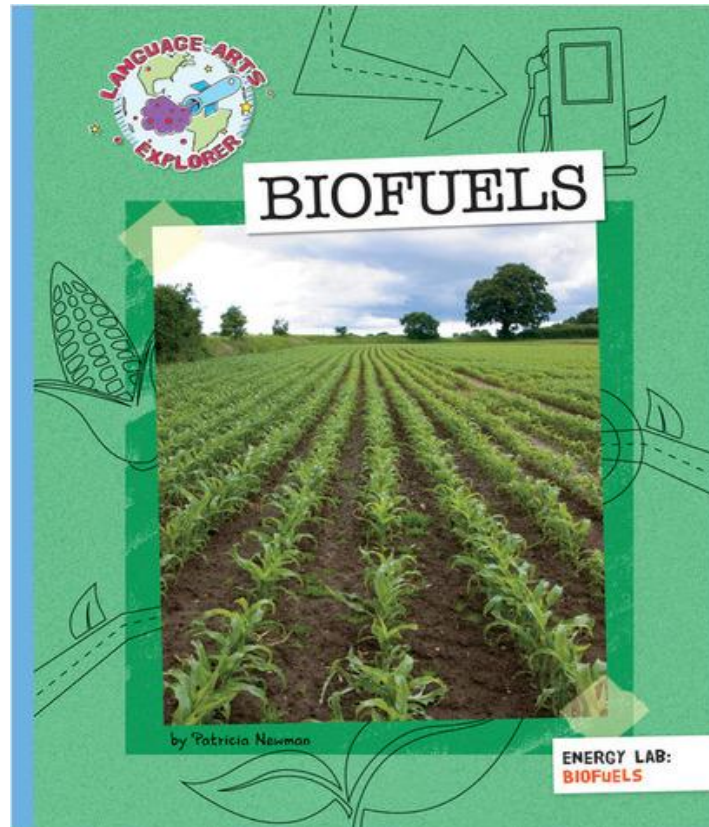


A CCSS Annotated Activity Guide for



Written by Patricia Newman

Published by Cherry Lake Publishing

Guide crafted by Debbie Gonzales

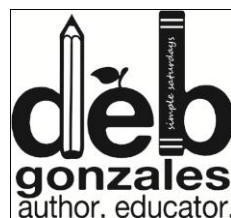
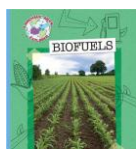


Table of Contents

Biofuels Foldable Study Organizer	3
Biofuels Foldable Study Organizer: Clue Cards	5
Biofuels Foldable Study Organizer: Picto Clue Cards	7
Biofuels: Cause and Effect Graphic Organizers	9
Biofuels: Cause and Effect Graphic Organizers Work Sheet	10
Biofuels: Cause and Effect Graphic Organizers Answer Sheet	11
Biofuels Cryptogram	12
Biofuels Cryptogram Answers	13
Biofuels Crossword Puzzle	14
Biofuels Crossword Puzzle Answers	15
Common Core State Standards Annotations – Reading Informational Texts	16
Acknowledgements	18



Biofuels Foldable Study Organizer

Objective: To categorize facts about biofuels in a concrete manipulative manner.

Materials:

- Print out of four columned Foldable found on page 4
- Print out of Clue Cards found on pages 5 & 6
- Scissors
- Tape
- Stapler
- The book *Biofuels*
- Picto Clue Cards found on pages 7 & 8



Procedure:

- Print Foldable found on page 4.
- Using scissors, trim around the outer border of the Foldable.
- Following the horizontal line, fold up bottom edge. Be certain that the pictures are revealed on the front of the Foldable.
- Crease along the horizontal line.



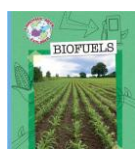
Crease along dotted line.





- Tape the outer edges, securing the picture flap to the back of the Foldable.
- Separate each section with a staple creating a pocket for each category.

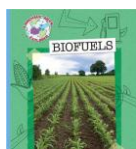


Create a category pocket with a staple.

