CELL THEORY

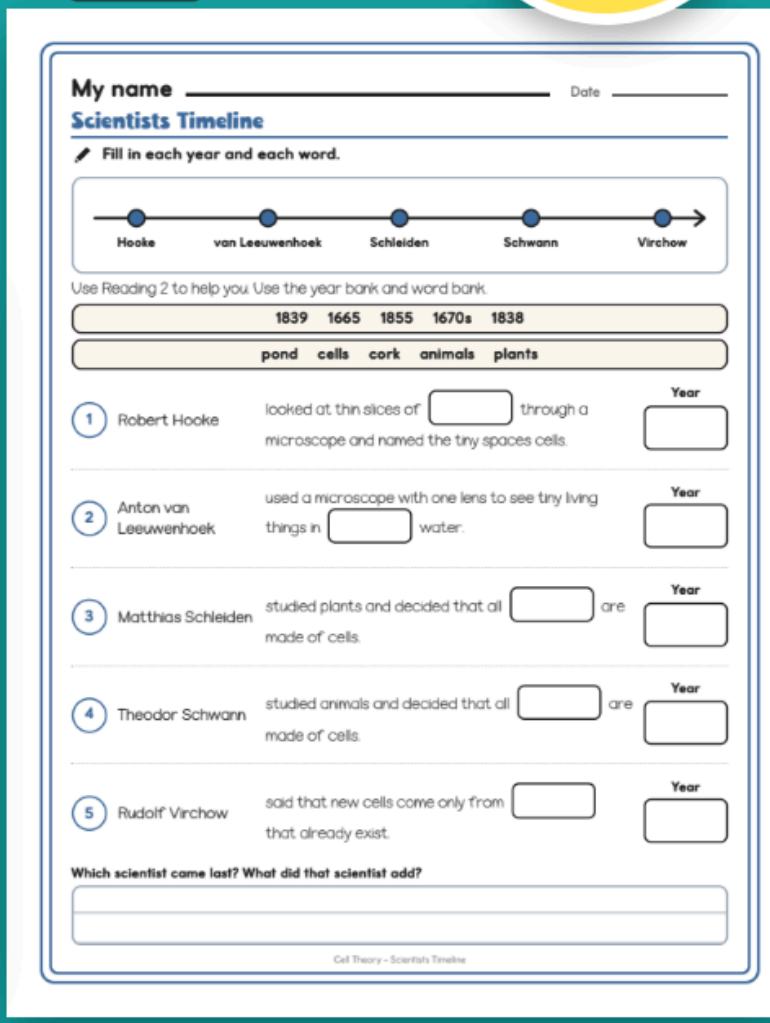
WORKSHEETS · GRADES 6-8

3 CUT & PASTE SORTS

41 PAGES



1665	Hooke
1670s	Leeuwenhoek
1838	Schleiden
1839	Schwann
1855	Virchow



My name _____ Date _____

Scientists Timeline

Fill in each year and each word.

Hooke — van Leeuwenhoek — Schleiden — Schwann — Virchow

Use Reading 2 to help you. Use the year bank and word bank.

1839 1665 1855 1670s 1838

pond cells cork animals plants

			Year
1	Robert Hooke	looked at thin slices of [ ] through a microscope and named the tiny spaces cells.	
2	Anton van Leeuwenhoek	used a microscope with one lens to see tiny living things in [ ] water.	
3	Matthias Schleiden	studied plants and decided that all [ ] are made of cells.	
4	Theodor Schwann	studied animals and decided that all [ ] are made of cells.	
5	Rudolf Virchow	said that new cells come only from [ ] that already exist.	

Which scientist came last? What did that scientist add?

Cell Theory – Scientists Timeline

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- Open it in a PDF reader (Adobe Acrobat Reader, Preview, or your browser), click into a line or a box, type, and Save As.
- The name line, every answer box, every ruled work box and every check box on the student pages are type-in fields, and so are the tracker, class grid, team note and family page. You can also print any page and write by hand.
- It works offline. No account, no subscription, no internet connection needed after you download it.

Print at 100 percent

Turn off fit to page and shrink to fit so the ruled lines stay 0.34 inch apart. Every student page is black and white inside a colored border, so it still reads when copied in black and white.

