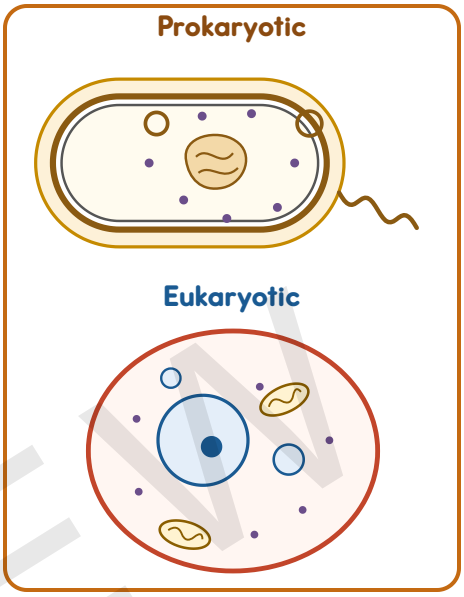
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My name _____ Date _____

Read: What Is a Cell?

Read. Then answer the questions.

A cell is the smallest unit of life. Every living thing is made of one or more cells. Scientists sort cells into two big groups. A prokaryotic cell has no nucleus. A eukaryotic cell has a nucleus, a part that holds the cell's DNA. Both kinds have DNA, a cell membrane, cytoplasm and ribosomes. They differ in where the DNA is kept, how big the cell is and whether it has organelles with membranes around them.



1. The smallest unit of life is...

☐ **a cell** ☐ **an organ** ☐ **a nucleus**

2. Which kind of cell has no nucleus?

☐ **prokaryotic** ☐ **eukaryotic**

3. What does a nucleus hold?

☐ **the DNA** ☐ **the water** ☐ **the wall**

4. Name one part that both kinds of cells have.

_____

5. Give one way the two groups differ.

_____

PREVIEW

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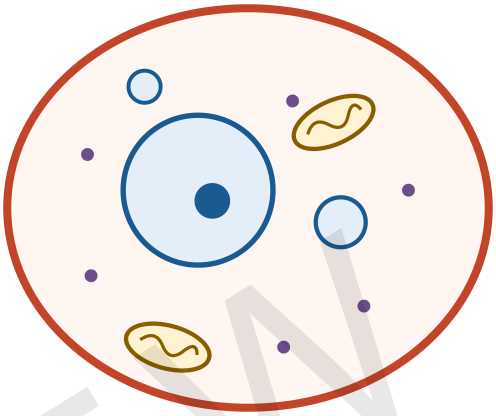
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Read: Eukaryotic Cells

Read. Then answer the questions.

Animals, plants, fungi and protists are made of eukaryotic cells. A eukaryotic cell keeps its DNA in a nucleus with a membrane around it. It also has organelles, small parts that each do a job and have a membrane of their own. Mitochondria free energy from food. A vacuole stores water and other things. Eukaryotic cells are usually much larger than prokaryotic cells, so they have room for more parts.

An animal cell



1. Where does a eukaryotic cell keep its DNA?

☐ **in a nucleus** ☐ **in a plasmid** ☐ **in a capsule**

2. What do mitochondria do?

☐ **free energy from food** ☐ **build cell walls** ☐ **hold the DNA**

3. Which living things have eukaryotic cells?

☐ **animals and plants** ☐ **only bacteria** ☐ **no living things**

4. What is an organelle?

_____

5. Why is there room for more parts in a eukaryotic cell?

_____

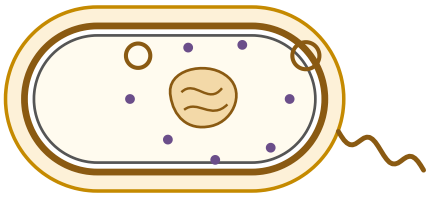
PREVIEW

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My name _____ Date _____

Worked Example

Read how it is done. Then try one.



Mystery cell
- It has no nucleus.
- Its DNA floats in the middle.
- It has a cell wall.
- It is 2 micrometers wide.

Step 1 Look for a nucleus. This cell has no nucleus.

Step 2 Find the DNA. It floats in the middle, in a nucleoid. No membrane surrounds it.

Step 3 Check the size and the parts. It is very small, and it has no organelles with membranes.