- Cut out Clue Cards.
- Sort the Clue Cards by slipping them in the correct category pocket.
- Check your work using the Picto Clue Cards found on pages 7 & 8. Note that category is designated by the corresponding graphic identifying the Foldable classification. Depending on the students' capabilities, feel free to play the Foldable game with these Picto Clue Cards, which offer an error-free, enjoyable game playing experience.



<p>Biomass</p> 	
<p>Fossil Fuels</p> 	
<p>Biofuels</p> 	
<p>Biodiesel</p> 	



Biofuels Foldable Study Organizer: Clue Cards

Oil

Sugar Cane

Ethanol

Created by pressing 75% of the fat out of algae

Switchgrass

Petroleum

Helps reduce greenhouse gases

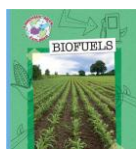
Sugar cane may be a better way to create ethanol

Very old biomass

Stores carbon

Plants

Can become liquid fuel



Carbon is a key ingredient in production

Kerosene

Cutback on need for non-renewable energy sources

Non-renewable energy source

Organic material made by plants

Organic materials made by animals

Algae

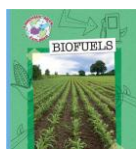
Corn production to create ethanol may lead to higher food prices

Costs more than regular gasoline due to lack of easy availability of algae

Some airlines are experimenting with a blend of petroleum-based jet fuel and biofuel from algae oil

Made from renewable organic materials

Gasification is the process by which energy is released by heating biomass



Biofuels Foldable Study Organizer: Picto Clue Cards

Oil



Sugar Cane



Ethanol



Created by pressing 75% of the fat out of algae



Switchgrass



Petroleum



Helps reduce greenhouse gases



Sugar cane may be a better way to create ethanol



Very old biomass



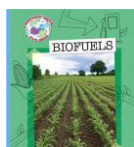
Stores carbon



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Cutback on need for non-
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Non-renewable energy source



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Corn production to create
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Costs more than regular gasoline
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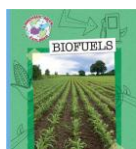
Some airlines are experimenting with a
blend of petroleum-based jet
fuel and biofuel from algae oil



Made from renewable organic
materials



Gasification is the process by
which energy is released by
heating biomass



Biofuels: Cause and Effect Graphic Organizers

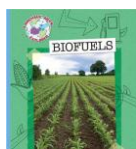
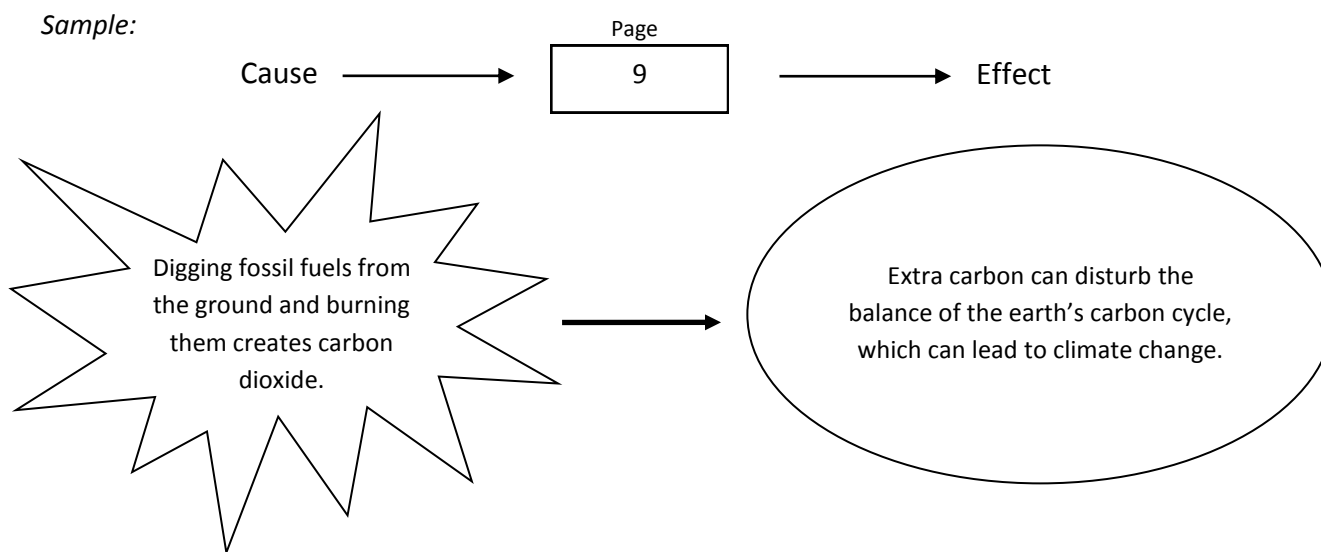
Objective: To study and cite references for the cause and effect of a number of issues regarding the use and development of biofuels.