Student work

A filled-in tracker, class grid or team note carries a real student's name. Keep it in the data folder, and use a first name only on any page that leaves your hands.

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. Every question is read, and a fix to the file ships as a free update: re-download it any time from My Purchases.

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PREVIEW

How To Read a Page

The parts of a student page, then the page types in the order they come.

The parts of a page

- **The answer box.** A bordered box for a letter, a number, a year or a word. Click it to type, or print and write in it.
- **The ruled work box.** Lines 0.34 inch apart for sentences. Write one idea to a line.
- **The check box.** True or false, yes or not yet: click or mark.
- **The word bank.** A box of words to use. Some words are used once, some are not used.
- **The cut line.** Six pieces in a 3 by 2 grid, each 2.4 by 1.25 inches, edge to edge: one cut across and two down.

Page type	What it looks like	What the student does
Readings and words	3 pages	Read, answer, then match six words to what they mean.
Timeline	2 pages	Fill in years and words for five scientists, then put five events in order.
Tenets	2 pages, 9 items	Fill in the three tenets, then match examples to them.
Who did it	2 pages, 11 items	Match scientists to clues and name who said it.
True or false and mistakes	3 pages, 16 items	Check sentences, fix false ones, find Sam's mistakes.
Drawing and writing	4 pages, 6 questions	Draw what Hooke saw, then answer in sentences.
Quizzes, exit tickets, sorts	12 items, 3 tickets, 18 pieces	Two quizzes, one exit sheet, three cut-and-paste mats.

Untimed, unscored on the page

No student page has a timer or a score on it. The keys and the tracker are for you. The answer keys are on pages 29 to 32.

Short answers

The short-answer keys (page 31) say what to look for, not one right sentence. Accept any answer that uses a fact from the readings.

Printing and the type-in fields

Every page prints clean in black and white. The name line, every answer box, every ruled box and every check box are type-in fields in any PDF reader: click one, type, then save. This is a fillable PDF, not a slideshow or a word-processor file.

Room to work

Work boxes hold three or more lines. If a student needs more room, hand over one page a day, or let students write on scrap paper and copy their best sentences into the box.

PREVIEW

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My name _____ Date _____

Reading 1: Cell Theory in Short

Read about cell theory. Then answer.

What is cell theory?

All living things are made of cells. A cell is the smallest unit that can carry out the jobs of life, such as getting energy, growing and responding to the world. Some living things, such as bacteria, are a single cell. Others, such as a maple tree or a person, are made of many, many cells that work together. **Cell theory** is a set of three ideas about cells. First, all living things are made of one or more cells. Second, the cell is the basic unit of structure and function in living things. That means cells make up the body and also do its work. Third, all cells come from existing cells. New cells form when a cell divides. Scientists call this a theory because many scientists tested the ideas again and again over many years, and the ideas held up. In science, a theory is a well-tested explanation, not just a guess.

Main idea: What is this reading mostly about?

Check what you read. Write the letter in the box.

1. How many ideas are in cell theory?
   - **A** Three
   - **B** One
   - **C** Five

2. A bacterium is a living thing that is made of...
   - **A** One cell
   - **B** Trillions of cells
   - **C** No cells

3. In science, a theory is...
   - **A** A guess with no evidence
   - **B** A well-tested explanation
   - **C** A fact nobody can question

PREVIEW

My name _____ Date _____

Cell Theory Words

Match each word to what it means.

Write the letter of the meaning in the box. Use the readings to help you.

1	**cell**		**A**	A tool that makes tiny things look bigger.
2	**organism**		**B**	Made of one cell.
3	**unicellular**		**C**	An explanation that scientists have tested many times.
4	**multicellular**		**D**	The basic unit of structure and function in living things.
5	**microscope**		**E**	Made of many cells.
6	**theory**		**F**	A living thing.

Use two of the words in one sentence about a tree or a person.

PREVIEW

My name _____ Date _____

Put the Timeline in Order

Put the five events in order.

The events are mixed up. Write 1 for what happened first, then 2, 3, 4 and 5.

A Matthias Schleiden decides that all plants are made of cells. ☐

B Robert Hooke looks at cork and names cells. ☐

C Rudolf Virchow writes that new cells come from existing cells. ☐

D Anton van Leeuwenhoek sees living things in pond water. ☐

E Theodor Schwann decides that all animals are made of cells. ☐

Which two scientists had ideas only one year apart?

