Biology Sub Plans Week, High School

Week-long sub plans: five days of print and go work for grades 9 to 12, planned Monday to Friday.

PREVIEW

What is included

- Sub binder: notes, the filled-in week plan, a blank schedule, class list, Monday opener (11 pages)
- Biology sets for five days (15 pages)
- Calm puzzles and reset sheets (10 pages)
- Biology team tasks (9 pages)
- Biology games (10 pages)
- Answer keys (8 pages)

How it works

1. Open the week plan. Every set already has its day and page number.
2. Each day: one biology set per period (a lesson with worked examples, practice and a challenge), a calm puzzle, a team task and an optional game for the last 15 minutes.
3. Every set stands alone: swap sets between days, or use one with another class when it fits.
4. No prep, no tech: print and go. The sub needs no biology knowledge. Every answer is in the key.
5. Print in color or ink-saver black and white, US Letter or A4.

What this preview shows: the week at a glance, the filled-in week plan, the note to the substitute, the Monday opener, and all of Day 1 (the biology set, the calm block, the team task and the game), one answer-key page and one ink-saver page. Every product page is watermarked. The full kit has 64 pages.

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YOUR WEEK AT A GLANCE (1 OF 2)

Every biology set of the week, with its page and what it reviews. The day's set runs in every period you teach; any set works on any day.

MONDAY (DAY 1)

Opener	**Meet Your Sub** Fifteen minutes at the top of every period on Monday: the sub sheet, three questions, the class agreement and the voice levels.	p. 10 · 15 min
Biology set 1	**Biochemistry and Cell Structure** Reviews: the four macromolecules, prokaryotic and eukaryotic cells, labeling a plant cell, organelle jobs, diffusion and active transport, osmosis.	p. 13 · 50 min
Calm puzzle	**Word Search and Reset Sheet** A quiet subject word search and a two-minute reset sheet for a loud day, a long wait or anyone who finishes early.	p. 16 · 20 min
Team task	**From Atom to Biosphere** Groups of four rank twelve things from one atom to the biosphere by level of organization, score the gap against the expert order and defend a choice.	p. 18 · 40 min
Game (optional)	**Whiteboard Quiz Game** Optional fun to end the class.	p. 19 · 15 min

TUESDAY (DAY 2)

Biology set 2	**Cell Energy** Reviews: ATP and ADP, the photosynthesis and respiration equations, comparing the two processes, fermentation, a light and oxygen bubble experiment.	p. 21 · 50 min
Calm puzzle	**Sudoku and Grounding Sheet** A hard sudoku with exactly one answer and a 5-4-3-2-1 grounding sheet for anyone who needs to come back into the room.	p. 24 · 20 min
Team task	**The Blood Bank Shift** Groups of four use ABO and Rh compatibility to plan which surgeries a hospital blood bank can supply, for the most priority points.	p. 26 · 40 min
Game (optional)	**Paper Password** Optional fun to end the class.	p. 28 · 15 min

WEDNESDAY (DAY 3)

Biology set 3	**DNA, Protein Synthesis and Mutations** Reviews: DNA base pairing, transcription and translation with a codon table, silent, missense, nonsense and frameshift mutations, sickle cell.	p. 30 · 50 min
Calm puzzle	**Secret Codes and Control Sheet** Two coded sayings to crack in silence and a sheet that sorts what you can and cannot control this week.	p. 33 · 20 min
Team task	**The Paper Double Helix** Groups of four build a sixteen base pair DNA model from paper, pass a zip test, then unzip and copy it to show how DNA replicates.	p. 35 · 40 min
Game (optional)	**Class Feud** Optional fun to end the class.	p. 37 · 15 min

THURSDAY (DAY 4)

Biology set 4	**Evolution and Classification** Reviews: the four conditions of natural selection, evidence for evolution, the eight taxonomy levels, scientific names, cladograms, a dichotomous key.	p. 39 · 50 min
Calm puzzle	**Maze and Brain Dump** A long maze with exactly one true path and a brain dump sheet that turns a crowded head into one next step.	p. 42 · 20 min
Team task	**The Evolution Hall** Four museum curators, each holding facts nobody else has, decide which evolution exhibits fill twelve wall panels and which teach a myth.	p. 44 · 40 min
Game (optional)	**Classroom Millionaire** Optional fun to end the class.	p. 46 · 15 min