Materials:

- Print out of page 10
- The book *BioFuels*
- Pencil or pen
- Answer Sheet is found on page 11

Procedure:

- Read *Biofuels*, paying close attention to issues regarding the causes and effects of fuel production.
- Use the graphic organizers found on page 10 to cite issues, following steps as illustrated in the sample below.
 - Cite page number for finding in the rectangle labeled “page.”
 - Note the cause of the issue in the graphic explosion.
 - Note the effect in the graphic oval.
- Notice that for the first two the graphic organizers on page 10 there are blank and filled spaces. The student must go on a scavenger hunt, of sorts, to discover the missing information.
- Note that the spaces in the third graphic organizer have been left blank. The student is required to fill in the blanks independently.

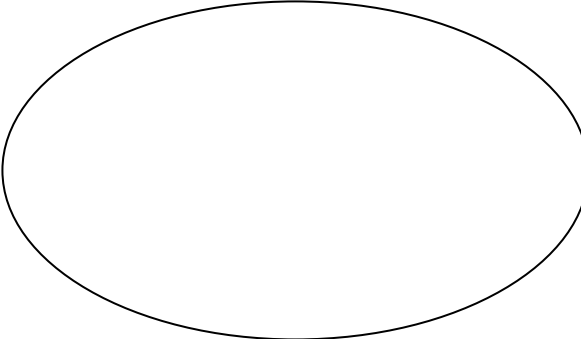


Biofuels: Cause and Effect Graphic Organizers Work Sheet

Cause → Page
6 → Effect

During photosynthesis, plants use the sun's energy and carbon dioxide to make food for themselves.

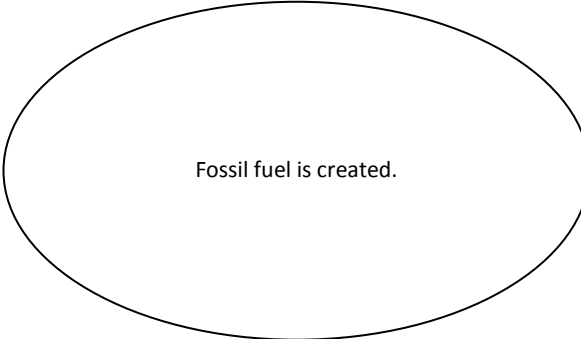
→



Cause → Page → Effect

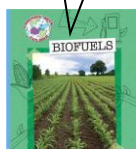
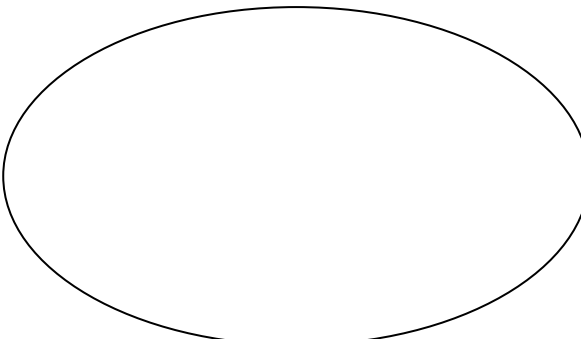
→

Fossil fuel is created.