☐ **and** ☐

How many years passed from Hooke (1665) to Virchow (1855)? ☐ **years**

Why did these discoveries need a microscope?

PREVIEW

My name _____ Date _____

The Three Tenets

Fill in the missing word in each tenet.

Fill in the missing word in each tenet. A tenet is one main idea of a theory.

existing one unit

1. All living things are made of _____ or more cells.

In my own words:

An example:

2. The cell is the basic _____ of structure and function in living things.

In my own words:

An example:

3. All cells come from _____ cells.

In my own words:

An example:

PREVIEW

My name _____ Date _____

Who Is It? Match

Match each scientist to the clue.

Write the letter of the clue in the box.

1	**Robert Hooke**		**A**	Studied animals and decided they are made of cells.
2	**Anton van Leeuwenhoek**		**B**	Named cells after looking at thin slices of cork.
3	**Matthias Schleiden**		**C**	A doctor who said new cells come from cells that already exist.
4	**Theodor Schwann**		**D**	Saw tiny living things in pond water with a one-lens microscope.
5	**Rudolf Virchow**		**E**	Studied plants and decided they are made of cells.

Pick one scientist. Write one more thing that scientist found.

PREVIEW

My name _____ Date _____

True or False 1

Is it true or false? Check one.

Check true or false for each sentence.

1. Robert Hooke called the tiny spaces he saw in cork "cells." ☐ true ☐ false

2. Theodor Schwann decided that all plants are made of cells. ☐ true ☐ false

3. Hooke saw living cells moving around in the cork. ☐ true ☐ false

4. Rudolf Virchow wrote that new cells come from cells that already exist. ☐ true ☐ false

5. One scientist finished cell theory in a single year. ☐ true ☐ false

6. Anton van Leeuwenhoek made his own single-lens microscopes. ☐ true ☐ false

Pick one false sentence. Fix it so it is true.

PREVIEW

My name _____ Date _____

Short Answers 1

Answer each question in sentences.

Use facts from the readings. Write in sentences.

1. What did Robert Hooke see when he looked at cork? Why did he call the spaces cells?

2. What did Anton van Leeuwenhoek see in pond water that was new?

3. Why does it matter that Schleiden studied plants and Schwann studied animals?

PREVIEW

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My name _____ Date _____

Find the Mistake

Find the mistake. Then fix it.

Sam is made up for practice. Each sentence has one mistake.

1 **Sam wrote:**

"Robert Hooke invented cell theory in 1665."

What is wrong?

Write it the right way.

2 **Sam wrote:**

"Theodor Schwann showed that all plants are made of cells."

What is wrong?

Write it the right way.

3 **Sam wrote:**

"Rudolf Virchow said that new cells can come from nonliving matter."

What is wrong?

Write it the right way.

4 **Sam wrote:**

"All living things are made of exactly one cell."

What is wrong?

Write it the right way.

PREVIEW

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My name _____ Date _____

Quiz B

Pick the best answer. Write its letter.

Take your time. Guess if you are not sure.

7 Which sentence is the first tenet of cell theory?

A All cells are the same size.
B Only plants are made of cells.
C All living things are made of one or more cells.

8 An amoeba is...

A A living thing made of one cell
B A living thing made of no cells
C A part of a muscle

9 Which sentence matches the third tenet?

A All cells come from existing cells.
B All cells have a nucleus.
C All cells are alive forever.

10 Which of these is made of many cells?

A A maple tree
B A bacterium
C An amoeba

11 What does basic unit of structure and function mean?

A Cells are the biggest part of the body
B Cells make up the body and do its work
C Cells only hold things in place

12 Why is cell theory called a theory?

A Many scientists tested it and it held up
B One scientist guessed it
C It has never been tested

PREVIEW

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My name _____ Date _____

Make Your Own

Make up your own cell theory pages.

Tip: use the readings and the tenets. Check each one with a partner.

1 Write a clue card for one scientist. Ask a partner to guess who.

My clue (do not write the name)

The answer is ☐

2 Write one new example for each tenet of cell theory.

Tenet 1 example:

Tenet 2 example:

Tenet 3 example:

3 Write one true or false sentence about cells. Check one.

My sentence about cells

It is ☐ **true** ☐ **false**

PREVIEW

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My name _____ Date _____

Cut and Paste 1

Cut out the six pieces. Paste each one in the right box.

