

Level Up

At Your Library

An iREAD
Summer Reading
Companion

from

Illinois
AGRICULTURE
in the ClassroomSM

Table of Contents

1	<i>Stepping Stones</i> and Plant Parts Logic Puzzle
11	<i>Right This Very Minute</i> and Spot IL!
30	<i>Farming Strong All Year Long</i> and Corn Soy Hog Pumpkin Cattle
54	<i>The Secret Life of Bugs</i> and Good Bugs, Bad Bugs Memory
62	<i>The Great Big Water Cycle Adventure</i> and Water Cycle Tower
69	<i>Max Explains Everything: Grocery Store Expert</i> and Indoor BINGO
71	<i>Carl and the Meaning of Life</i> and Beneficial Bugs Scavenger Hunt
73	<i>On the Farm, At the Market</i> and Farmers Market Scavenger Hunt
75	<i>Logan's Greenhouse</i> and Ins and Outs
94	<i>Superlative A. Lincoln</i> and Tin Foil Flatboat
97	<i>The Great Pumpkin Smash</i> and Pumpkin Catapult
106	<i>Off Like the Wind!: The First Ride of the Pony Express</i> and Walking Paper Horse
111	<i>Pizza! A Slice of History</i> and Solar Oven
114	<i>The Magic and Mystery of Trees</i> and Healthy Trees: Apple Addition

Level Up

At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



Stepping Stones

Lucy Knisley

Jen is used to not getting what she wants. She did not want to leave the city. She did not want to move to a farm with her mom and her mom's new boyfriend, Walter. She did not want to leave her friends and her dad. And she definitely did not want to get two new sisters. But Jen is at mercy of her parent's decision and has to learn to adapt, even if she doesn't like it. Follow Jen along her journey as she navigates through major life changes and tries to find her place in this new world.

Plant Parts Logic Puzzle

Test students' knowledge of which part of the plant their favorite vegetables are with this mind-bending logic puzzle activity!

See following page(s) for lesson plan!



PLANT PARTS LOGIC PUZZLE

Grade Level

3-8

Length of Lesson

30 minutes

Objective

By the end of this lesson, students will have a better understanding of plant parts, and which parts of plants we eat.

Materials Needed

- Scissors
- Glue or tape
- Copies of activity sheets

Standards

NGSS

3-LS3-1; MS-LS2-2

Lesson Summary

This lesson is a fun, hands-on activity designed to help students understand how the plants we eat are derived from different parts of the plants they come from.

Suggested Sequence of Events:

1. Set Up: Print enough copies of the activity sheets that each individual or group has enough materials. Refer to the Teacher Resources page for more information.
2. Read through the IAITC Seasons Ag Mag to learn more about the different specialty crop grown here in Illinois.
3. Complete the activity following the procedures:
 - Students can work individually or in small groups of two to three depending on the ability of your students.
 - Hand out materials to each student/group, except the categories answer key worksheet.
 - The categories answer key page is optional, to be used to help with the logic puzzle if needed.
 - First, have them cut out the plant part labels and match them to the 'tagged' vegetables. Once they are confident they have them matched correctly, use glue/tape to secure the labels.
 - Next, have them cut out the vegetable cards. Have them mix up the cards and then try to fill the shopping bag grid with the squares. Each edge of the square needs to match the edge of the square adjacent to it. For instance, roots need to match with other roots, stems need to match up with other stems, etc.
 - Once they fill the board, have them remove the squares and try again!
4. Whole class discussion and reflection of activity.

NOTE: There are two versions of both the vegetable cards and the shopping bag worksheet, each labeled "beginner" or "advanced". Use the appropriate version for your students, or start with "beginner" and then test their ability with "advanced". The "beginner" vegetable cards *may be* used interchangeably with the "advanced" shopping bag worksheet and vice versa. Use your best judgement!

TEACHER RESOURCES

General Game Information:

- The categories worksheet included is optional to use. It can be used as an introduction to plant parts or to help aid them as they complete the logic puzzle.
- There are two versions of the vegetable cards. The harder version includes all the fruits and vegetables from the categories sheet. The easier version includes only one fruit/vegetable from each category.
- There are also two versions of the shopping bag puzzle board. The easier version is a 3x3 grid and the harder version is a 4x4 grid.
- Mix and match the versions of the cards and grids according to the ability of your students!

Extension Ideas:

- Read “On the Farm, at the Market” by G. Brian Karas and talk about how commodities get to farmers markets.
- Talk about their favorite fruits and vegetables. Where are those crops grown? Are any of them grown in Illinois? Which state produces the most of those various crops?
- Invite a local specialty crop farmer who grows vegetables into your classroom to talk about growing food.
- Learn about locally grown foods and farmers markets. Challenge students to complete the AITC Farmers Market Scavenger Hunt worksheet.
 - What other commodities besides fruits and vegetables can be found at a farmers market?
- Learn more about gardening and grow vegetables or flowers in your classroom.
- Have students design their own garden. What would the dimensions be? What would they plant in their gardens?
- Learn more about pollinators and their role in agriculture.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!

Answer Key Note:

Correctly classifying plant parts is more complicated than it might seem. Some of the included plant parts could be classified differently. For instance, one could argue that green beans are actually a fruit instead of a seed, since we eat both the beans and the pods all together.

Teachers can make adjustments to how they want their students to classify these plant parts based on their own research and understanding and the lesson will still function the same.

Cut out the plant part labels on the next page and match them to the vegetables below according to which part we eat. Each one will be used only once!

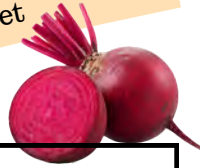
artichoke



asparagus



beet



broccoli



carrot



cauliflower



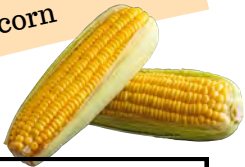
celery



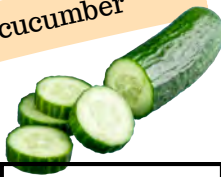
cilantro



corn



cucumber



green bean



horseradish



kale



lettuce



pea



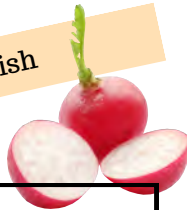
pepper



pumpkin



radish



rhubarb



spinach



tomato



wheat



Cut out these plant part labels and match them to the vegetables on the previous page according to which part we eat. Each one will be used only once!

root	stem	seed	flower
root	leaf	seed	flower
root	leaf	fruit	flower
root	leaf	fruit	seed
stem	leaf	fruit	
stem	seed	fruit	