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FRIDAY (DAY 5)		
Biology set 5	**Human Body Systems** Reviews: levels of organization, organ system jobs, homeostasis, negative and positive feedback, insulin and glucagon, heart rate data after exercise.	p. 48 · 50 min
Calm puzzle	**Word Ladders and Three Good Things** Four five-letter word ladders, three scrambled words and a three good things sheet to close out the week.	p. 51 · 20 min
Team task	**The Mosquito Release** Groups of four sort an evidence bank by side and by area of biology, then debate releasing gene-modified mosquitoes two against two.	p. 53 · 40 min
Game (optional)	**Mystery Box** Optional fun to end the class.	p. 55 · 15 min

How the sets work

- One set per day covers every period you teach: Monday's set runs in every Monday class.
- Every set stands alone. Swap sets between days, or use one with another class when it fits.
- Each set opens with a line that says what it reviews, so you can match it to what your class covered.
- The calm puzzle fits any gap, the team task fills a block period, and the game is optional fun for the last 15 minutes.
- No prep, no tech. Every answer is in the keys at the back, so the sub needs no biology knowledge.

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This Week's Plan

You teach one subject to several classes, so every period you teach runs this same plan, first period to last: Monday's column in every Monday period, Tuesday's in every Tuesday period. Planning, lunch and duty periods: nothing to do. List your periods and classes on the blank schedule on the next page. This order is a sample: every set stands alone, so swap any set into any slot or any day.

WHEN	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
First 15 minutes: attendance, voice level, then	**Meet Your Sub** p. 10 · 15 min	**Go over yesterday's answers** Read them out from the key at the back; students mark their own (10 min)	**Go over yesterday's answers** Read them out from the key at the back; students mark their own (10 min)	**Go over yesterday's answers** Read them out from the key at the back; students mark their own (10 min)	**Go over yesterday's answers** Read them out from the key at the back; students mark their own (10 min)
Rest of the period: the day's set (one copy per student)	**Biology 1** Biochemistry and Cell Structure p. 13 · 50 min	**Biology 2** Cell Energy p. 21 · 50 min	**Biology 3** DNA, Protein Synthesis and Mutations p. 30 · 50 min	**Biology 4** Evolution and Classification p. 39 · 50 min	**Biology 5** Human Body Systems p. 48 · 50 min
If a class finishes early or gets loud	**Word Search and Reset Sheet** p. 16 · 20 min	**Sudoku and Grounding Sheet** p. 24 · 20 min	**Secret Codes and Control Sheet** p. 33 · 20 min	**Maze and Brain Dump** p. 42 · 20 min	**Word Ladders and Three Good Things** p. 51 · 20 min
Block period (90 minutes) only	**From Atom to Biosphere** p. 18 · 40 min	**The Blood Bank Shift** p. 26 · 40 min	**The Paper Double Helix** p. 35 · 40 min	**The Evolution Hall** p. 44 · 40 min	**The Mosquito Release** p. 53 · 40 min
Last 15 minutes (optional): a fun way to end the class, or for extra time	**Whiteboard Quiz Game** p. 19 · 15 min	**Paper Password** p. 28 · 15 min	**Class Feud** p. 37 · 15 min	**Classroom Millionaire** p. 46 · 15 min	**Mystery Box** p. 55 · 15 min

How this week works

- You are covering a teacher who teaches one subject to several classes. Each class comes to this room once a day, for one period.
- So every class gets the same set on the same day: Monday's set in every Monday period, Tuesday's set in every Tuesday period.
- One set per day covers all your classes. Copy that day's set once per student in the morning. Planning, lunch and duty periods: nothing to run.
- Each set fills one period (45 to 55 minutes); the challenge at the end stretches it to a 90-minute block.

How to use this plan

- Page numbers point to the first page of each set. Copy one per student.
- The calm block is always allowed: a period that runs short, a loud class, or anyone who finishes early.
- The game is optional: a fun way to end the class, or something for extra time.

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Note to the Substitute

Grades 9 to 12 · five days · every set runs from the printout alone

Thank you for covering my classes this week

Everything you need is in this binder. The front pages (important information, weekly schedule, class list) are filled in for this week. After them come the work sets, one per day: **Biology 1** is Monday's set, **Biology 2** is Tuesday's, and so on to **Biology 5** on Friday. Run the day's set in every period you teach that day. Each set is one period (45 to 55 minutes), stands alone, and has its own answer key at the back of the binder, so you never have to make anything up or know the subject. The first page of every set tells you what to say. Every set ends with a challenge, so it stretches to a 90-minute block when you need it.