Step 4 Decide. No nucleus means the cell is prokaryotic.

Your turn. Read the clues about Cell Y.

- It has a nucleus.
- It has chloroplasts.
- It has a cell wall.
- It is 40 micrometers wide.

Does it have a nucleus? ☐ **yes** ☐ **no**

Which kind? ☐ **prokaryotic** ☐ **eukaryotic**

Which cell? ☐ **plant cell** ☐ **animal cell**

I know because...

PREVIEW

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My name _____ Date _____

Which Kind of Cell? 2

Check one box for each one. Write how you know.

Each clue fits one kind of cell. Which one?

1. Has a nucleoid.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

2. Has a nucleus.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

3. Has mitochondria.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

4. Has a plasmid.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

5. The DNA is inside a membrane.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

6. Usually the smaller kind of cell.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

7. Usually the larger kind of cell.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

8. No organelles with membranes.

☐ **prokaryotic** ☐ **eukaryotic** **I know because** _____

PREVIEW

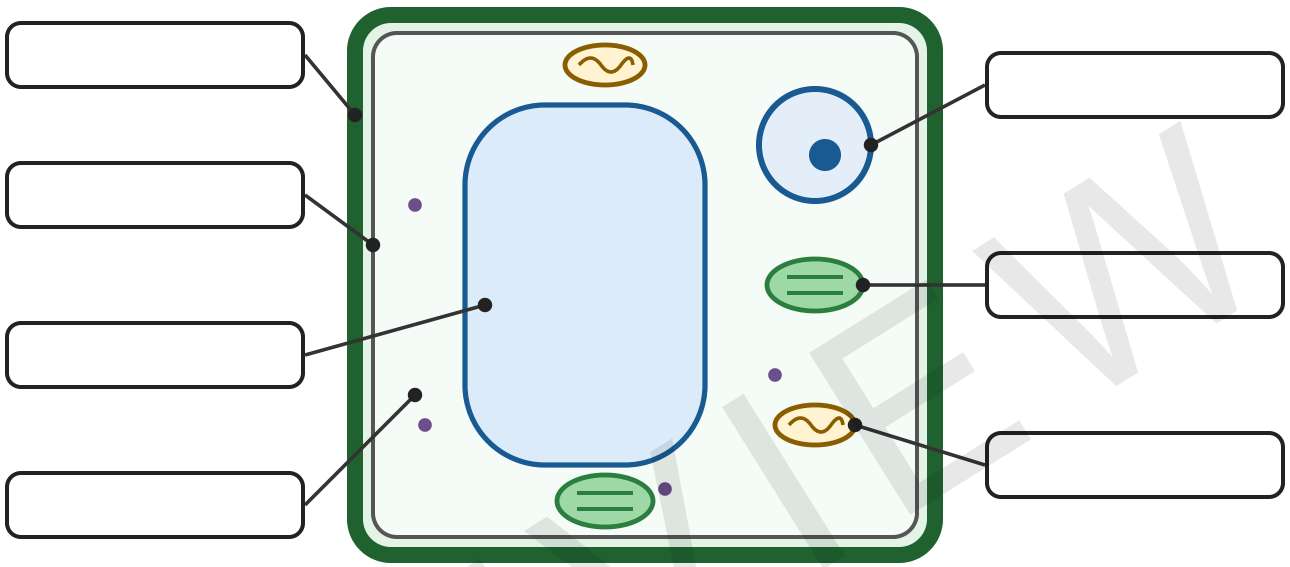
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My name _____ Date _____

Label the Plant Cell

Write each part's name in its box. Use the word bank.

Word bank **Nucleus** **Cell membrane** **Mitochondrion** **Cell wall** **Cytoplasm** **Chloroplast** **Large vacuole**



Name two parts of this cell that an animal cell does not have.

PREVIEW

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My name _____ Date _____

Compare: Prokaryotic and Eukaryotic

Fill in the empty boxes. Use the word bank.

Word bank **none** **no nucleus** **plants, animals, fungi** **usually smaller** **inside the nucleus**

Feature	Prokaryotic cell	Eukaryotic cell
Nucleus		has a nucleus
Where the DNA is	in the nucleoid	
Size		usually larger
Organelles with membranes		many, such as mitochondria
Examples	bacteria	

Name one thing both kinds of cells have.