Categories Answer Key

Roots



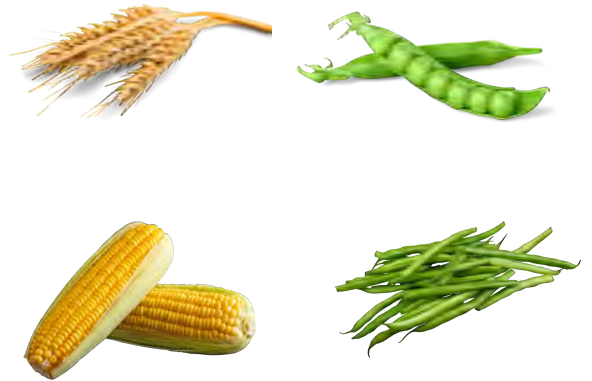
Stems



Leaves



Seeds



Flowers

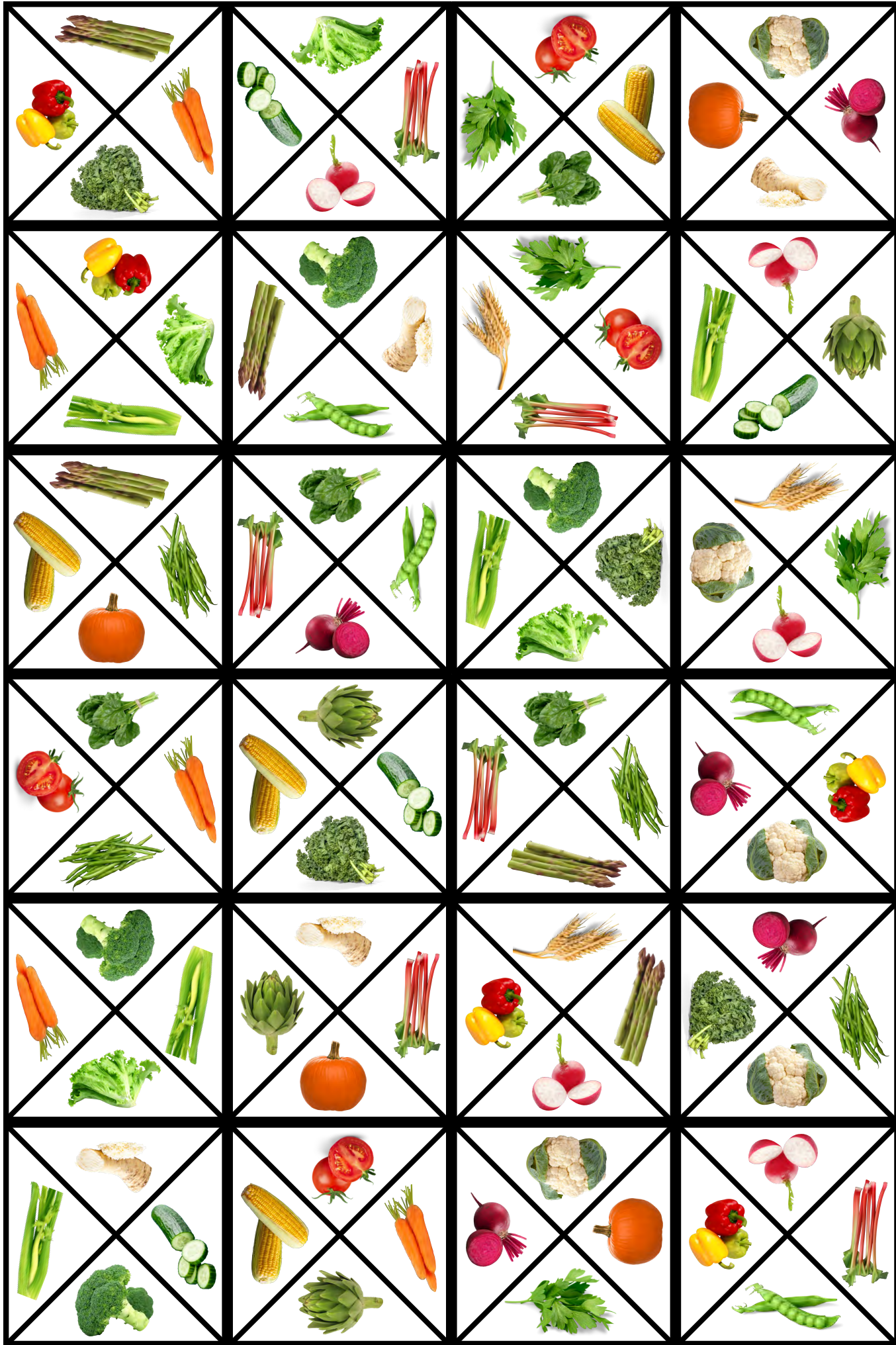


Fruits



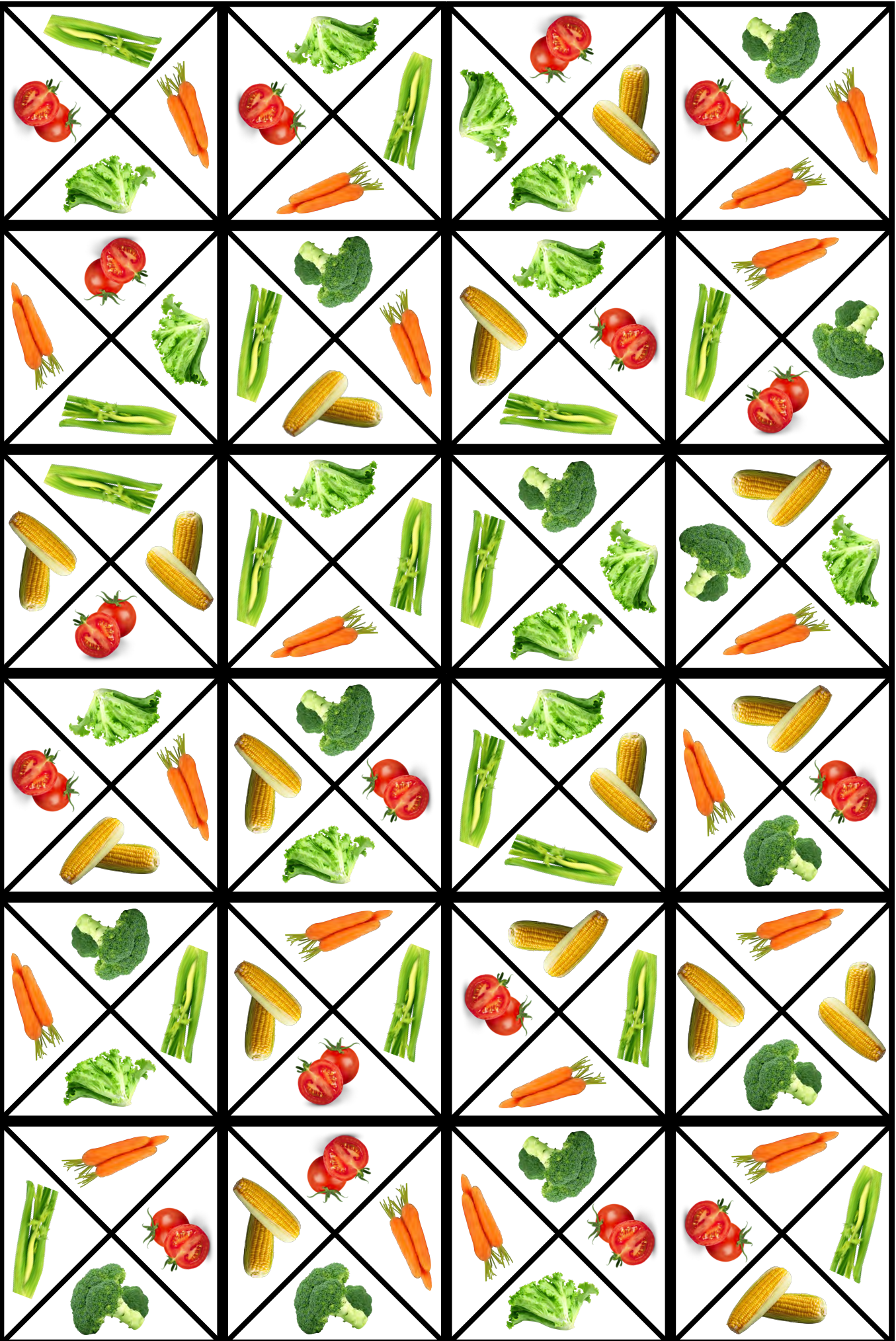
ADVANCED

Instructors: Cut out these Vegetable Cards along the THICK lines. You will end up with 24 square cards! These are the playing cards for the review activity.



BEGINNER

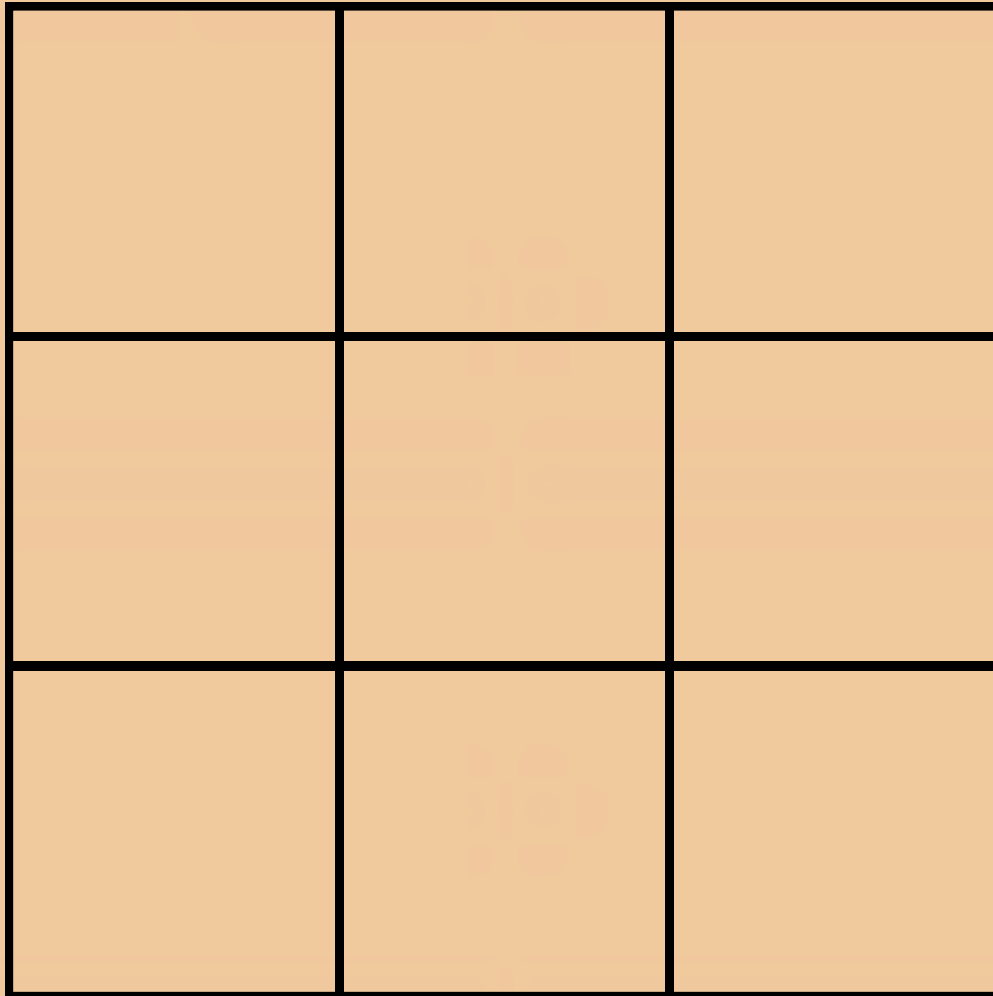
Instructors: Cut out these Vegetable Cards along the THICK lines. You will end up with 24 square cards! These are the playing cards for the review activity.



Time to go shopping at the Farmers Market
and put your knowledge to the test!

Arrange the Vegetable Cards into
the shopping bag below so that
"like" plant parts are touching each
other (i.e. - stems touching stems,
roots touching roots)

BEGINNER



Time to go shopping at the Farmers Market and put your knowledge to the test!

Arrange the Vegetable Cards into the shopping bag below so that "like" plant parts are touching each other (i.e. - stems touching stems, roots touching roots)

Level Up

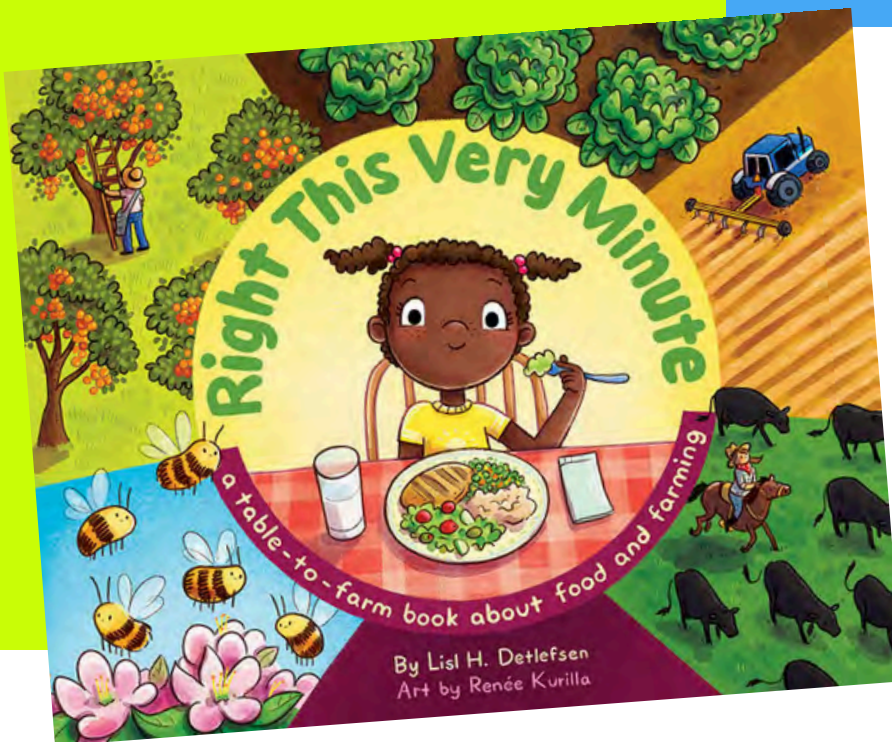
At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



Right This Very Minute Lisl Detlefsen



How food gets from farm to table is explained in this fun and fast-paced introduction to the farms and farmers that grow the food we eat every day. This delicious celebration of food and farming is sure to inspire readers of all ages to learn more about where their food comes from — and appreciate the hard work of farming and the cool technology today's farmers use.