After the subject sets come the shared blocks, one of each per day. The **calm block** is always allowed: for a period that runs short, a loud class, or anyone who finishes early. The **team task** fills a period on its own. The **game** is optional: a fun way to end the class, or something for extra time. Fifteen minutes, from the script.

Each day has

- One Biology set (one period, with a challenge to stretch it)
- A calm and quiet block: a puzzle page and a reset sheet
- A team task for groups of four
- A paper game from the script

If the class is loud

- Set a voice level with a number, 0 to 3, and use it all week (the Day 1 opener explains it).
- Switch to the calm block. Nobody needs to move.
- Every set has a challenge at the end, so fast finishers always have something.
- If a set is not working, stop it and use the calm block or the team task. Every set starts cold.

At the end of each day

Please fill in that day's line on the "How it went" page. It takes two minutes and I read every word.

Did this kit work well for your class? A quick review helps other teachers find it and earns you TpT credits. Thank you!

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Meet Your Sub

Day 1 opener, 15 minutes at the start of every period on Monday, before the set. Nothing to prepare.

Opener

Sub script (the same five minutes in every class)

1. **Before first period, fill in the introduction sheet** on the next page, once, for the whole day. Keep it short and honest. A high school class reads a sub in about ten seconds, so give them something real to read.
2. **Introduce yourself from the sheet** in two minutes. Then hold up the Ask the Sub list and take three questions from raised hands. Three, not ten. Say when you are done taking questions.
3. **Read the class agreement out loud** and ask this period to add one line of their own. Write that line on the board for the period. The line they wrote is the one they keep.
4. **Set the voice level with a number** from 0 to 3, using the box at the bottom of the sheet. Say which level today's set needs, and use the same numbers in every class all week.
5. **Start the set** with one sentence: this is today's work, it has a challenge at the end, and the calm block is always allowed when you are finished.

If the room is loud

- Skip the questions. Keep the agreement and the voice level, and say the number out loud.
- Start the set sooner. Work on the desk beats a speech about behavior every time.
- Name the level again after four minutes. A number is easier to follow than a lecture.

If a period runs ten minutes short

- Run Common Ground in groups of four. Six minutes of work, four minutes of reading out.
- Or hand out the reset sheet from the calm block and let the room go quiet early.
- Or have each student write one question they would ask the teacher when they get back.

Monday checklist (before first period)

- [ ] Read the Important Information page: office extension, exits, the nurse, the teacher next door.
- [ ] Check the class list for allergies, medical needs, early releases and students who carry a pass.
- [ ] Find today's set on the weekly schedule and count copies for every period, plus five spares.
- [ ] Fill in the About Your Sub sheet once and post it where the back row can read it.
- [ ] Write the voice levels 0 to 3 on the board and leave them there all week.
- [ ] Keep the answer keys inside the binder, not face up on the desk.

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Biology Set 1: Biochemistry and Cell Structure

Biology · Day 1

Read the three paragraphs and the table, then sort the ten molecules. Pencil and paper only.

This set reviews: the four macromolecules, prokaryotic and eukaryotic cells, labeling a plant cell, organelle jobs, diffusion and active transport, osmosis

Every living thing is built mostly from four kinds of large molecules, the macromolecules. Carbohydrates, proteins and nucleic acids are polymers: long chains made by linking many small units called monomers, the way a train is made of cars. Carbohydrates are chains of simple sugars such as glucose; they supply quick energy, and cellulose builds the walls of plant cells. Proteins are chains of amino acids. They build muscle and hair, carry oxygen in the blood, and work as enzymes, which speed up chemical reactions without being used up. Nucleic acids, DNA and RNA, are chains of nucleotides that store and carry genetic information. Lipids, the fats, oils, waxes and steroids, are not one repeating chain, but they share one feature: they do not mix with water. They store energy for the long term and form the membrane around every cell.

Cells come in two basic designs. Prokaryotic cells, such as bacteria, have no nucleus; their DNA sits in the cytoplasm. Eukaryotic cells, the cells of plants, animals and fungi, keep their DNA inside a nucleus and divide their work among organelles, small structures that each do one job. Ribosomes build proteins, the Golgi apparatus packages them, mitochondria release energy from food, and in plants, chloroplasts capture energy from light. Plant cells also have a rigid cell wall outside the membrane and a large central vacuole that stores water.