Which kind of cell is usually larger? How can that matter?

PREVIEW

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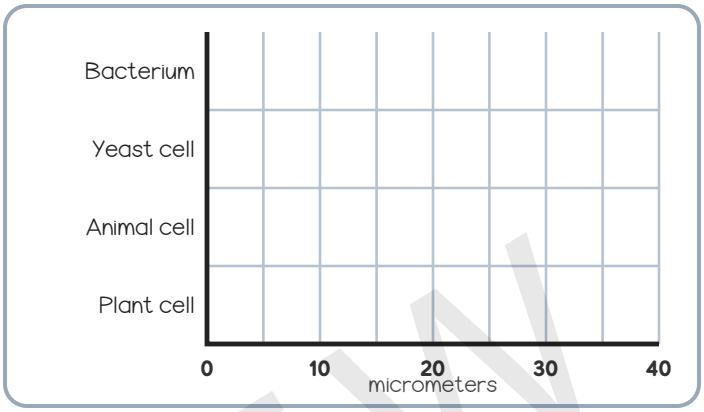
My name _____ Date _____

Cell Sizes

Read the table. Fill in the boxes.

These widths are invented and rounded for practice. Shade a bar on the chart for each cell.

Cell	Kind	Width (micrometers)
Bacterium	Prokaryotic	2
Yeast cell	Eukaryotic	8
Animal cell	Eukaryotic	20
Plant cell	Eukaryotic	40



Smallest cell ☐

Largest cell ☐

Animal cell is how many times as wide as the bacterium? ☐

Yeast cell is how many times as wide as the bacterium? ☐

Plant cell is how many micrometers wider than the animal cell? ☐

How many bacteria fit side by side across the plant cell? ☐

Why does a larger cell have room for more organelles?

PREVIEW

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My name _____ Date _____

Claim, Evidence, Reasoning 1

Read the facts. Write your claim, evidence and reasoning.

Two unknown cells (invented numbers)

Cell X has no nucleus and is 2 micrometers wide. Cell Y has a nucleus and is 20 micrometers wide. Which cell is prokaryotic?

Claim

Evidence: use the facts and numbers

Reasoning: why does the evidence fit the claim?

A cell with a wall (invented numbers)

Cell Z is 40 micrometers wide. It has a nucleus, a cell wall and chloroplasts. Is Cell Z a plant cell or an animal cell?

Claim

Evidence: use the facts and numbers

Reasoning: why does the evidence fit the claim?

PREVIEW

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My name _____ Date _____

Quiz

Check the best answer for each one.

1. A cell with no nucleus is...

   ☐ **prokaryotic** ☐ **eukaryotic** ☐ **a plant cell**

2. Where does a bacterium keep its DNA?

   ☐ **in a nucleus** ☐ **in the nucleoid** ☐ **in a mitochondrion**

3. A small ring of extra DNA is a...

   ☐ **flagellum** ☐ **capsule** ☐ **plasmid**

4. Which part makes food using light?

   ☐ **chloroplast** ☐ **mitochondrion** ☐ **nucleus**

5. Which part frees energy from food?

   ☐ **chloroplast** ☐ **mitochondrion** ☐ **cell wall**

6. Which cell has a cell wall?

   ☐ **animal cell** ☐ **plant cell** ☐ **neither one**

7. A tail that helps a bacterium swim is a...

   ☐ **flagellum** ☐ **nucleoid** ☐ **vacuole**

8. An organelle is...

   ☐ **a kind of cell wall** ☐ **a tiny bacterium** ☐ **a small part that does a job**

9. Which kind of cell is usually larger?

   ☐ **prokaryotic** ☐ **eukaryotic** ☐ **the same size**

10. Animals, plants and fungi are made of...

    ☐ **prokaryotic cells** ☐ **eukaryotic cells** ☐ **no cells**

PREVIEW

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My name _____ Date _____

Cut and Sort 1

Cut out the pieces. Paste each one in its box.

Does the cell have a nucleus or not? Paste five pieces in each box.