Spot IL! Card Game

Learn more about Illinois Agriculture with this fun, fast-paced observation card game!

See following page(s) for lesson plan!



Science

SPOT IT!

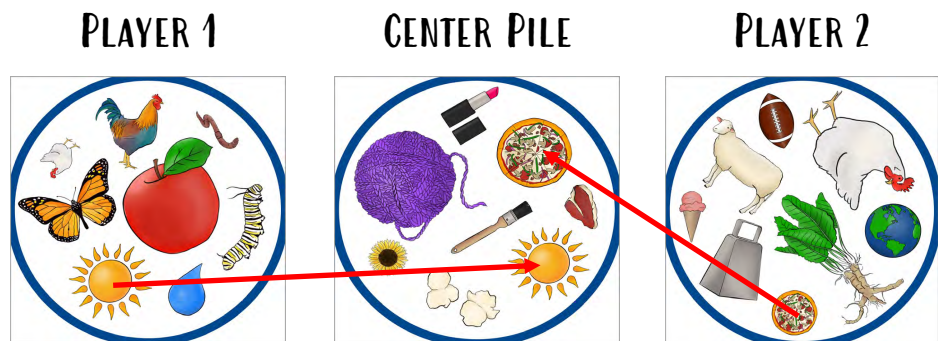
From the clothes you wear and the food you eat, to the sun in the sky and worms below your feet, the world of agriculture is all around you! This game highlights various parts of the world of agriculture all throughout the supply chain, environment, and more.

Directions:

1. Shuffle the deck of cards and deal them out, one card at a time to each player, until they are gone. Players should keep their cards in a stack, face down.
2. Put the very last card down in the center of the players, face up.
3. To begin playing, each player will flip over the top card of their stack and try to find the one symbol on their card that matches the center card.
4. When the matching symbol is found, the player will quickly lay their card down on the center pile and say, out loud, which symbol they've matched.
5. Players will continue to find the one matching symbol on the top card in their hand to the center card. Continue this until one player runs out of cards.
 - Every card has only one matching symbol to every other card. Symbols will be in different locations and have different sizes on various cards.
5. Whoever runs out of cards first, wins!

Example:

Player one's card has a sun symbol that matches the center card. Player two matches the pizza. Whoever finds the match and lays it down first, while saying their symbol out loud, moves onto their next card.

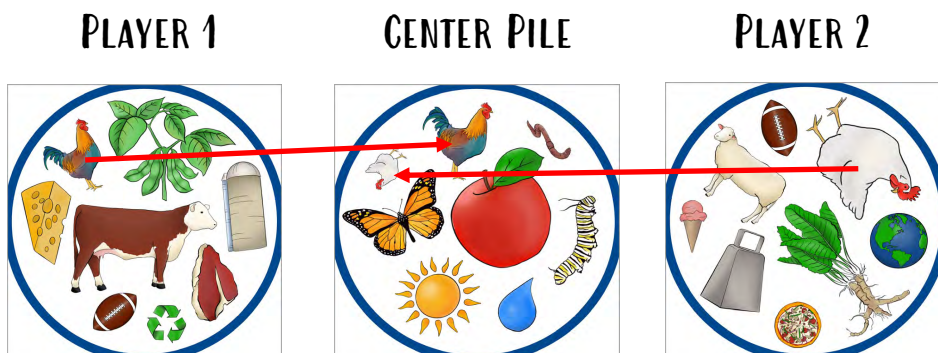


The player who matches first, moves to their next card.

The winning card is new center card.

Players that don't match quick enough continue trying to match that card to the new center card.

Player one laid their card down first and said "sun" before player two could spot their matching symbol. Now, players have to match their cards to player one's card that was laid in the center.






































SPOT IL! SYMBOLS

Due to our rich, fertile soil, Illinois is a leading agricultural producer for the country and world. The agriculture industry in Illinois is a primary contributor to our state's economy, contributing \$51.1 billion in value-added. Seventy-six percent of Illinois land is farmland, on which there are approximately 72,600 farms growing our top five agriculture commodities: corn, soybeans, hogs for pork products, cattle and calves for beef products, and specialty crops like pumpkins and horseradish!

























Learn more about each of these symbols by reading through the Spot IL! Booklet.

LIVESTOCK	COMMODITIES	ENVIRONMENT	GENERAL AG
 Beef Cow	 Wheat	 Tree	 Tractor
 Dairy Cow	 Cotton	 Earth	 Combine
 Pig	 Pumpkin	 Flower	 Semi
 Goat	 Apple	 Sun	 Silo
 Horse	 Horseradish	 Recycle	 Barn
 Rooster	 Soybean	 Water	 Spade
 Chicken	 Corn	 Earthworm	 Pitchfork
 Sheep		 Caterpillar	
 Turkey		 Bee	
		 Butterfly	



Science

SPOT IL! SYMBOLS

CO-PRODUCTS & BY-PRODUCTS		MISC.			
	Popcorn		Pizza		Silverware
	Football		Soda		Cowbell
	Flour		T-Shirt		Abraham Lincoln
	Steak		Ice Cream		
	Toothpaste		Bread		
	Cheese		Paintbrush		
	Button		Lipstick		
	Vegetable Oil		Chicken Leg		
	Yarn		Jeans		
	Egg		Milk		
	Straw Bale				

Spot IL!