The cell membrane is a double layer of phospholipids with proteins set into it. It is selectively permeable: some substances cross it easily, others need help, and some cannot cross at all. In diffusion, particles spread from where they are more concentrated to where they are less concentrated, and the cell spends no energy, so diffusion is passive transport. Osmosis is the diffusion of water across a membrane. Facilitated diffusion is still passive, but the particles pass through a protein channel. When a cell must move particles the other way, from low concentration to high, it uses active transport, which costs energy in the form of ATP.

The four macromolecules

MACROMOLECULE	BUILDING BLOCK	MAIN JOBS	EXAMPLES
Carbohydrates	simple sugars	quick energy; plant cell walls	glucose, starch, cellulose
Lipids	fatty acids and glycerol	long term energy storage; cell membranes	fats, oils, phospholipids
Proteins	amino acids	enzymes, muscle, carrying oxygen	hemoglobin, keratin
Nucleic acids	nucleotides	store and carry genetic information	DNA, RNA

Sort the molecules

Write C for carbohydrate, L for lipid, P for protein or N for nucleic acid in each box.

- ☐ **1.** sucrose, the sugar in a sugar bowl
- ☐ **2.** collagen, the tough fiber in skin and tendons
- ☐ **3.** cholesterol, a steroid
- ☐ **4.** a gene on a chromosome
- ☐ **5.** glycogen, the energy store in liver cells
- ☐ **6.** amylase, the enzyme in saliva
- ☐ **7.** the wax coating a leaf
- ☐ **8.** messenger RNA
- ☐ **9.** cellulose in a stalk of celery
- ☐ **10.** olive oil

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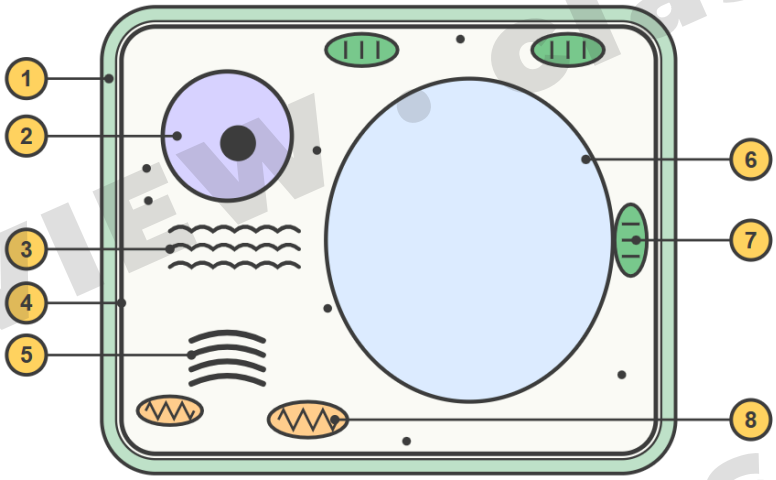
Biology Set 1: The Plant Cell

Label the eight numbered parts from the word bank, then match each job to its organelle.

Biology · Day 1

Label the cell

Cell membrane | Cell wall | Central vacuole | Chloroplast | Endoplasmic reticulum | Golgi apparatus | Mitochondrion | Nucleus



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

Organelle jobs

Write the letter of the organelle next to each job. Two of these organelles are not labeled in the drawing.

A. Nucleus
B. Mitochondrion
C. Chloroplast
D. Ribosome
E. Golgi apparatus
F. Lysosome
G. Cell membrane
H. Central vacuole

___ 1. Builds proteins by linking amino acids
___ 2. Controls what enters and leaves the cell
___ 3. Holds the cell's DNA and controls the cell's activities
___ 4. Stores water and keeps a plant cell firm
___ 5. Releases energy from food by cellular respiration, making ATP
___ 6. Modifies, sorts and packages proteins to ship
___ 7. Captures light energy and uses it to make sugar
___ 8. Breaks down worn out parts and waste with enzymes

1. **Name the three labeled structures in this cell that an animal cell does not have.**

_____

2. **A heart muscle cell works nonstop. Which organelle would you expect it to have in large numbers, and why?**