Prokaryotic no nucleus	**Eukaryotic** has a nucleus

PREVIEW

Cut on the dashed lines: one cut across and four down.

no nucleus	DNA inside the nucleus	a bacterium	has mitochondria	DNA in the nucleoid
a plant cell	has a plasmid	usually larger	usually smaller	an animal cell

Preview - Bright Path Shed

My name _____ Date _____

Cut and Sort 3

Cut out the pieces. Paste each one in its box.

What job is it? Paste two pieces in each box. These parts are in both kinds of cells or one kind.

Holds the DNA	Makes or frees energy	Protects and supports

PREVIEW

Cut on the dashed lines: one cut across and two down.

nucleus	cell wall	mitochondrion
nucleoid	chloroplast	capsule

Answer Key: Worked Example, Compare, Venn, Sizes, Sort 1

Every value was computed from the numbers on the student page. Bold words in the first table are what the student types.

Worked example and Your Turn

- Worked example: no nucleus, so the mystery cell is **prokaryotic**.
- Your Turn: yes, it has a nucleus; **eukaryotic**; **plant cell** (it has chloroplasts and a cell wall).

Compare: Prokaryotic and Eukaryotic page 20

Feature	Prokaryotic	Eukaryotic
Nucleus	no nucleus	has a nucleus
Where the DNA is	in the nucleoid	inside the nucleus
Size	usually smaller	usually larger
Organelles with membranes	none	many, such as mitochondria
Examples	bacteria	plants, animals, fungi

Compare: Plant and Animal page 21

Part	Plant	Animal
Nucleus	yes	yes
Mitochondria	yes	yes
Cell wall	yes	no
Chloroplasts	yes	no
Large central vacuole	yes	no

Cell Sizes page 23

Question	Answer
Smallest cell	Bacterium
Largest cell	Plant cell
Animal cell is how many times as wide as the bacterium?	10
Yeast cell is how many times as wide as the bacterium?	4
Plant cell is how many micrometers wider than the animal cell?	20
How many bacteria fit side by side across the plant cell?	20

Venn Diagram (letters) page 22

Place	Letters	Facts
Prokaryotic only	B, D, G	no nucleus; has a plasmid; DNA in a nucleoid
Both	C, F, H	has DNA; has a cell membrane; has ribosomes
Eukaryotic only	A, E, I	has a nucleus; has mitochondria; organelles with membranes

Cut and Sort 1 page 31

Piece	Piece shows	Box
r1 c1	no nucleus	Prokaryotic
r1 c2	DNA inside the nucleus	Eukaryotic
r1 c3	a bacterium	Prokaryotic
r1 c4	has mitochondria	Eukaryotic
r1 c5	DNA in the nucleoid	Prokaryotic
r2 c1	a plant cell	Eukaryotic
r2 c2	has a plasmid	Prokaryotic
r2 c3	usually larger	Eukaryotic
r2 c4	usually smaller	Prokaryotic
r2 c5	an animal cell	Eukaryotic

PREVIEW

Answer Key: Short Answer and Claims

Sample answers for pages 29, 26 and 27. Accept any answer that says the same thing, with the evidence (a clue or a number).

1. Compare where the DNA is kept in a prokaryotic cell and in a eukaryotic cell.

In a prokaryotic cell the DNA is loose in the nucleoid, with no membrane. In a eukaryotic cell it is inside the nucleus.

2. Name two parts a plant cell has that an animal cell does not.

Any two of: cell wall, chloroplasts, large central vacuole.

3. Give two things that both prokaryotic and eukaryotic cells have.

Any two of: DNA, a cell membrane, cytoplasm, ribosomes.

4. Why can a eukaryotic cell hold more organelles than a prokaryotic cell?

It is usually much larger, so it has more room.

5. A cell has a nucleus and chloroplasts. Is it prokaryotic or eukaryotic? Explain.

Eukaryotic. A nucleus means eukaryotic, and chloroplasts are organelles.

Two unknown cells (page 26)

Claim: Cell X is prokaryotic. **Evidence:** Cell X has no nucleus and is 2 micrometers wide. Cell Y has a nucleus and is 20 micrometers wide. **Reasoning:** A prokaryotic cell has no nucleus and is usually smaller, and Cell X matches both.

A cell with a wall (page 26)

Claim: Cell Z is a plant cell. **Evidence:** Cell Z has 2 parts that only plant cells have, a cell wall and chloroplasts, and it is 40 micrometers wide. **Reasoning:** Animal cells have no cell wall and no chloroplasts, so a cell that has both is a plant cell.