Cause → Page → Effect

→



Biofuels: Cause and Effect Graphic Organizers Answer Sheet

Page
6

Cause → → Effect

During photosynthesis, plants use the sun's energy and carbon dioxide to make food for themselves.

When plants do this, they give off oxygen, a fundamental element of the carbon cycle.

Page
8

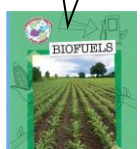
Cause → → Effect

Plants and animals underground are cooked by the earth's heat and pressure over millions of years.

Fossil fuel is created.

Page

Cause → → Effect



Biofuels Cryptogram

Unscramble each of the clue words.

Copy the letters in the numbered cells to other cells with the same number.

CEYDA

		8		9

REALIMN

				5		

NAGMOSSIR

				7				

MALNAI

		4			

TSLPNA

				1	

RAPORTINEIS

		2							

SOESINMIS

						6		

TAWES

				11

LISSUFLEOF

					10			

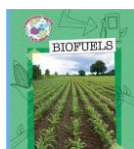
NICAAGR

						3

	H	
1		2

			B		
3	4	5		6	7

8	9	3	10	11



Biofuels Cryptogram Answers

CEYDA

d	e	c	a	y
		8		9

REALIMN

m	i	n	e	r	a	l
			5			

NAGMOSSIR

o	r	g	a	n	i	s	m	s
				7				

MALNAI

a	n	i	m	a	l
		4			

TSLPNA

p	l	a	n	t	s
				1	

RAPORTINEIS

r	e	s	p	i	r	a	t	i	o	n
		2								

SOESINMIS

e	m	i	s	s	i	o	n	s
							6	

TAWES

w	a	s	t	e
				11

LISSUFLEOF

f	o	s	s	i	l	f	u	e	l
							10		

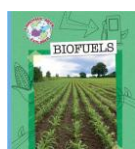
NICAOCR

o	r	g	a	n	i	c
						3

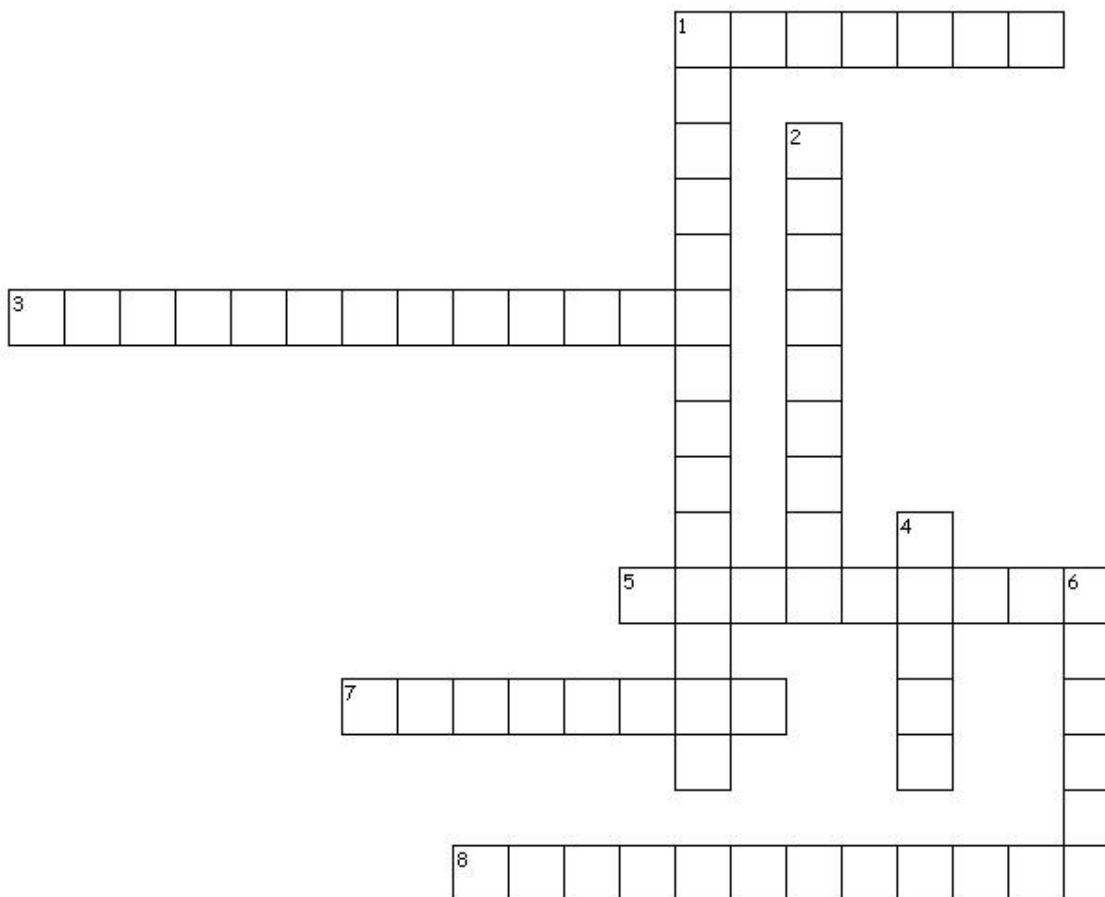
T	H	E
1	2	

C	A	R	B	O	N
3	4	5		6	7

C	Y	C	L	E
8	9	3	10	11



Biofuels Crossword Puzzle

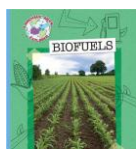


Across

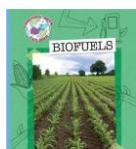
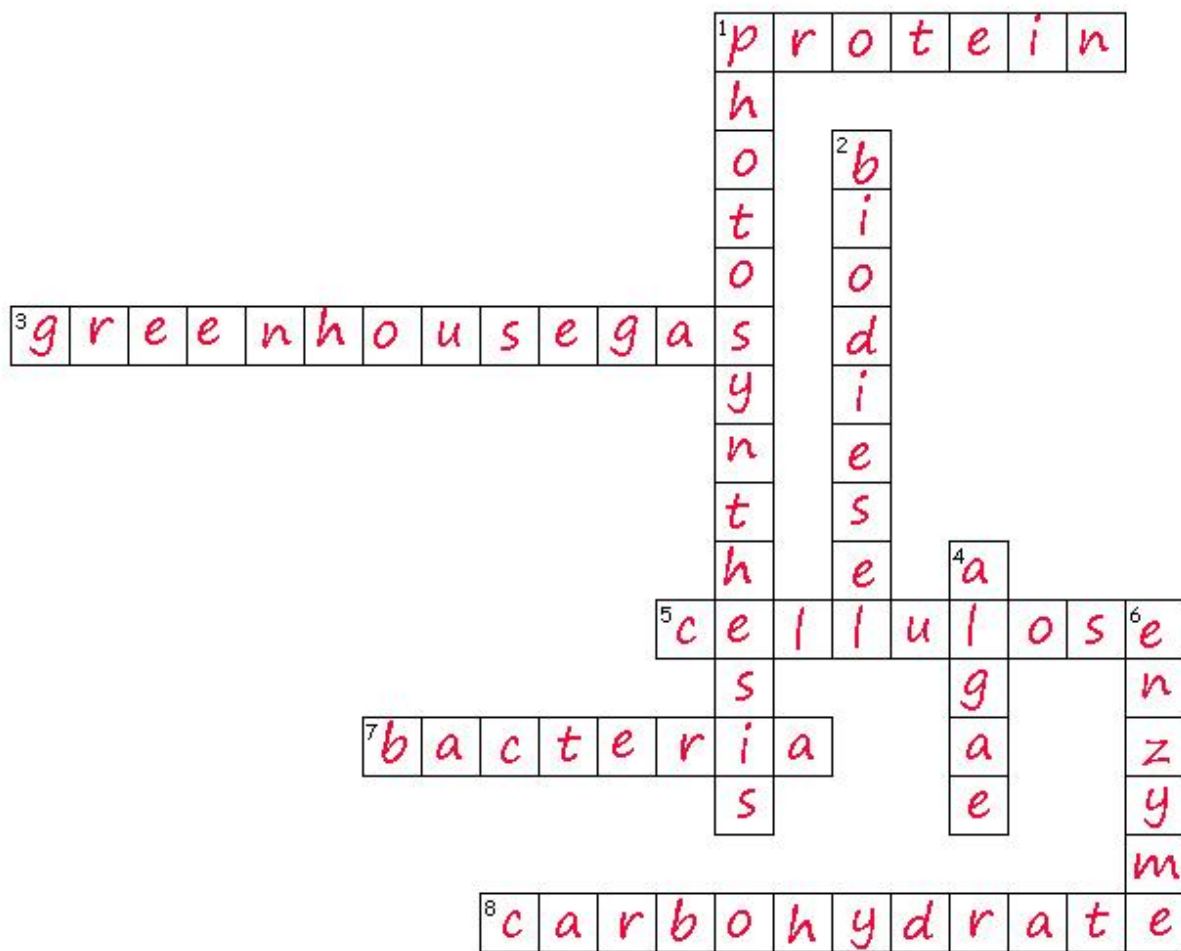
1. necessary for life on Earth
3. traps heat in atmosphere
5. found in plant cell walls
7. microscopic organisms
8. organic compound