_____

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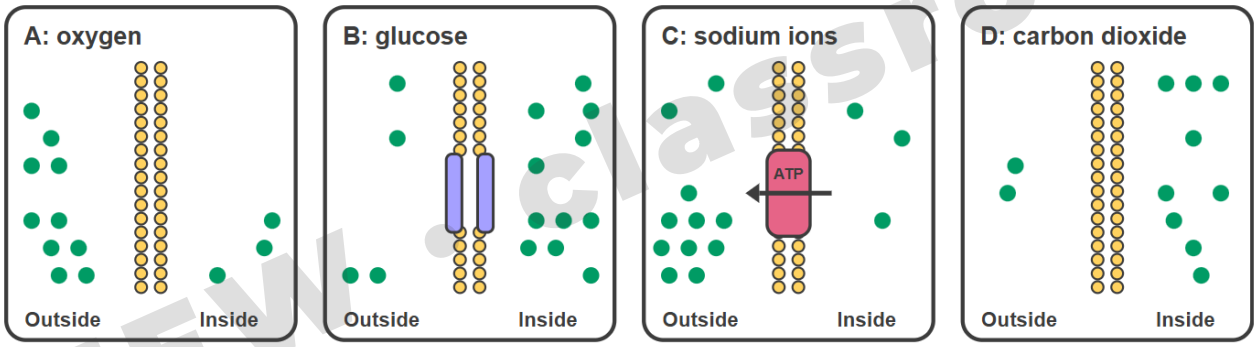
Biology Set 1: Across the Membrane

Count the particles on each side of each membrane, then fill in the table. The arrow in C shows the way the cell is moving them.

Biology · Day 1

Four membranes



PANEL	WHICH SIDE HAS MORE?	NET MOVEMENT: INTO OR OUT OF THE CELL?	PASSIVE OR ACTIVE?	TYPE OF TRANSPORT
A				
B				
C				
D				

Osmosis

A red blood cell holds about 0.9 percent salt. It is placed in three different solutions.

SALT OUTSIDE	HYPERTONIC, HYPOTONIC OR ISOTONIC?	WATER MOVES	WHAT HAPPENS TO THE CELL
3 percent			
0 percent			
0.9 percent			

Challenge

Amara cut five potato cores and weighed each one at 5.00 g. She left each core overnight in a different sugar solution, then weighed it again.

Sugar solution (percent)	0	5	10	15	20
Mass after (g)	5.60	5.25	4.95	4.60	4.30
Percent change					

a. Fill in the percent change: (mass after minus 5.00) divided by 5.00, times 100. **b.** In which solutions did water move into the potato? How do you know? **c.** Estimate the sugar concentration inside the potato cells and explain your reasoning.

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Calm Block, Day 1: Word Search

Find all 12 biology words. Any direction, including backward and diagonal. Pencils only, voices at 0.

Calm · Day 1

B	U	I	Z	N	L	S	S	O	F	N	T	T	Z
Z	D	L	P	E	Y	Y	A	O	O	W	X	S	L
C	X	S	F	X	X	T	S	I	S	N	L	C	E
Y	R	T	C	Y	S	E	T	O	L	L	C	I	Y
R	T	E	N	H	S	A	N	K	S	I	H	T	O
E	B	I	R	K	T	J	E	O	M	O	M	E	X
S	T	B	D	P	I	C	N	L	M	N	M	N	U
O	J	U	A	E	G	D	S	T	E	R	E	E	K
C	J	D	R	X	R	P	N	D	L	L	O	G	B
U	A	W	C	R	E	E	P	E	N	N	L	H	B
L	O	I	K	C	W	L	H	C	Y	I	B	A	C
G	M	S	I	E	L	O	U	C	A	V	A	X	L
E	H	E	U	D	M	E	T	O	G	Y	Z	Y	Y
F	S	T	Z	P	L	A	T	E	L	E	T	L	S

ADAPTATION · LYSOSOME · GENETICS · HEREDITY · PLATELET · VACUOLE · GLUCOSE · HORMONE · SPECIES · ALLELE · KIDNEY · ZYGOTE

Faster than reading every square

- Hunt the rare letters first. Only one word in the list has a Z in it, so every Z in the grid is worth a second look.
- Scan one row at a time for a word's first two letters, then check all eight directions from that square.
- Cross a word off the list the second you circle it, or you will search for it twice.

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Calm Block, Day 1: Reset Sheet

For one person, at your own pace. Nobody collects this and nobody reads it but you.