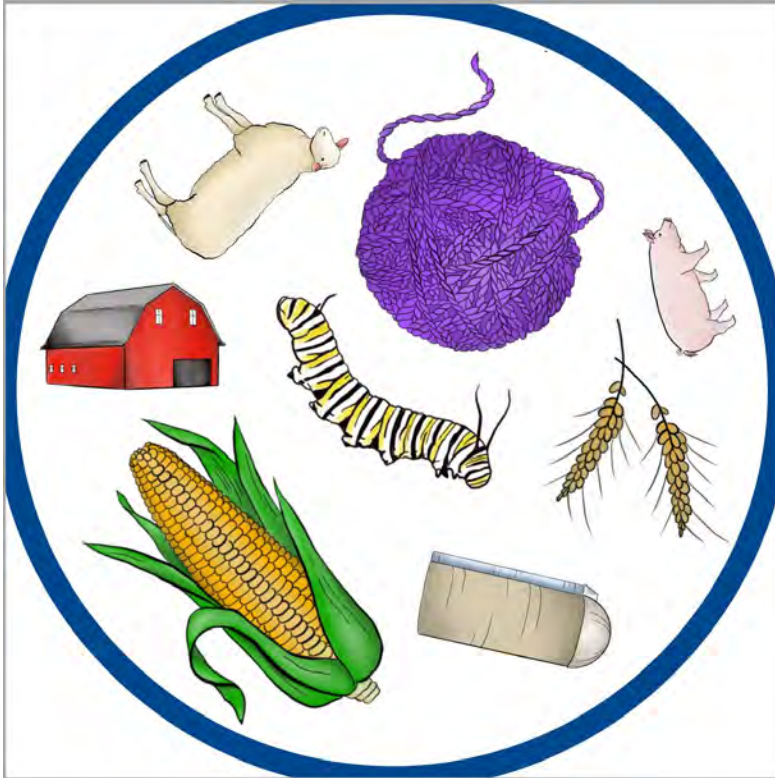
a game from

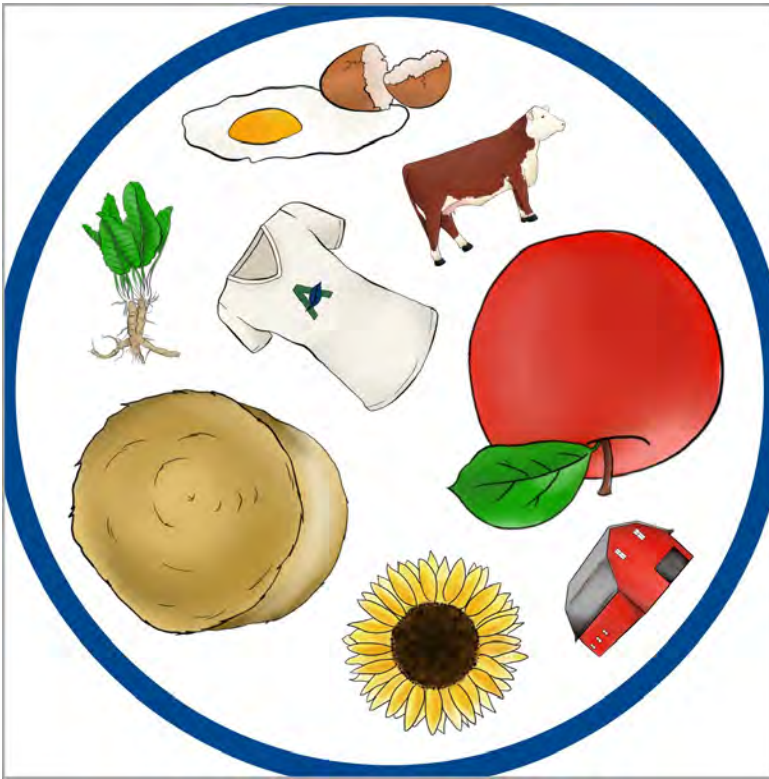
Illinois
AGRICULTURE
in the ClassroomSM

DIRECTIONS

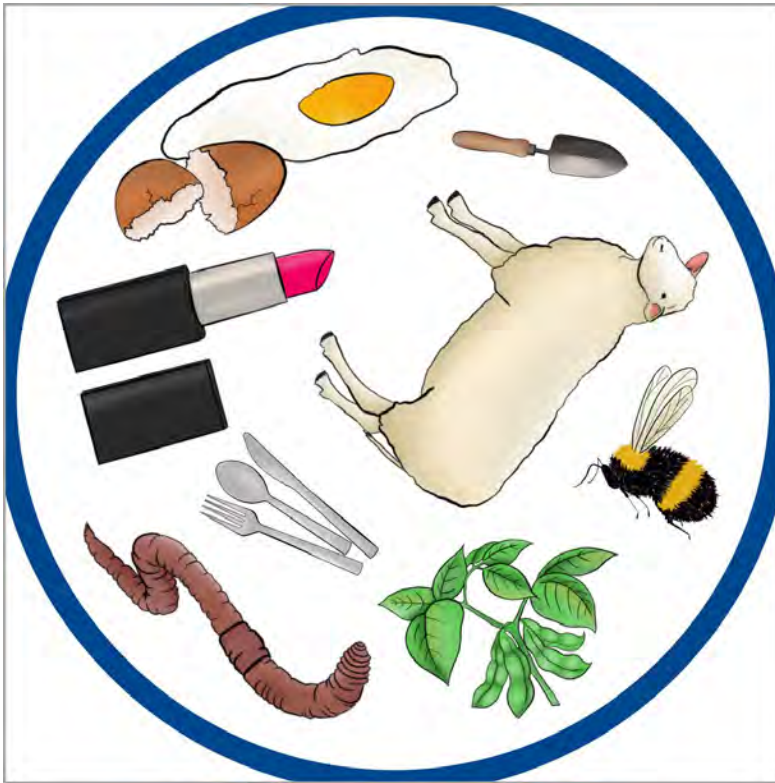
1. Shuffle the deck of cards and deal them out, one card at a time to each player, until they are gone. Players should keep their cards in a stack, face down.
2. Put the very last card down in the center of the players, face up.
3. To begin playing, each player will flip over the top card of their stack and try to find the one symbol on their card that matches the center card. Every card has only **one** matching symbol to every other card. Symbols will be in different locations and have different sizes on various cards.
4. When the matching symbol is found, the player will quickly lay their card down on the center pile and say, out loud, which symbol they've matched.
5. Players will continue to find the one matching symbol on the top card in their hand to the center card. Continue this until one player runs out of cards.
6. Whoever runs out of cards first, wins!





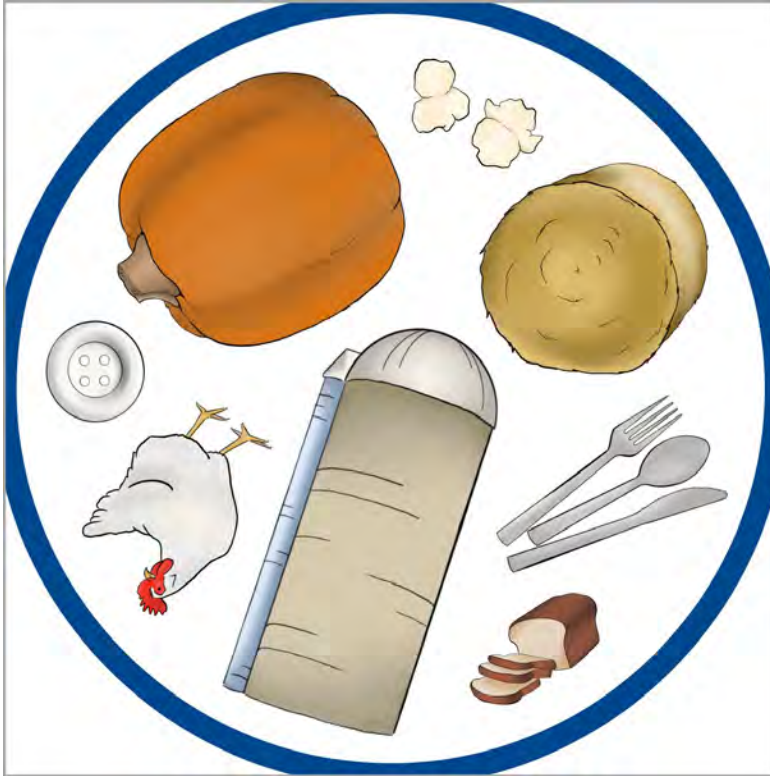


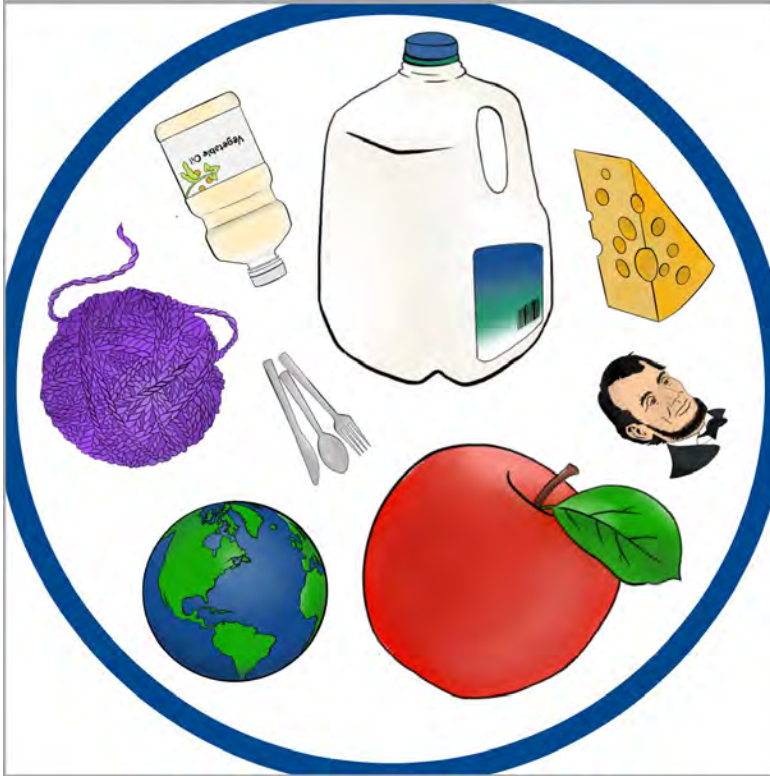
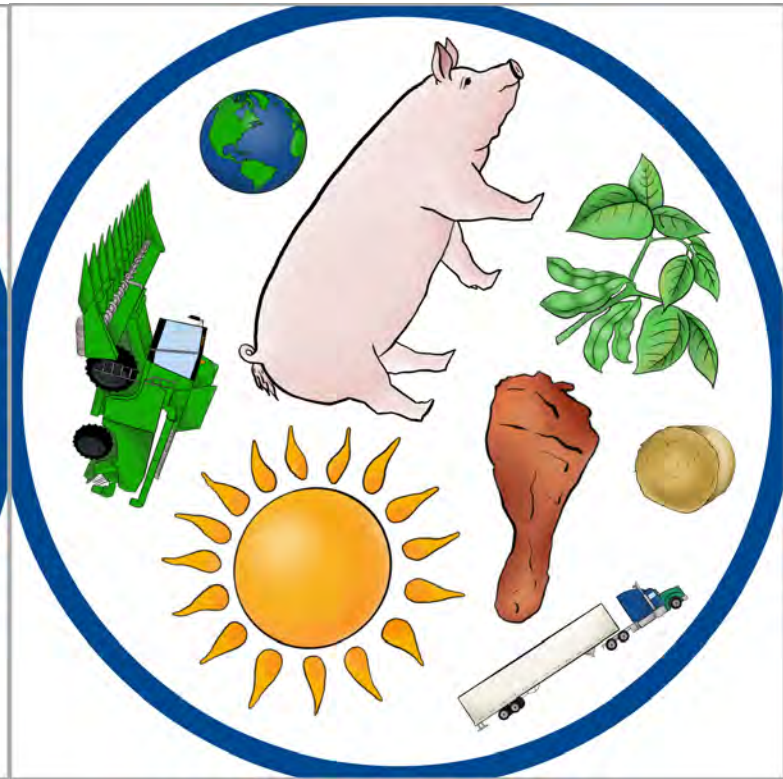






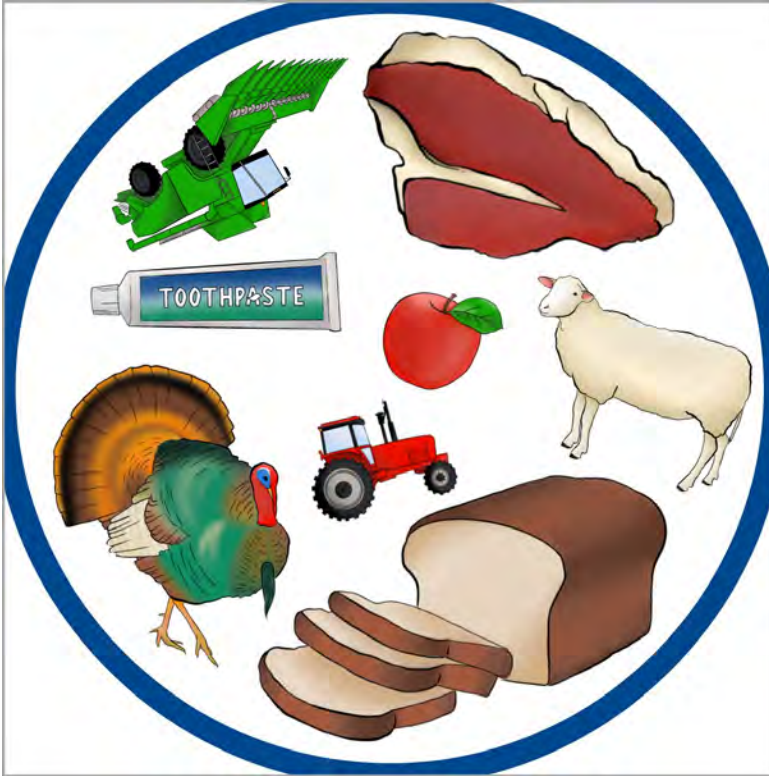
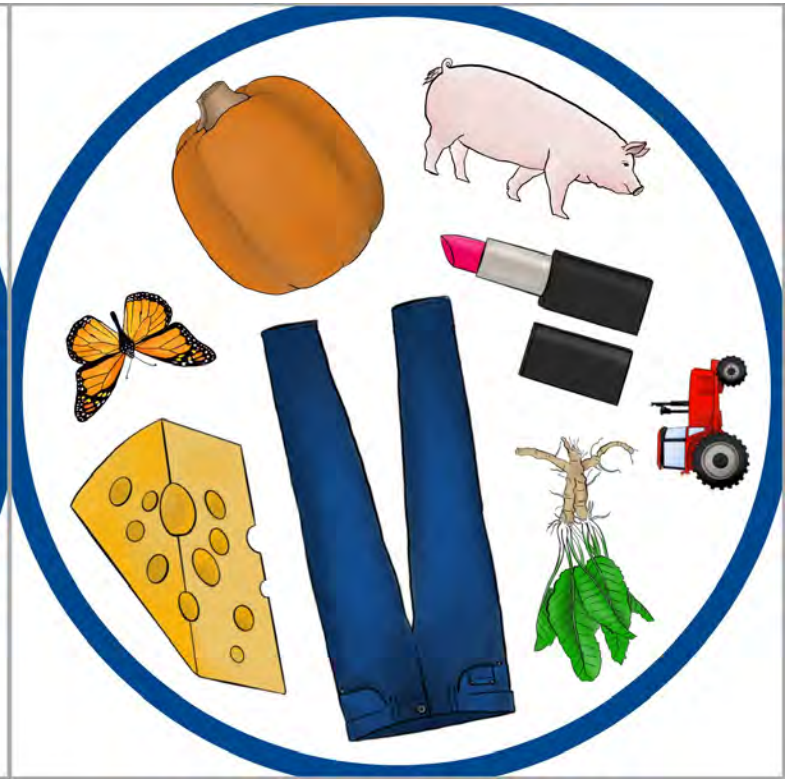