Down

1. plant energy process
2. clean-burning fuel
4. carry out photosynthesis
6. speeds up chemical reaction in organisms

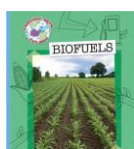


Biofuels Crossword Puzzle Answers

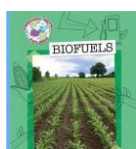


Common Core State Standards Annotations – Reading Informational Texts

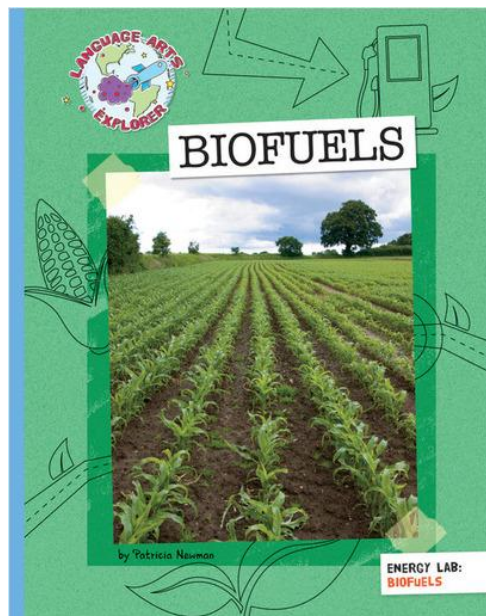
		Foldable & Clue Cards	Cause & Effect Graphic Org.	Cryptogram	Crossword
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers	✓	✓		✓
RI.3.2	Determine the main idea of a text; recount the key details and explain how they support the main idea.	✓	✓		
RI.3.3	Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	✓	✓		
RI.3.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 3 topic or subject area</i> .	✓			✓
RI.3.5	Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.	✓	✓	✓	
RI.3.7	Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	✓	✓		
RI.3.8	Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	✓	✓		
RI.1.4	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	✓	✓		
RI.4.2	Determine the main idea of a text and explain how it is supported by key details; summarize the text.	✓			
RI.4.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	✓	✓		



		Foldable & Clue Cards	Cause & Effect Graphic Org.	Cryptogram	Crossword
RI.4.5	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.	✓	✓		
RI.4.7	Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	✓	✓		
RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	✓	✓		
RI.5.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 5 topic or subject area</i> .	✓	✓	✓	✓
RI.6.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.	✓	✓	✓	✓
RI.6.7	Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	✓	✓		



Acknowledgements



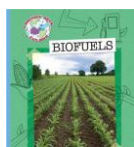
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