Calm · Day 1

Two minutes, then back to it

This is not a mood test and it is not therapy. It is a short routine for the moments when your head is somewhere else and the work in front of you is going nowhere: slow the breath, put a name on the feeling, pick the next five minutes. Work down the page and stop at the bottom.

Step 1: make the breath out longer

Breathe in through your nose while you count to four, then out through your mouth while you count to six. The long breath out is the part that slows your heart rate down. Six rounds, then stop.

Check a box for each round so you are not counting in your head.

☐☐☐☐☐☐

Step 2: name it

A feeling you can name gets smaller. Tired, annoyed, behind, worried, bored, flat, wired. One word is enough, and it does not have to be the right word.

Write yours on the first line below.

Name it in one word, then write the sentence your head keeps repeating

What is actually true right now, in this room, that I could check in ten seconds

The next five minutes: what I will do the moment I put this sheet down

What usually helps me

- ☐ Water and a real breath of air
- ☐ Writing the thing down instead of holding it
- ☐ Two minutes of a puzzle or a doodle
- ☐ Starting the smallest piece of the work
- ☐ Standing up and stretching my shoulders
- ☐ Putting my phone face down in my bag
- ☐ Asking one person one question
- ☐ Deciding to deal with it after school

My own line

Something that works for you that is not on that list.

Right now I feel (circle one)

1 2 3 4 5 6 7 8 9 10

1 = settled, 10 = about to boil over. Check the same number again in ten minutes. Down by one is the whole point.

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Team Task, Day 1: From Atom to Biosphere

Groups of four. Voice level 2. One sheet per group, one person writes, and no number goes down until all four agree.

Team · Day 1

The situation

A textbook spread zooms out from one atom in a gray wolf's heart to the whole living planet, but its twelve panels got shuffled. Life is organized in levels, and **each level is built from the one below it**.

Your job: rank the twelve panels from **1 (the smallest level)** to **12 (the largest level)**. Work alone for five minutes in "My rank", then agree on one set of group ranks, each rank used once. Then the sub reads out the expert order and you score the difference.

Group of three: one person both writes and keeps time. Group of five: the fifth person asks "what is it made of?" before every rank is written.

PANEL	LEVEL NAME	MY RANK	GROUP RANK	EXPERT	DIFFERENCE
All the gray wolves in Yellowstone National Park					
One heart muscle cell of a gray wolf					
Every place on Earth where life exists					
A gray wolf's heart					
A protein molecule inside a mitochondrion					
The wolf's heart, arteries, veins and blood					
The park's life plus its rivers, soil and climate					
A single carbon atom inside that protein					
Every species in the park, from wolves to fungi					
Cardiac muscle: many heart cells working together					
One gray wolf					
A mitochondrion inside a heart muscle cell					
Total difference (lower is better)					

Level names (use each once)

Atom, Biosphere, Cell, Community, Ecosystem, Molecule, Organ, Organ system, Organelle, Organism, Population, Tissue

Scoring

For each row: group rank minus expert rank, and drop the minus sign. Add the twelve numbers up.

- **8 or less:** excellent
- **9 to 16:** good
- **17 to 26:** fair
- **27 to 72:** poor

Defend one choice

Pick the row with your biggest difference. What did your group think it was made of, and what is it really built from?

Challenge

After the reveal: what is the lowest living level? What is the lowest level that includes abiotic (nonliving) factors?

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Game, Day 1: Whiteboard Quiz Game

Sub script and questions. 15 minutes at the end of the period, or for extra time. Optional.

Game · Day 1

Set up (2 minutes)

1. Draw a 5 by 5 grid on the board, or tape up the board sheet. Write the five category names across the top and the values 100 to 500 down each column.
2. Teams of four to six. Team 1 picks a category and a value.
3. Read the question. The team gets 15 seconds and one answer. Right: they take the points and pick again. Wrong: the next team may steal, then play moves on.
4. Cross the square off. Highest total when time is up wins.

Read this out

"One voice per team: pick a captain who says the final answer. Shouted answers do not count and the square is dead. Team 1, choose a category and a value."

Keep the running score in a corner of the board. If a team argues a call, the script wins and the game moves on. The bold answer is the one to accept, but take a clear equivalent too (kidneys for the kidney, CO2 for carbon dioxide).