Read each piece. Which tenet does it show?

Tenet 1: Made of cells	Tenet 2: Basic unit	Tenet 3: Cells from cells

PREVIEW

Cut on the dashed lines: six pieces, one cut across and two cuts down.

A red blood cell carries oxygen through the body.	An oak tree is made of many cells.	A cell divides to make two new cells.
A bacterium is one living cell.	Cells in a leaf make food for the plant.	New skin cells come from skin cells that already exist.

Which piece was hardest to place? Why?

Answer Key: Readings, Words, Timeline

Every letter is the position of the right option in the printed list. The years are the textbook dates.

Readings pages 5, 6

Item	Letter	Answer
5.1	A	Three
5.2	A	One cell
5.3	B	A well-tested explanation
6.1	A	The walls of dead plant cells
6.2	C	Theodor Schwann
6.3	B	New cells come only from existing cells

Cell Theory Words page 7

Word	Letter	Meaning
1. cell	D	the basic unit of structure and function in living things
2. organism	F	a living thing
3. unicellular	B	made of one cell
4. multicellular	E	made of many cells
5. microscope	A	a tool that makes tiny things look bigger
6. theory	C	an explanation that scientists have tested many times

Scientists Timeline page 8

Scientist	Word	Year
1. Robert Hooke	cork	1665
2. Anton van Leeuwenhoek	pond	1670s
3. Matthias Schleiden	plants	1838
4. Theodor Schwann	animals	1839
5. Rudolf Virchow	cells	1855

Put the Timeline in Order page 9

Event	Answer
A. Matthias Schleiden decides that all plants are made of cells.	3
B. Robert Hooke looks at cork and names cells.	1
C. Rudolf Virchow writes that new cells come from existing cells.	5
D. Anton van Leeuwenhoek sees living things in pond water.	2
E. Theodor Schwann decides that all animals are made of cells.	4
Two ideas one year apart	Matthias Schleiden and Theodor Schwann
Years from Hooke to Virchow	190

PREVIEW

Answer Key: Mistakes, Quizzes, Writing

The student in Find the Mistake is invented. Accept any wording that fixes the sentence.

Item	What went wrong	Right sentence
20.1	Hooke named cells in 1665. Cell theory was put together by many scientists, from 1838 to 1855.	Hooke named cells in cork in 1665. Cell theory came together over many years.
20.2	Schleiden studied plants. Schwann studied animals.	Matthias Schleiden decided all plants are made of cells. Schwann decided all animals are.
20.3	Virchow said the opposite: new cells come only from cells that already exist.	New cells come only from cells that already exist.
20.4	Tenet 1 says one or more cells. A person has many cells.	All living things are made of one or more cells.

Quizzes pages 21, 22

Item	Letter
21.1	A
21.2	B
21.3	A
21.4	C
21.5	A
21.6	B
22.1	C
22.2	A
22.3	A
22.4	A
22.5	B
22.6	A

Short answers: what to look for pages 18, 19

Item	Look for
18.1	Rows of tiny box-shaped spaces, which were the walls of dead plant cells. He called them cells because they looked like small rooms.
18.2	Tiny living things, which nobody had described before. He saw them with a single-lens microscope that he made.
18.3	Together their work showed that both plants and animals are made of cells, so it could be true of all living things.
19.1	All living things are made of one or more cells. Examples: a bacterium (one cell), a tree or a person (many cells).
19.2	Cells make up the body (structure) and they do the work of life (function).
19.3	Many scientists tested the ideas for many years and the ideas held up. A theory is a well-tested explanation.

Drawing, exit tickets, Make Your Own

- Draw What Hooke Saw (page 17): rows of tiny box-shaped spaces with walls between them. The spaces were walls of dead plant cells; Hooke called them cells because they looked like small rooms.
- Exit tickets (page 23): ticket 1 names the three tenets; ticket 2 pairs one scientist with what that scientist found and the year; ticket 3 is open.
- Make Your Own (page 24): a clue card that points to one scientist; one new example for each tenet; a true or false sentence that is really true or false.

PREVIEW

Cell Theory Tracker

One student, every scored page. Filled example: page 37.