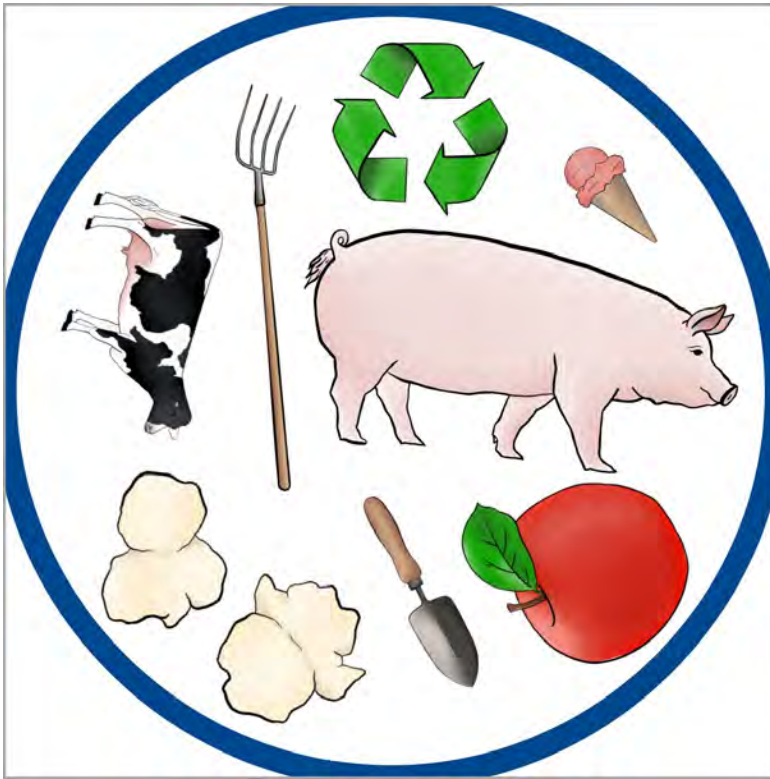


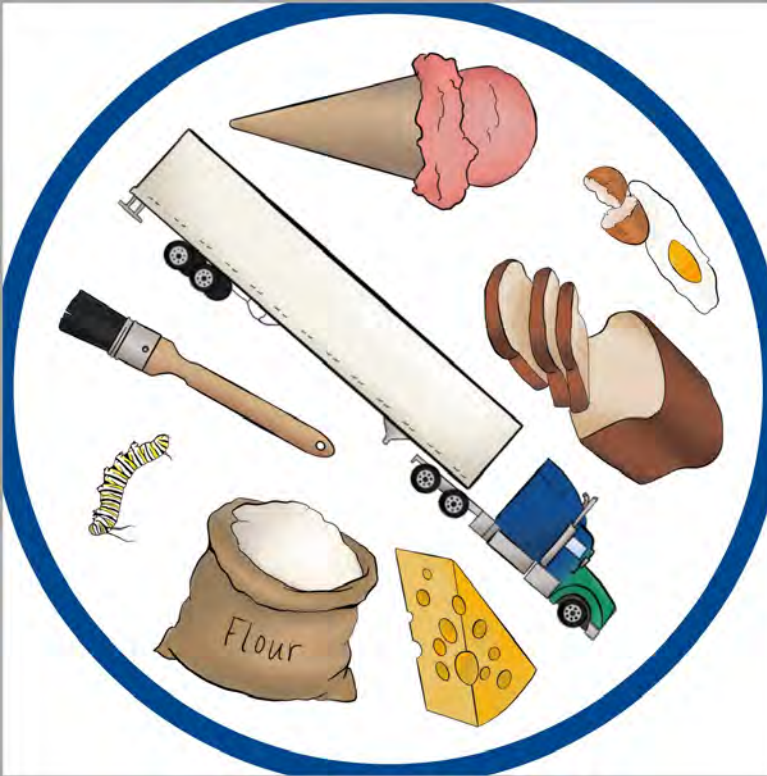












Level Up

At Your Library

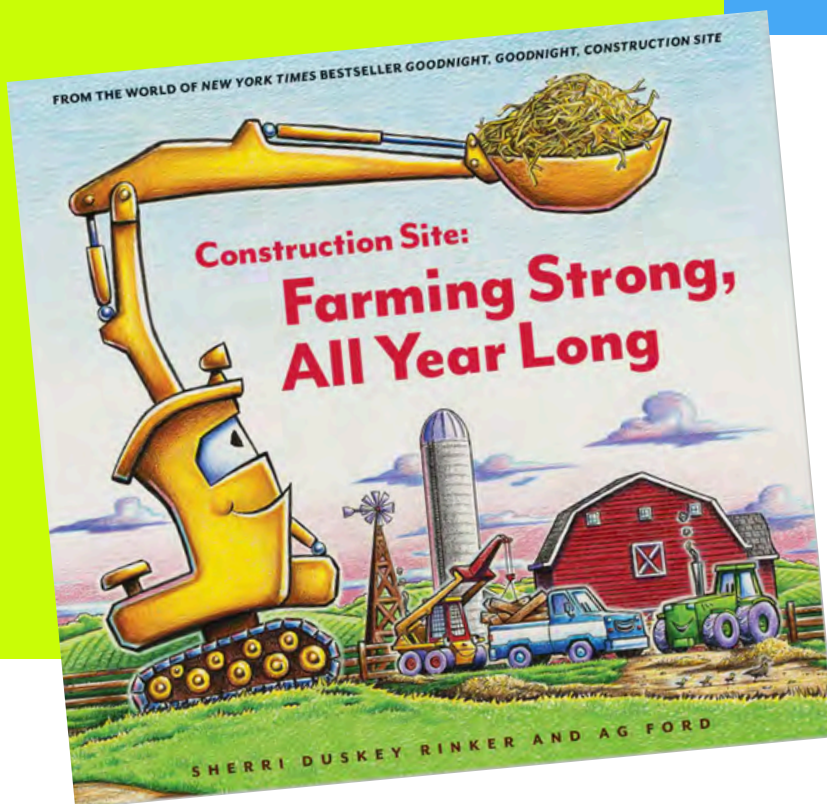
Summer 2025

An iREAD Summer
Reading Companion
from



Farming Strong All Year Long

Sherry Duskey Rinker



Follow a construction crew as they help out on a busy farm throughout the year, working together to plant crops in spring, build a barn in summer, harvest in fall, and prepare the animals for winter. This children's book highlights the different tasks and teamwork required on a farm across all seasons.

Corn Soy Hogs Cattle Pumpkin

Get ready for some hand-slapping mayhem with this Illinois Agriculture version of a popular card game!

See following page(s) for lesson plan!



CORN SOY HOGS CATTLE PUMPKIN

Explore Illinois agriculture's top five commodities with this addictive game which is as unique as its name! Race against each other to SLAP a match between a card and a spoken word... but watch out, your mind might play tricks on you!

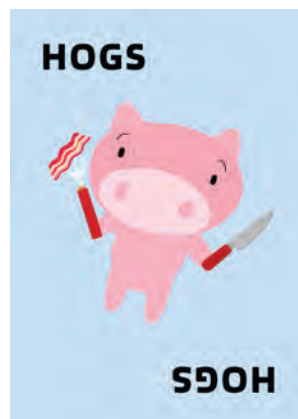
Objective of the Game:

Get rid of all your cards and be the first to SLAP a match between a card and a spoken word.

Directions:

1. Shuffle the deck of cards and deal them out, one card at a time to each player, until they are gone. Players should keep their cards in a stack, face down.
2. To begin playing, the person to the dealer's left puts a card down into the center, face-up, saying, "Corn." The player on his left then puts her card face-up on top of his, while saying, "Soy." Play continues in this way, saying each word in the title of the game in order ("Corn" "Soy" "Hogs" "Cattle" "Pumpkins", "Corn" "Soy" "Hogs" "Cattle" "Pumpkins", "Corn".....). Most of the time, the word spoken by the player will *not* match the card laid.
3. Play continues as outlined above until the card just laid matches the word spoken by the player (eg., they put down a 'Hog' while saying "Hogs").
4. At this point, all the players must SLAP their hands on top of the pile of cards in the center, and the LAST player to do so takes the entire pile, and puts them on the bottom of the pile in his/her hand.
5. He/She then starts off the next round saying, "Corn," the next player, "Soy," the next player, "Hogs," etc...
6. IF the card laid pictures the commodity holding a PRODUCT that comes from that commodity, all players must also - in addition to slapping the deck - name another PRODUCT that comes from that commodity (i.e. - "corn syrup" from Corn, or "bacon" from Hogs). The last to do so takes the center pile!

