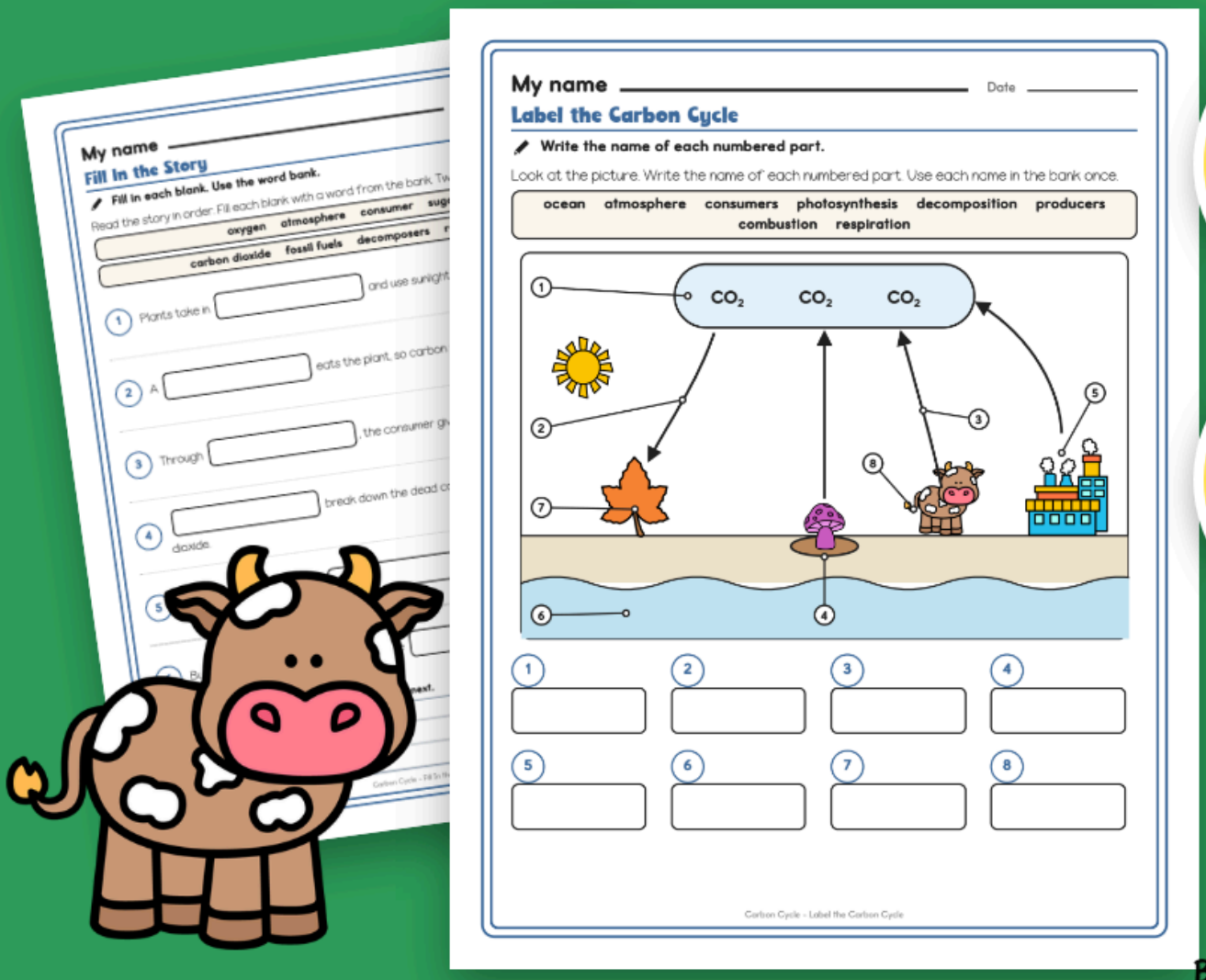
CARBON CYCLE

DIAGRAM · READING · VOCABULARY · QUIZ · KEY



GRADES 6-9

25 STUDENT PAGES

Bright Path Sped

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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.