Three cells under a microscope (page 27)

Claim: Two of the three cells are eukaryotic. **Evidence:** 2 cells (P and R) have a nucleus and 1 cell (Q) has none. **Reasoning:** A cell with a nucleus is eukaryotic and a cell with no nucleus is prokaryotic, so P and R are eukaryotic.

Bacteria and an animal cell (page 27)

Claim: About 10 bacteria fit side by side across the animal cell. **Evidence:** The animal cell is 20 micrometers wide and one bacterium is 2 micrometers wide. 20 divided by 2 is 10. **Reasoning:** Dividing the width of the big cell by the width of the small one tells how many fit across.

Mistakes to listen for

- Thinking a bacterium has no DNA, or that every eukaryotic cell has a cell wall. Mixing up the nucleoid and the nucleus.

PREVIEW

Class Progress Grid

Every student on one grid: items right by page type.

Class or group _____ Month _____

Student	Words, readings (of 31)	Worked, kind of cell (of 19)	Labels (of 28)	Compare, Venn, sizes (of 30)	Fix It, claims (of 22)	Quiz, short, exit (of 19)	Sorts (of 22)

PREVIEW

How to fill this in

For each column, add up how many items that student has right with no prompt (the tracker rows). One glance across a row shows which kind of work is easiest and which is next.

Grouping for small-group time

Students low on the words and readings need the reference pages (pages 5 and 6) and the worked example (page 13). Students low on the labels need the sort mats (pages 32 and 33). Students near full marks can move to Which Kind of Cell? 2 (page 15), the Venn diagram (page 22) and the claims (pages 26 and 27).

Cells at Home

Dear family, this week we are learning about the two kinds of cells. These questions are for talking, not for a grade. Short answers are fine.

Student _____ Week of _____

Three things to talk about

- Ask your student to name the two kinds of cells. A hint: one has a nucleus and one does not.
- Ask: "Where is the DNA kept?" In a eukaryotic cell it is in the nucleus. In a prokaryotic cell it is in the nucleoid.
- Ask which parts a plant cell has that an animal cell does not: a cell wall, chloroplasts and a large vacuole.

My words from home

A cell part I can name _____

How the two kinds differ _____

A question I still have _____

Words that may come up

Prokaryotic: no nucleus. **Eukaryotic:** has a nucleus. **Nucleoid:** where a bacterium keeps its DNA. **Organelle:** a small part that does a job. **Plasmid:** a ring of extra DNA. **Chloroplast:** makes food using light.

Note from the teacher

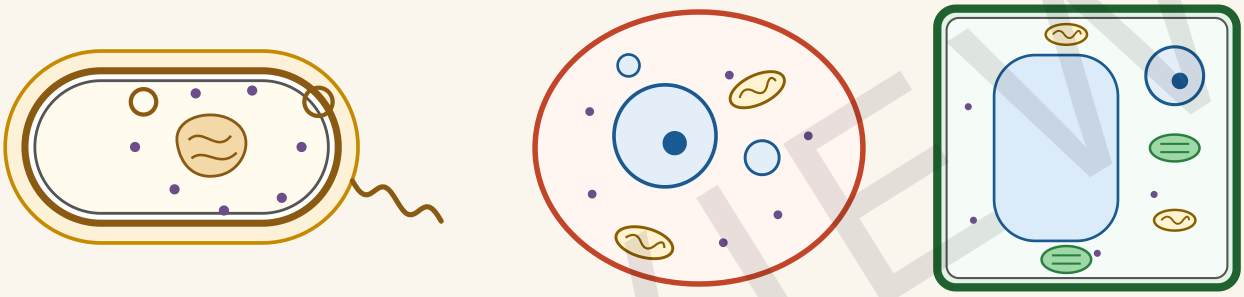
Note from home

PREVIEW

Binder Cover

Slide this into the front of a binder. The divider tabs and a spine label to cut out are on the next page (page 47).

Science - Life Science



PROKARYOTIC AND EUKARYOTIC CELLS

Compare, Sort, Label

Learn | **Practice** | **Check**

Teacher _____ Class or student _____

PREVIEW