Examples of Product Cards:






Directions continued on next page...



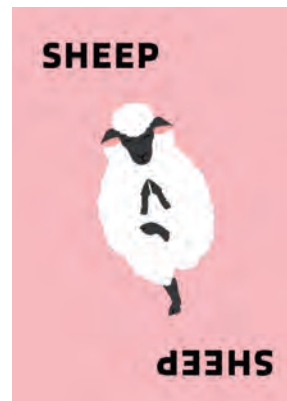
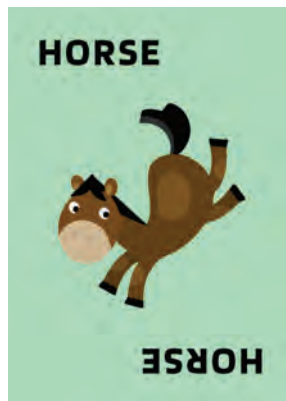
CORN SOY HOGS CATTLE PUMPKIN

Directions (continued):

When a Special Card is laid, all players must complete the actions below *immediately* and *then slap* the deck. If a player does the wrong action or are the last to slap the deck, they must pick up the cards.

Chicken:	"Dance" like this chicken and make the sound a chicken makes	
Horse:	"Jump and kick" and make the sound a horse makes	
Sheep:	"Strike a yoga pose" like this sheep and make the sound a sheep makes	

Examples of Special Cards:



Other Rules:

1. **Flinching:** If any player slaps, or even starts to but jerks it back ("flinches"), they forfeit the round and pick up all the cards in the center.
2. **Pace:** You have to keep a steady fast rhythm to the game. If you break it by forgetting what you're supposed to be saying or by not noticing it's your turn, you have to forfeit the round and pick up the cards.
3. **No Peeking:** All players must put cards down into the pile by flipping them over facing outward. If a player clearly looks at their card before placing it into the pile, they forfeit the round and pick up the cards.

Going "Out" & Winning:

1. When a player has used all their cards, they continue to say "Corn, Soy, Hogs... etc" in turn, and STILL have to slap the pile when a match occurs.
2. The game ends when a player with no remaining cards is the FIRST to correctly SLAP a match or special card!

TEACHER RESOURCES

Prior to Game Play:

- Learn about the products that come from each of Illinois' top five agricultural commodities by reading through IAITC's Ag Mags! Relevant Ag Mags to consider:
 - Corn
 - Soybean
 - Pork
 - Beef
 - Pumpkins
 - Poultry
 - Horse

Game Play Alternatives:

- For younger students, remove the requirement of naming a product that comes from that commodity when a Product Card is laid.
- For older students, require them to name a product that comes from that commodity *each time* the word spoken matches the card laid, not just when a Product Card is laid.
 - Further Extension: No product may be named twice.

Extension Ideas:

- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!
- Have students complete any of the "Ag-Venture" worksheets associated with the above Ag Mags to strengthen non-fiction reading skills while learning more about these commodities.
- Visit the USDA Economic Research Service's State Fact Sheets at www.ers.usda.gov/data-products/state-fact-sheets/ to learn more about the economic impact of Illinois' top five agricultural commodities.
- Map out the top commodities in your state/region/country by viewing other states' USDA Fact Sheets.

Game Development:

- This Corn Soy game was inspired by a great game called [Taco Cat Goat Cheese Pizza](#).

CORN SOY HOGS CATTLE PUMPKIN

TEACHER GUIDE

Game Play:

Players will play the game as outlined in Instructions Card 1 until the card just laid matches the word spoken by the player (eg., they put down a 'Hog' while saying "Hogs").

At this point, all the players must SLAP their hands on top of the pile of cards in the center and also NAME A PRODUCT that comes from that commodity (eg., "corn syrup" for Corn or "bacon" for Hogs), and the LAST player to do so -- or to name an incorrect product -- takes the entire pile, and puts them on the bottom of the pile in his/her hand.

The following are some ideas of acceptable products originating from each commodity that the players might NAME while they SLAP the deck. Other products could be named!

CORN

- Sweet Corn
- Canned Corn
- Corn Syrup
- Cornstarch
- Pet Food
- Livestock Feed
- Ethanol
- Vegetable Oil
- Popcorn
- Corn Flour
- Breakfast Cereal (Corn Flakes, Fruit Loops, etc)
- Corn Bread
- Corn Chips (Doritos, Fritos, tortilla chips, etc)



SOY

- Edamame
- Tofu
- Soy Milk
- Soy Yogurt
- Soy Sauce
- Soy Flour
- Biodiesel
- Livestock Feed
- Vegetable Oil
- Tempeh



HOGS

- Ham
- Bacon
- Pork Chops
- Pork Loin
- Sausage
- Pork Ribs
- Ground Pork
- Pet Food
- Insulin
- Suede



CATTLE

- Steak
- Hamburger
- Ground Beef
- Beef Ribs
- Milk
- Cheese
- Yogurt
- Ice Cream
- Butter
- Sour Cream



PUMPKINS

- Pumpkin Pie
- Pumpkin Bread
- Pumpkin Spice
- Pumpkin Seeds
- Pumpkin Blossoms



TEACHER RESOURCES

Print Playing Cards Yourself!

If you would like to print the playing cards for this game yourself, follow the instructions below.

Disclaimer: when you print double-sided, you may encounter a slight mis-alignment between the front and back sides on most printers. Therefore, the cards may not be perfectly aligned front-to-back. This is merely an aesthetic problem... the game will play the same even if the cards aren't perfect!

Printing Recommendations:

- Print the following pages double sided, flip on short edge.
- For most durable cards, print on white cardstock.
- Print in full color ink, if possible!

Once printed, cut the cards out.

- The card dimension will be 2.5" x 3.5"
- There should be 66 front-and-back playing cards in total.

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

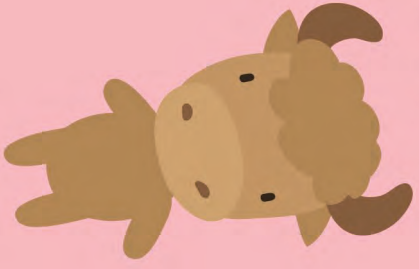
a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

CATTLE



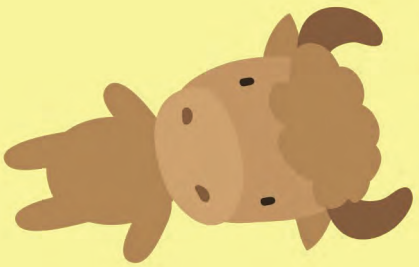
CATTLE

CATTLE



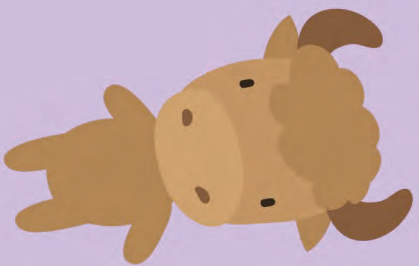
CATTLE

CATTLE



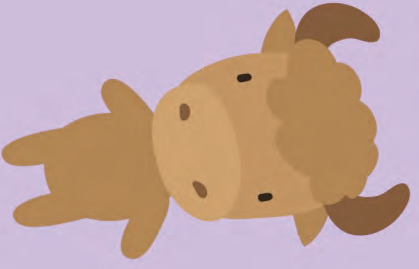
CATTLE

CATTLE



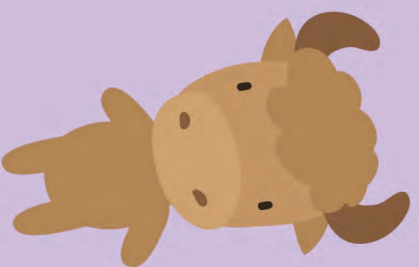
CATTLE

CATTLE



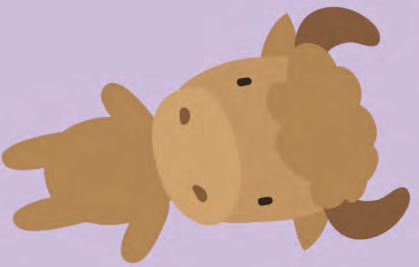
CATTLE

CATTLE



CATTLE

CATTLE



CATTLE

CATTLE



CATTLE

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

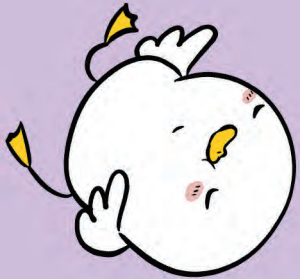
CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

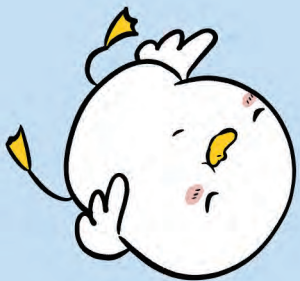
CORN
SOY
HOGS
CATTLE
PUMPKIN

CHICKEN



CHICKEN

CHICKEN



CHICKEN

CORN



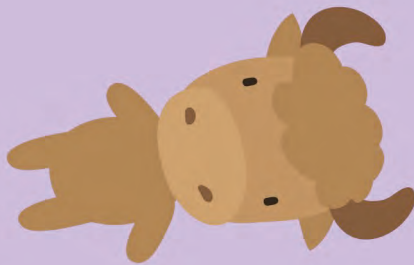
CORN

CORN



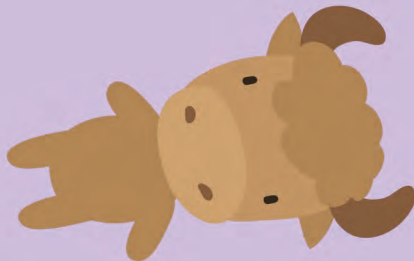
CORN

CATTLE



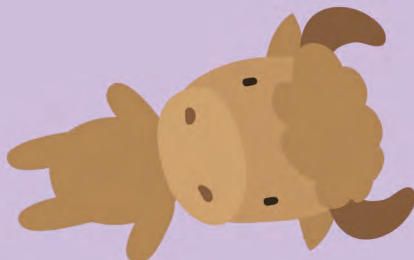
CATTLE

CATTLE



CATTLE

CATTLE



CATTLE

CHICKEN



CHICKEN

a game from
 Illinois
AGRICULTURE
 In the Classroom.

CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

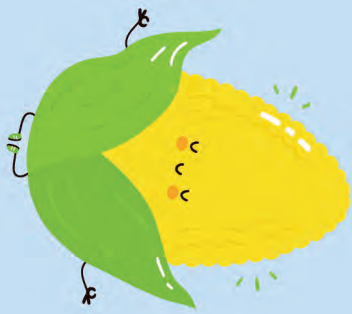
CORN
 SOY
 HOGS
 CATTLE
 PUMPKIN

CORN



CORN

CORN



CORN

CORN



CORN

CORN



CORN

CORN



CORN

CORN



CORN

CORN



CORN

CORN



CORN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN


a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.


CORN
SOY
HOGS
CATTLE
PUMPKIN

HOGS




HOGS

CORN




CORN

HOGS




HOGS

HOGS




HOGS

HOGS




HOGS

HOGS




HOGS

HOGS



HOGS

HOGS



HOGS

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

HORSE



HORSE

HORSE



HORSE

HORSE



HORSE

PUMPKIN



PUMPKIN

SGOH



HOGS

SGOH



HOGS

SGOH



HOGS

SGOH



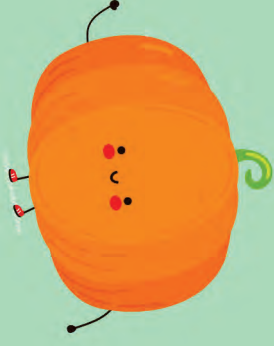
HOGS

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

a game from
Illinois
AGRICULTURE
In the Classroom.

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

PUMPKIN



PUMPKIN

PUMPKIN



PUMPKIN

SHEEP



SHEEP

SHEEP



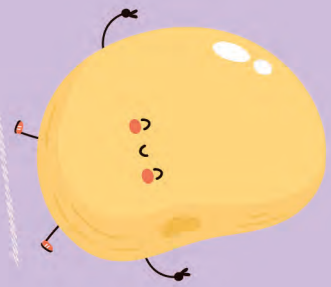
SHEEP

SHEEP



SHEEP

SOY



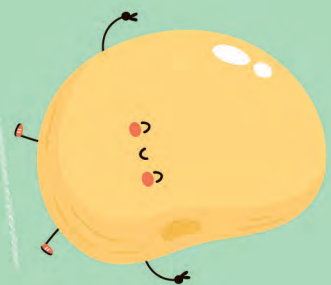
SOY

SOY




SOY

SOY




SOY

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from  a game from


CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from  a game from


CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from  a game from

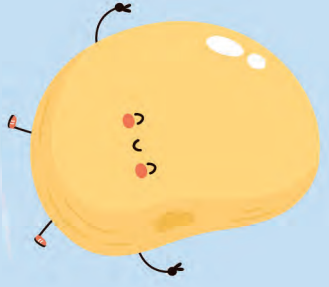
CORN
SOY
HOGS
CATTLE
PUMPKIN

CORN
SOY
HOGS
CATTLE
PUMPKIN

a game from  a game from

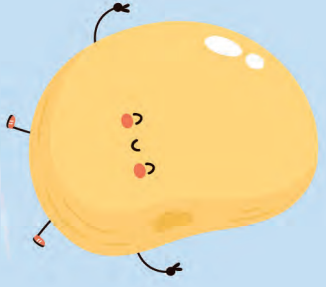
CORN
SOY
HOGS
CATTLE
PUMPKIN

SOY



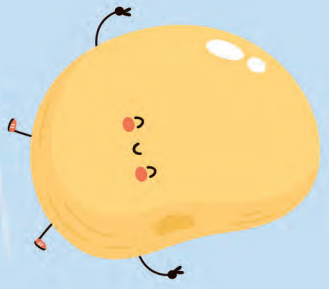
YOS

SOY



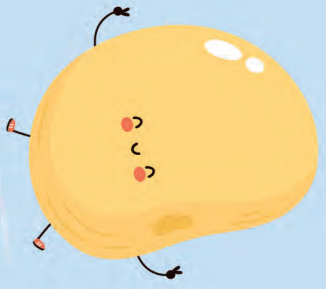
SOY

SOY



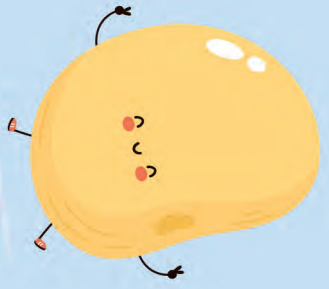
YOS

SOY



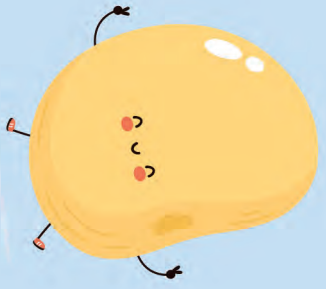
SOY

SOY



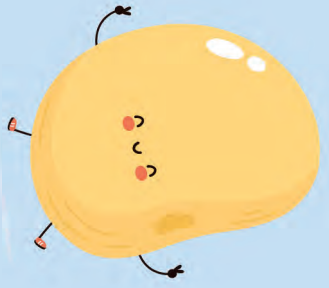
YOS

SOY



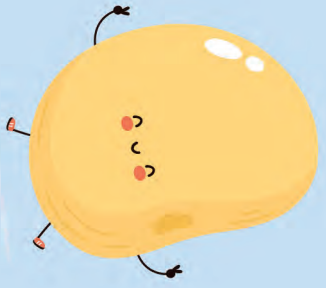
SOY

SOY



YOS

SOY



SOY

CORN SOY HOGS CATTLE PUMPKIN INSTRUCTIONS

CORN SOY HOGS CATTLE PUMPKIN INSTRUCTIONS

Number of Players: Minimum: 3

Maximum: as many as you can fit around a deck

Finching:

If any player slaps, or even starts to but, jerks it back ("Finches"), they forfeit the round and pick up all the cards in the center.



Deal: Shuffle and then distribute all cards evenly face down to all players

Objective: Get rid of all of your cards and be the FIRST to slap a match

Pace:

You have to keep a steady fast rhythm to the game. If you break it by forgetting what you're supposed to be saying or by not noticing it's your turn, you have to forfeit the round and pick up the cards.

Game Play: The person to the dealer's left puts a

card down into the center, face-up, saying "Corn."

The player on his left then puts her card face-up on top of his, while saying, "Soy."

Play continues in this way, saying each word in the title of the game in order ("Corn," "Soy," "Hogs," "Cattle," "Pumpkin," "Corn," "Soy," "Hogs," "Cattle," "Pumpkin" ...) until the following happens:

No Peeking:

All players must put cards down into the pile by flipping them over facing outward. If a player clearly looks at their card before placing it into the pile, they forfeit the round and pick up the cards.

1

3

CORN SOY HOGS CATTLE PUMPKIN INSTRUCTIONS

Special Cards:

When a Special Card is placed, all players must complete the actions below IMMEDIATELY and THEN SLAP the pile. If a player does the wrong action or are the last to slap the pile, they must pick up the cards.

Chicken: "Dance" like this chicken and make the sound a chicken makes

Horse: "Jump and kick" and make the sound a horse makes

Sheep: "Strike a yoga pose" like this sheep and make the sound a sheep makes



Winning the Game:

The game ends when a player with no remaining cards is the FIRST to correctly SLAP a match or special card!

4

CORN SOY HOGS CATTLE PUMPKIN INSTRUCTIONS

Game Play Continued:

Play continues as outlined on Card 1, until the card just laid matches the word spoken by the player (eg, they put down a "Hog" while saying "Hogs"). At this point, all the players must SLAP their hands on top of the pile of cards in the center, and the LAST player to do so takes the entire pile, and puts them on the bottom of the pile in his/her hand. He/She then starts off the next round saying, "Corn," the next player, "Soy," the next player, "Hogs," etc...

If the card laid pictures the commodity holding a PRODUCT that comes from that commodity, all players must also - in addition to slapping the deck - name another PRODUCT that comes from that commodity (ie - "corn syrup" from Corn, or "bacon" from Hogs). The last to do so takes the center pile!

When a player has used all their cards, they continue to say "Corn, Soy, Hogs..." etc" in turn, and STILL have to slap the pile when a match occurs.

2

Level Up

At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



The Secret Life of Bugs Moira Butterfield

Let Luna, a friendly ladybird, lead you through this beautiful first guide to bug life. Learn about bug habitats - who lives where, from teeny tiny bugs (featherwing beetles) to the largest of critters (giant stick insect and goliath beetles). Find out the amazing things that bugs can do, like flying high or disguising themselves.

Good Bugs, Bad Bugs Memory Game

Learn about life cycles of insects and which bugs are beneficial and harmful in this fun matching game!

See following page(s) for lesson plan!



GOOD BUGS, BAD BUGS

Grade Level

2-8

Length of Lesson

30 minutes

Objective

By the end of this lesson, students will be able to identify various beneficial and harmful insects commonly found in flower and vegetable gardens.

Materials

- Large bug cards, cut apart
- Copies of student Organization Sheet
- Small bug cards, cut apart

Standards

NGSS

2-LS4-1; 3-LS2-1; 3-LS4-2-3; 4-LS1-1; 5-PS3-1; MS-LS2-2

Lesson Summary

This lesson is designed to help students recognize the different types of common bugs that can be found in our flower and vegetable gardens and identify if they are beneficial or harmful for the plants in our gardens.