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PREVIEW

How To Read a Page

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

The parts of a page

- **The answer box.** A bordered box for a letter, a number 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 not at all.
- **The cut line.** Eight or nine pieces in a short grid, edge to edge: a few straight cuts across and down.

Kind of sheet	How many	What the student does
Readings and cards	4 sheets	Read, answer, and keep the process cards to look things up.
Words and matching	4 sheets, 22 items	Match words and parts; try a worked example.
Diagram and chart	2 sheets, 20 items	Label the cycle, then fill in a chart for the four processes.
Order and story	2 sheets, 12 items	Put six steps in order, then fill in the story with the bank.
True or false and mistakes	3 sheets, 16 items	Check sentences, fix false ones, find Mara's mistakes.
Writing	4 sheets, 12 questions	Short answers with at least four ruled lines, then explain-it boxes with at least five each.
Quizzes, exit tickets, sorts	12 items, 3 tickets, 17 pieces	Two quizzes, one exit sheet, two cut-and-sort mats.

PREVIEW

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 30 to 35.

Short answers and explain-its

Their keys (page 34) say what to look for, not one right sentence. Accept any answer that uses a fact from the readings or the process cards.

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

Short-answer boxes hold four lines and explain-it boxes hold five. 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.

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My name _____ Date _____

Reading 1: Where Carbon Goes

Read about the carbon cycle. Then answer.

The carbon cycle, photosynthesis and respiration

Carbon is in every living thing. The **carbon cycle** is the path carbon takes as it moves through the air, the oceans, the land and living things. Much of the carbon in the air is in **carbon dioxide**, a gas called CO_2. Plants and algae take carbon dioxide from the air and use sunlight to make sugar. This is **photosynthesis**. The sugar stores carbon inside the plant, and the plant gives off oxygen. Animals eat plants or other animals, so the carbon moves from one living thing to the next. Every living thing gives carbon dioxide back to the air through **respiration**, the process that breaks down sugar with oxygen to release energy.

Main idea: What is this reading mostly about?

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

1. What is carbon dioxide?
   - **A** A gas in the air that carries carbon
   - **B** A solid rock
   - **C** A kind of sugar

   [ ]

2. Which process takes carbon dioxide out of the air?
   - **A** Respiration
   - **B** Photosynthesis
   - **C** Burning fuel

   [ ]

3. What does respiration do?
   - **A** Makes sugar from sunlight
   - **B** Breaks down rock
   - **C** Breaks down sugar to release energy and gives carbon dioxide back to the air

   [ ]

PREVIEW

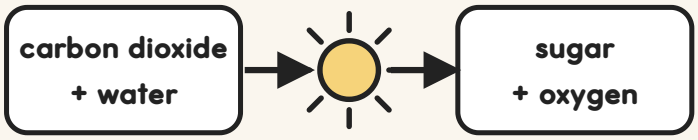
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My name _____ Date _____

Process Cards 1

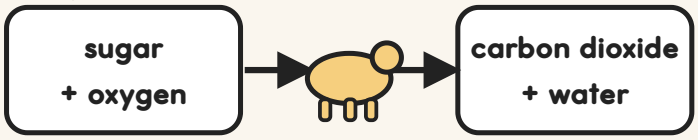
Read the cards. Keep them all week.

Photosynthesis



Takes in	carbon dioxide, water and sunlight
Gives out	sugar (stored carbon) and oxygen
Who does it	plants, algae and some bacteria
Carbon moves	from the air into living things: a sink
Example	a leaf on a sunny day

Respiration



Takes in	sugar (or other food) and oxygen
Gives out	carbon dioxide, water and energy
Who does it	plants, animals, fungi and bacteria
Carbon moves	from living things into the air: a source
Example	an animal breathing out after it runs

Pick one process. Tell what it does in your own words.

PREVIEW

My name _____ Date _____

Carbon Cycle Words

Match each word to what it means.

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

1	carbon cycle		A	Anything that puts carbon into the air.
2	photosynthesis		B	How cells break down sugar with oxygen to release energy.
3	respiration		C	Anything that takes carbon out of the air.
4	decomposition		D	The path carbon takes through the air, oceans, land and living things.
5	source		E	The breakdown of dead matter by decomposers.
6	sink		F	How plants and algae use sunlight to make sugar from carbon dioxide and water.