Student _____ Teacher _____ Month _____

Page	Page type and set	Items	Right	Date	Notes
5	Reading 1: Cell Theory in Short	3			
6	Reading 2: How the Theory Was Built	3			
7	Cell Theory Words	6			
8	Scientists Timeline	10			
9	Put the Timeline in Order	7			
11	The Three Tenets	3			
12	Which Tenet?	6			
13	Who Is It? Match	5			
14	Who Said It?	6			
15	True or False 1	6			
16	True or False 2	6			
20	Find the Mistake	4			
21	Quiz A	6			
22	Quiz B	6			
26	Cut and Paste 1	6			
27	Cut and Paste 2	6			
28	Cut and Paste 3	6			

How to fill this in

Write how many items the student got right with no prompt, and the date. A blank means not tried yet, never wrong. There are 95 items on the 17 scored pages. Answer keys: pages 29 to 32. Filled example: page 37.

This month we are working on (your own standard or wording)

PREVIEW

Team Note

Use this page between team meetings or when a student moves classes, to hand off what changed without writing a note from scratch. Everything below is observable, with a blank for the number or the wording your team already uses.

Student _____ Team member _____ Date _____

Page type	Covered since last note (Y/N)	Items right	Still blank
Readings and words			
Timeline			
Tenets			
Who did it			
True or false			
Find the mistake			
Quizzes			
Sorts			

What I saw (observable, not a conclusion)

- Put ___ of 5 scientists in order without a prompt.
- Matched ___ of 9 tenet items (pages 11, 12).
- Got ___ of 12 true or false sentences right (pages 15, 16).
- Explained a tenet in a complete sentence: yes / no / with a reminder.

Next step

- Next page or set: ___, because ___ (what you saw).
- What to try in another class or at home: ___.
- What to keep doing because it is working: ___.
- Anything for the team meeting to decide: ___ (this page records what happened, never a label or a plan).

Summary, in one or two sentences, for whoever reads this next

A filled-in line, for reference

"Got 4 of 6 true or false sentences right on 10/16. Next step: reread Reading 2 and ask what the cork cells really were." That is the level of detail this page is built for. It matches the filled example on page 37.

PREVIEW

Maya's Tracker (Invented Student)

Maya R. is invented; nothing on this page describes a real student. The blank tracker is on page 33.

Student	Teacher	Month
Maya R. (an invented student)	Mr. Okafor (invented)	October

Page	Page type and set	Items	Right	Date	Notes
5	Reading 1: Cell Theory in Short	3	3	10/6	-
6	Reading 2: How the Theory Was Built	3	2	10/7	Missed which idea Virchow added
7	Cell Theory Words	6	5	10/8	Mixed up unicellular and multicellular
8	Scientists Timeline	10	8	10/9	Two years wrong
9	Put the Timeline in Order	7	7	10/10	-
11	The Three Tenets	3	-	-	-
12	Which Tenet?	6	4	10/14	Mixed up tenets 2 and 3
13	Who Is It? Match	5	5	10/15	-
14	Who Said It?	6	-	-	-
15	True or False 1	6	4	10/16	Thought cork cells were alive
16	True or False 2	6	-	-	-
20	Find the Mistake	4	-	-	-
21	Quiz A	6	5	10/20	Mixed up Schleiden and Schwann
22	Quiz B	6	-	-	-
26	Cut and Paste 1	6	-	-	-
27	Cut and Paste 2	6	-	-	-
28	Cut and Paste 3	6	-	-	-

How to read it

Maya R. has done **9 of 17** scored pages and got **43 of 52** items right with no prompt. **3** pages were all right and **6** carry a note. Every number comes from the table.

What the table points to

The lowest pages are Reading 2: How the Theory Was Built (2 of 3) and Which Tenet? (4 of 6) and True or False 1 (4 of 6). Those are where the next practice goes. The 8 pages left blank are not tried yet, never wrong.

PREVIEW

Binder Cover

Slide this into the front of a binder. Type a name in the two fields or write it by hand. The divider tabs and a spine label to cut out are on the next page (page 40).

Science - Life Science

CELL THEORY

Readings, Timeline and Practice

Hooke | **Leeuwenhoek** | **Schleiden**

Schwann | **Virchow**

Teacher _____

Class or student _____

PREVIEW