Cells

100 What is the basic unit of life?
The cell

200 Which organelle holds most of a eukaryotic cell's DNA?
The nucleus

300 What rigid layer surrounds a plant cell's membrane?
The cell wall

400 What is the movement of water across a membrane called?
Osmosis

500 What type of cell, like a bacterium, has no nucleus?
Prokaryotic

Evolution

100 Whose 1859 book proposed evolution by natural selection?
Charles Darwin

200 What is an inherited trait that helps an organism survive?
An adaptation

300 What are the preserved remains of ancient life called?
Fossils

400 What is the most specific level of classification?
Species

500 What is the two-part naming system for species called?
Binomial nomenclature

Energy

100 What green pigment absorbs light in plants?
Chlorophyll

200 Which gas do cells release during cellular respiration?
Carbon dioxide

300 What sugar do plants make in photosynthesis?
Glucose

400 Which type of fermentation runs in muscles short of oxygen?
Lactic acid fermentation

500 What first stage of cellular respiration splits glucose?
Glycolysis

Body Systems

100 Which system moves blood through the heart and vessels?
Circulatory

200 Which organ filters waste from the blood to make urine?
The kidney

300 Which system fights infection with white blood cells?
The immune system

400 What is keeping a stable internal balance called?
Homeostasis

500 Which hormone lowers the level of sugar in the blood?
Insulin

DNA

100 What is the shape of a DNA molecule called?
A double helix

200 Which base replaces thymine in RNA?
Uracil

300 What process copies a gene from DNA into messenger RNA?
Transcription

400 What process builds a protein from mRNA at a ribosome?
Translation

500 How many mRNA bases code for a chain of 20 amino acids, stop codon aside?
60

Final Wager: Meiosis

Play this when the board is clear, or when two minutes are left. Announce the category, then every team writes a secret wager of up to the points it already has. Read the question. Teams get 60 seconds of silent writing, then hold their answers up together.

A human body cell has 46 chromosomes. How many are in a human egg cell?
23

Right: add the wager. Wrong: subtract it. That is the final score.

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Game, Day 1: The Board

Tape this to the whiteboard or copy it. Cross squares off as they are played.

Game · Day 1

CELLS	ENERGY	DNA	EVOLUTION	BODY SYSTEMS
100	100	100	100	100
200	200	200	200	200
300	300	300	300	300
400	400	400	400	400
500	500	500	500	500

Scores

Team 1

Team 2

Team 3

Team 4

Team 5

Team 6

Final Wager: Meiosis

Write your wager before you hear the question. A team may bet any amount up to the points it already has. Right answer: add the wager. Wrong answer: subtract it.

Team 1
WAGER
ANSWER

Team 2
WAGER
ANSWER

Team 3
WAGER
ANSWER

Team 4
WAGER
ANSWER

Team 5
WAGER
ANSWER

Team 6
WAGER
ANSWER

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Answer Keys (1 of 8)

Teacher copy. Keep these pages out of the student sets.

Biology Set 1: Biochemistry and Cell Structure

Sort: 1. C (carbohydrate); 2. P (protein); 3. L (lipid); 4. N (nucleic acid); 5. C (carbohydrate); 6. P (protein); 7. L (lipid); 8. N (nucleic acid); 9. C (carbohydrate); 10. L (lipid).

Label the cell: 1. cell wall; 2. nucleus; 3. endoplasmic reticulum; 4. cell membrane; 5. Golgi apparatus; 6. central vacuole; 7. chloroplast; 8. mitochondrion. **Organelle jobs:** 1. D; 2. G; 3. A; 4. H; 5. B; 6. E; 7. C; 8. F.

Questions: 1. cell wall, central vacuole, chloroplast. 2. Mitochondria, because they release the energy in food as ATP, and a cell that never rests uses ATP constantly.

Four membranes: A. outside (10 outside, 3 inside); into the cell; passive; simple diffusion (accept diffusion). B. inside (4 outside, 11 inside); out of the cell; passive; facilitated diffusion. C. outside (11 outside, 3 inside); out of the cell; active; active transport, because the particles move from low to high concentration. D. inside (2 outside, 9 inside); out of the cell; passive; simple diffusion (accept diffusion).

Osmosis: 3 percent: hypertonic, water moves out of the cell, the cell shrinks; 0 percent: hypotonic, water moves into the cell, the cell swells and may burst; 0.9 percent: isotonic, water shows no net movement, the cell stays the same size.