Use two of the words in one sentence about the carbon cycle.

PREVIEW

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My name _____ Date _____

Match the Parts of the Cycle

Match each word to what it means.

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

1	**Producer**		A	Coal, oil or natural gas formed from buried remains over millions of years.
2	**Consumer**		B	An organism, such as a fungus or a bacterium, that breaks down dead matter.
3	**Decomposer**		C	A gas made of one carbon atom and two oxygen atoms.
4	**Atmosphere**		D	An organism that makes its own food, such as a plant or an alga.
5	**Reservoir**		E	The layer of gases around Earth, which holds carbon dioxide.
6	**Fossil fuel**		F	Burning a fuel with oxygen, which releases energy and carbon dioxide.
7	**Combustion**		G	An organism that gets energy by eating other living things.
8	**Carbon dioxide**		H	A place where carbon is stored for a long time.

Pick one pair. Tell how a producer and a consumer are connected.

PREVIEW

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My name _____ Date _____

Fill In the Chart

Fill in the chart for each process.

Use the process cards. Words from the bank can help. For the air, write source or sink.

carbon dioxide sugar oxygen water sunlight

dead matter fossil fuel energy source sink

Photosynthesis	**Takes in**	
	Gives out	
	Source or sink?	

Respiration	**Takes in**	
	Gives out	
	Source or sink?	

Decomposition	**Takes in**	
	Gives out	
	Source or sink?	

Burning fossil fuels	**Takes in**	
	Gives out	
	Source or sink?	

PREVIEW

My name _____ Date _____

Fill In the Story

Fill in each blank. Use the word bank.

Read the story in order. Fill each blank with a word from the bank. Two words are not used.

oxygen	**atmosphere**	**consumer**	**sugar**
carbon dioxide	**fossil fuels**	**decomposers**	**respiration**

1. Plants take in _____ and use sunlight to make sugar.

2. A _____ eats the plant, so carbon moves into its body.

3. Through _____, the consumer gives off carbon dioxide.

4. _____ break down the dead consumer and release carbon dioxide.

5. Buried remains can become _____ over millions of years.

6. Burning fossil fuels returns carbon to the _____.

Pick one sentence. Tell what happens to the carbon next.

PREVIEW

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My name _____ Date _____

True or False 2

Is it true or false? Check one.

Check true or false for each sentence.

1. A carbon sink takes carbon out of the air. ☐ true ☐ false

2. A source puts carbon into the air. ☐ true ☐ false

3. Fossil fuels form from buried remains over millions of years. ☐ true ☐ false

4. Producers make their own food. ☐ true ☐ false

5. Burning fossil fuels takes carbon dioxide out of the air. ☐ true ☐ false

6. Carbon dioxide is a gas. ☐ true ☐ false

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

PREVIEW

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My name _____ Date _____

Short Answers 2

Answer each question in sentences.

Use facts from the readings and the process cards. Write in sentences.

4 Why do decomposers matter in the carbon cycle?

5 Describe how carbon can be stored for millions of years.

6 A classmate says the ocean has no role in the carbon cycle. Give one fact that answers them.

PREVIEW

My name _____ Date _____

Explain It 2

Explain your thinking in sentences.

Use what you know about the carbon cycle. Say why.

Start with: I know that ____ because ____.

4 Decomposition and respiration are alike in one way. Tell what that is, and use the words carbon dioxide.

5 Why is a fossil fuel called a reservoir?

6 Explain how a food web is a model of the carbon cycle.

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 What does respiration release?

A Oxygen and sugar
B Fossil fuels
C Carbon dioxide, water and energy

8 What does the ocean do in the carbon cycle?

A Takes in carbon dioxide from the air
B Makes oxygen from rock
C Stores carbon only in fossil fuels

9 Which process is a source?

A Photosynthesis
B Burning fossil fuels
C Carbon storage in rock

10 What is a reservoir?

A A gas that plants release
B A consumer that eats plants
C A place where carbon is stored for a long time

11 Which word means breaking down dead plants and animals?

A Photosynthesis
B Decomposition
C Combustion

12 What do plants release during photosynthesis?

A Carbon dioxide
B Fossil fuel
C Oxygen

PREVIEW

My name _____ Date _____

Check My Own Work

Check your own work. Mark yes or not yet.

1	I can say what the carbon cycle is.	☐ yes	☐ not yet
2	I can name the parts of the cycle on a diagram.	☐ yes	☐ not yet
3	I can tell a source from a sink.	☐ yes	☐ not yet
4	I can tell what photosynthesis takes in and gives out.	☐ yes	☐ not yet
5	I can tell what respiration takes in and gives out.	☐ yes	☐ not yet
6	I can put the steps of the cycle in order.	☐ yes	☐ not yet
7	I can explain how fossil fuels store carbon.	☐ yes	☐ not yet
8	I can explain one way the ocean is part of the cycle.	☐ yes	☐ not yet

The part I can explain best is...

The part I still need help with is...

PREVIEW

My name _____ Date _____

Cut and Sort: Who Is It?

Cut out the nine pieces. Sort each one into the right box.

Read each piece. Is it a producer, a consumer or a decomposer?

Producers	Consumers	Decomposers

Cut on the dashed lines: nine pieces, two cuts across and two cuts down.

Grass	A deer	A mushroom on a log
An alga in a pond	A hawk	Bacteria in the soil
A sunflower	A frog	A fungus on dead leaves

Which piece surprised you? Why?

PREVIEW

Answer Key: Worked Example, Diagram, Chart

Accept any correct answer that matches the process card. For the chart, the air is the reference: photosynthesis takes carbon out, so it is a sink.

Worked Example: your turn page 10

Step	Answer
Step 1 key words	carbon dioxide / burned
Step 2 process	Burning fossil fuels
Check	No: photosynthesis makes sugar, and burning does not.

Label the Carbon Cycle page 13

Number	Part
1	atmosphere
2	photosynthesis
3	respiration
4	decomposition
5	combustion
6	ocean
7	producers
8	consumers

Fill In the Chart page 14

Process	Takes in	Gives out	Source or sink?
Photosynthesis	carbon dioxide, water, sunlight	sugar, oxygen	sink
Respiration	sugar, oxygen	carbon dioxide, water, energy	source
Decomposition	dead matter	carbon dioxide	source
Burning fossil fuels	fossil fuel, oxygen	carbon dioxide, energy	source

PREVIEW

Answer Key: Writing

These pages have no single right sentence. Accept any answer that uses a fact from the readings or the process cards.

Short answers: what to look for pages 19, 20

Item	Look for
19.1	The carbon cycle is the path carbon takes through the air, oceans, land and living things. Any two stores: the atmosphere, the oceans, living things, rock, fossil fuels or soil.
19.2	Photosynthesis takes in carbon dioxide and makes sugar; respiration takes in sugar and oxygen and gives off carbon dioxide. Accept any clear opposite pair.
19.3	A sink takes carbon out of the air: photosynthesis pulls carbon dioxide into the plant. A source puts carbon into the air: burning gasoline releases carbon dioxide.
20.1	They break down dead plants, dead animals and waste. They release carbon dioxide and nutrients, so carbon can return to the air and soil.
20.2	Buried remains of plants and animals turn into fossil fuels or rock, which hold the carbon for a long time.
20.3	The ocean takes in carbon dioxide from the air and holds much more carbon than the air does. Any clear fact about the ocean taking in carbon dioxide is correct.

Explain it: what to look for pages 21, 22

Item	Look for
21.1	Plants take in carbon dioxide and make sugar (photosynthesis). Animals eat plants, so the carbon moves into them, and they give off carbon dioxide (respiration).
21.2	Sinks take carbon out of the air, so less of it stays there. Accept any explanation that says a sink removes carbon from the air.
21.3	Fossil fuel carbon was locked underground for millions of years. Respiration releases carbon that living things took in recently. Accept any answer that says the stored carbon had been out of the cycle for a long time.
22.1	Both break down material that holds carbon, and both release carbon dioxide. Decomposition breaks down dead matter; respiration breaks down sugar.
22.2	A fossil fuel stores carbon for a long time, until it is burned or otherwise released.
22.3	Carbon moves from producers to consumers when one organism eats another, so the carbon follows the food web. Accept any answer that traces carbon from a producer to a consumer.