Challenge: a. 0 percent: plus 12; 5 percent: plus 5; 10 percent: minus 1; 15 percent: minus 8; 20 percent: minus 14. b. 0 and 5 percent, because those cores gained mass, and the only thing that can enter is water. c. About 9.2 percent: the change switches from a gain at 5 percent to a loss at 10 percent, so the solution that matches the cells (isotonic, no change) lies between them, closer to 10 percent. Accept any estimate between 5 and 10 percent with that reasoning.

Calm block, Day 1: word search solution (biology words)

B	U	I	Z	N	L	S	S	O	F	N	T	T	Z
Z	D	L	P	E	Y	Y	A	O	O	W	X	S	L
C	X	S	F	X	X	T	S	I	S	N	L	C	E
Y	R	T	C	Y	S	E	T	O	L	L	C	I	Y
R	T	E	N	H	S	A	N	K	S	I	H	T	O
E	B	I	R	K	T	J	E	O	M	O	M	E	X
S	T	B	D	P	I	C	N	L	M	N	M	N	U
O	J	U	A	E	G	D	S	T	E	R	E	E	K
C	J	D	R	X	R	P	N	D	L	L	O	G	B
U	A	W	C	R	E	E	P	E	N	N	L	H	B
L	O	I	K	C	W	L	H	C	Y	I	B	A	C
G	M	S	I	E	L	O	U	C	A	V	A	X	L
E	H	E	U	D	M	E	T	O	G	Y	Z	Y	Y
F	S	T	Z	P	L	A	T	E	L	E	T	L	S

All 12 words are marked. Words run in all eight directions, so a student who only searched across and down will be missing several.

Reset sheet: private, answers vary, nothing to grade. If a student hands it in anyway, thank them and leave it for the teacher.

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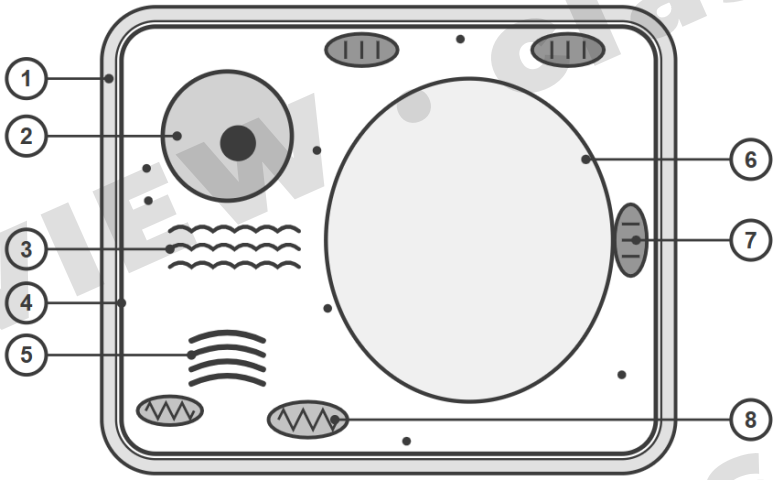
Biology Set 1: The Plant Cell

Label the eight numbered parts from the word bank, then match each job to its organelle.

Biology · Day 1

Label the cell

Cell membrane | Cell wall | Central vacuole | Chloroplast | Endoplasmic reticulum | Golgi apparatus | Mitochondrion | Nucleus



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

Organelle jobs

Write the letter of the organelle next to each job. Two of these organelles are not labeled in the drawing.

A. Nucleus
B. Mitochondrion
C. Chloroplast
D. Ribosome
E. Golgi apparatus
F. Lysosome
G. Cell membrane
H. Central vacuole

___ 1. Builds proteins by linking amino acids
___ 2. Controls what enters and leaves the cell
___ 3. Holds the cell's DNA and controls the cell's activities
___ 4. Stores water and keeps a plant cell firm
___ 5. Releases energy from food by cellular respiration, making ATP
___ 6. Modifies, sorts and packages proteins to ship
___ 7. Captures light energy and uses it to make sugar
___ 8. Breaks down worn out parts and waste with enzymes

1. **Name the three labeled structures in this cell that an animal cell does not have.**

_____

2. **A heart muscle cell works nonstop. Which organelle would you expect it to have in large numbers, and why?**

_____

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Thank you! If this works for your class, a quick review helps other teachers find it, and earns you TpT credits.