Exit tickets

- Exit tickets (page 26): ticket 1 names two sources and two sinks, each with a correct example; ticket 2 names what the chosen process takes in and gives out; ticket 3 is open.

PREVIEW

Carbon Cycle Tracker

One student, every scored sheet. Filled example: page 40.

Student _____ Teacher _____ Month _____

Page	Page type and set	Items	Right	Date	Notes
5	Reading 1: Where Carbon Goes	3			
6	Reading 2: Oceans, Decomposers and Fossil Fuels	3			
9	Carbon Cycle Words	6			
11	Match the Parts of the Cycle	8			
12	Which Process?	8			
13	Label the Carbon Cycle	8			
14	Fill In the Chart	12			
15	Put the Steps in Order	6			
16	Fill In the Story	6			
17	True or False 1	6			
18	True or False 2	6			
23	Find the Mistake	4			
24	Quiz A	6			
25	Quiz B	6			
28	Cut and Sort: Sources and Sinks	8			
29	Cut and Sort: Who Is It?	9			

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 105 items on the 16 scored sheets. Answer keys: pages 30 to 35. Filled example: page 40.

This unit 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 _____

Kind of sheet	Covered since last note (Y/N)	Items right	Still blank
Readings and words			
Matching			
Diagram and chart			
Order and story			
True or false			
Find the mistake			
Quizzes			
Sorts			

What I saw (observable, not a conclusion)

- Matched ___ of 16 parts and clues (pages 11, 12).
- Labeled ___ of 8 parts of the diagram (page 13).
- Put ___ of 6 steps in order (page 15).
- Got ___ of 12 true or false sentences right (pages 17, 18).
- Explained what one process does 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 5 of 6 true or false sentences right on 10/17. Next step: reread Reading 1 and ask which process takes carbon out of the air." That is the level of detail this page is built for. It matches the filled example on page 40.

PREVIEW

Jordan's Tracker (Invented Student)

Jordan R. is invented; nothing on this page describes a real student. The blank tracker is on page 36.

Student: Jordan R. (an invented student)

Teacher: Ms. Patel (invented)

Month: October

Page	Page type and set	Items	Right	Date	Notes
5	Reading 1: Where Carbon Goes	3	2	10/6	Mixed up carbon dioxide and sugar
6	Reading 2: Oceans, Decomposers and Fossil Fuels	3	3	10/7	-
9	Carbon Cycle Words	6	5	10/8	Mixed up source and sink
11	Match the Parts of the Cycle	8	6	10/9	Swapped producer and consumer
12	Which Process?	8	7	10/10	Missed one respiration clue
13	Label the Carbon Cycle	8	5	10/13	Named the ocean as the cloud
14	Fill In the Chart	12	9	10/14	Left three source or sink boxes blank
15	Put the Steps in Order	6	4	10/15	Put decomposition before the consumer
16	Fill In the Story	6	5	10/16	Wrote oxygen where carbon dioxide goes
17	True or False 1	6	5	10/17	Thought plants give off carbon dioxide
18	True or False 2	6	6	10/17	-
23	Find the Mistake	4	3	10/20	Missed the decomposer sentence
24	Quiz A	6	6	10/21	-
25	Quiz B	6	4	10/21	Mixed up reservoir and source
28	Cut and Sort: Sources and Sinks	8	7	10/22	Put the algae piece in the source box
29	Cut and Sort: Who Is It?	9	-	-	-

PREVIEW

How to read it

Jordan R. has done **15 of 16** scored sheets and got **77 of 96** items right with no prompt. **3** sheets were all right and **12** carry a note. Every number comes from the table.

What the table points to

The lowest sheet is Label the Carbon Cycle (5 of 8). That is where the next practice goes. The 1 sheet left blank is not tried yet, never wrong.