Suggested Sequence of Events:

1. Set Up: Print enough copies of the large bug cards and small bug cards for students to play in groups of 2-3. To save time, cut out cards ahead of time.
 - Print 2 copies of each page of the large bug cards for each group. Print double-sided with our logo on the back.
 - Print 1 copy of the small bug cards page for each group.
 - Print on cardstock and laminate for continued use over time.
2. Read [Up in the Garden, Down in the Dirt](#) by Kate Messner to capture student interest.
3. Read through the [IAITC Pollinator Ag Mag](#) to learn more about native Illinois Pollinators. Interactive online versions can be found on our website.
4. Complete the activity following the procedures:
 - Put students into groups of 2-3 and give each group a set of the memory cards. If they are not already pre-cut, have students cut the cards apart.
 - Give students some time to play the memory game. Encourage them to read the information on the front side of the cards.
 - When they are finished playing, give each group a copy of the organization sheet and a set of the small bug cards. Have students put the small bug cards in the correct 'beneficial' or 'harmful' category. They can use the large bug cards for help.
5. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas

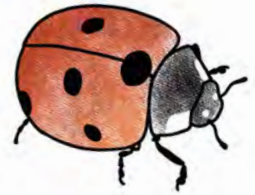
- Go into more detail about beneficial bugs and discuss *how* those bugs are beneficial. Are they pollinators, decomposers, or predators? Do they remain the same type of beneficial bug from their larval stage to their adult stage?
- Learn more about pollination and how it happens. How is this beneficial to plants?
- Learn more about the similarities and differences in bug life cycles.
- Raise butterflies in your classroom.
- Create a classroom vermicomposting bin and teach kids about composting and how worms help speed up this process! Use our "[Classroom Vermicomposting](#)" lesson for directions on setting up your bin.
- Learn about the process of decomposition and recycling important nutrients.
- For older students, have them research one of the bugs. Are there different species of this type of bug? Which species are more commonly found in Illinois?
- Look into the scientific name of these bugs. Where do scientific names come from? Look into Latin prefixes and suffixes.
- Any bug can become a pest if the population grows out of control and causes damage to buildings, landscape, vegetables, etc. Use the bugs in this lesson to talk about how we can use bugs to help with pests before spraying pesticides.
- Bugs are everywhere, but are they the same? Learn about the differences between beetles, insects, and arachnids!
- Bugs are found on almost every continent. Compare and contrast bugs from around the world.
- Bugs are full of protein! Learn more about entomophagy and buy some bug [treats](#) for them to try!
- Read through [Secrets of the Garden](#) by Kathleen Weidner Zoehfeld and talk about food chains, food webs, and the transfer of energy throughout them.
- Read through [Buzzing With Questions](#) by Illinois Author Janice Harrington and learn about the amazing research from scientist Charles Henry Turner.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!



Earthworm: Adult
Beneficial



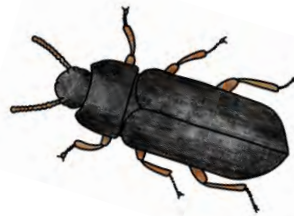
Lacewing: Adult
Beneficial



Ladybug: Adult
Beneficial



Roly Poly: Adult
Beneficial



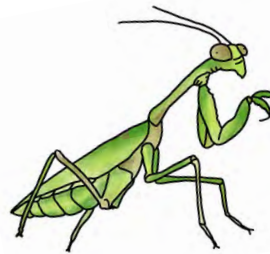
Ground Beetle: Adult
Beneficial



Honeybee: Adult
Beneficial



Butterfly: Adult
Beneficial



Praying Mantis: Adult
Beneficial



Ladybug: Larva
Beneficial



Earthworm: Larva
a.k.a. Hatchling
Beneficial



Lacewing: Larva
Beneficial



Roly Poly: Juvenile
Beneficial



Butterfly: Larva
Beneficial



Ground Beetle: Larva
a.k.a. Mealworm
Beneficial



Honeybee: Larva
Beneficial



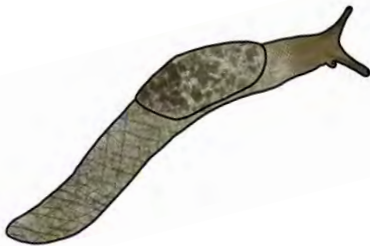
Praying Mantis: Nymph
Beneficial



Tomato Hornworm: Larva
Harmful



Squash Beetle: Adult
Harmful



Slug: Adult
Harmful



Aphid: Adult
Harmful



Cutworm: Larva
Harmful



Striped Cucumber
Beetle: Adult
Harmful



Thrips: Adult
Harmful



Cabbage Worm: Larva
Harmful

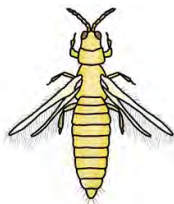
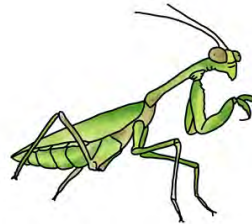


Beneficial

Harmful



Illinois Ag in the Classroom: Small Bug Cards



Level Up

At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



The Great Big Water Cycle Adventure

Kay Barnham & Maddie Frost



Follow the journey of water, from raindrops to rivers and then back to the clouds. Children have lots of questions about the world around them, and this adventure book helps them discover many amazing and wonderful scientific facts about nature. The illustrations are charming, and lively texts engage children and make this book a favorite to return to again and again. There are also Notes to Parents and Teachers at the end to encourage further exploration and learning.

Water Cycle Tower Game

Students will enjoy learning about the water cycle with this fun new take on a classic game.

See following page(s) for lesson plan!



WATER CYCLE TOWER GAME

Grade Level

3-8

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of the steps and sequence of the water cycle.

Materials Needed

- Jenga or Tumbling Tower wooden block game sets
- Copies of Student Worksheet
- Copies of Student H₂O Path Sheet
- Copies of Score Sheet
- Copies of Student H₂O cycle templates

Standards

NGSS

Earth's Systems:
2-ESS2-3

Lesson Summary

This lesson is designed to give students a hands-on activity to practice and reinforce their understanding of the water cycle. A basic understanding of the water cycle prior to playing the game is ideal.

Suggested Sequence of Events:

1. Set Up: Prior to playing, teachers will need to color/paint the ends of some of the wood blocks to denote different steps in the water cycle. See the Teacher Resources page for details.
2. Pre-Activity: As you teach your water cycle unit, consider utilizing the IAITC Water Ag Mag, available on the IAITC website. *Water is Water* by Miranda Paul is an excellent water cycle book with some subtle ag connections.
3. Review the steps of the water cycle and important vocabulary terms: evaporate, condense, precipitate, flow, collect, uptake, and sublimate.
4. Complete the activity following the procedures:
 - Give each student a copy of the student worksheet and read through it together.
 - Divide students into groups and provide each group with a tumbling tower game. Have students work together to decide which way they would like to play the game (options 1-4 on the student worksheet).
 - Students can play the game in a variety of ways, based on the allotted time, student ability, and teacher preference. See the Teacher Resources page for full instructions of each option.
 - Groups who choose to play option 3 will need copies of the H₂O Path Sheet and the Score Sheet. For option 4, they will need copies of the Student H₂O Journey Sheet. These can be laminated for multiple uses.
 - No matter which way students decide to play the game, normal Jenga/tumbling tower rules apply; Once a block is successfully pulled, it is placed back on top of the tower. Students should record their points as they play.
 - Students take turns, marking their progress through the water cycle and verbally explaining what each color represents in the water cycle.
5. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

- Students can play the game in the following ways, based on time allotted, student ability, and teacher preference:
 - Option 1: Students play until the tower falls. Students earn points for each colored block they remove. The student who knocks the tower down earns a penalty. Points are added up at the end; the student with the most points wins. Students should explain the part of the water cycle that corresponds with the color they chose to remove.
 - Option 2: Pre-determine a number of points students should earn. If the tower falls, that student will earn a penalty, but then the group re-stacks the tower and continues play. The first student to earn the correct number of points wins. Students should explain the part of the water cycle that corresponds with the color they chose to remove.
 - Option 3: The first student to successfully make it through all three paths on the water cycle sheet by removing the corresponding colored wooden blocks wins. Students can check-off or X-out each step as they pass through the path. Once they start a path, they must completely work through that path before starting the next path. Use the attached point sheets for keeping score for this option.
 - Option 4: Students use the attached Water Cycle Map to create their own journey through the water cycle. Once they have correctly sequenced (drawn) each step of the water cycle on their maps, they must then follow that sequence as they play the game and remove the corresponding blocks. The first student to complete their water cycle wins. Use attached Student H₂O Journey Sheet for this option.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!

The numbers in parentheses denote the number of blocks that need colored. Any leftover blocks do not need to be colored.

- Blue = Precipitation (6)
- Green = Uptake water (4)
- Pink = Sublimation (4)
- Red = Evaporation (4)
- Brown = Collects (4)
- Orange = Condensation (6)
- Yellow = Transpiration (4)
- Purple = Flows (4)





WATER CYCLE TOWER GAME

INSTRUCTIONS & RULES

All the water on Earth moves between oceans, rivers, lakes, the land, and the atmosphere in an ongoing cycle called the water cycle, which is powered by the sun. As the water flows through the cycle, it can change between the three states of matter: solid, liquid, and gas.

Set Up: Stack up the tumbling tower wooden pieces in a random order. Some of the pieces are colored and some are plain. Try to scatter the pieces throughout the tower as you stack it up. Then, get your game sheet and get ready to play!

Which Way to Play: There are 4 different ways to play the game. Read through all of them and then, as a group, decide which way you want to play!

- Option 1: Play until the tower falls. You can earn points for each colored block you remove. The person who knocks the tower down earns a penalty. Points are added up at the end; the person with the most points wins.

Rules: When you remove a colored block, explain that part of the water cycle to the rest of your group. Use scratch paper to keep score.

- Option 2: Pre-determine a number of total points to play to. If the tower falls, that person will earn a penalty, but then the group can re-stack the tower and continue playing. The first person to earn the correct number of total points wins.

Rules: When you remove a colored block, explain that part of the water cycle to the rest of your group. Use scratch paper to keep score.

- Option 3: The first person to successfully make it through all three given paths of the water cycle by removing the corresponding colored wooden blocks wins.

Rules: When it is your turn, choose Path 1, 2, or 3 to start. When you choose the path, start with the first step in that part of the water cycle and find a piece with the corresponding color. Remove that piece from its spot on the tower and then check off that step of the path. You must complete this entire path before you can move onto another path.

- Option 4: Use the attached Water Cycle Map to create your own path through the water cycle. Once you have correctly sequenced each step of the water cycle on your map, you must then follow that sequence as you play the game and remove the corresponding blocks in order. The first person to complete their water cycle wins.

No Skipping: If you can't pull the colored block you need, you have to pull a blank colored block. You cannot skip your turn OR pull a different colored block.

Point System: Colored blocks are 4 points each, blank blocks are 0 points.

Penalty: No matter which way you decide to play, if you knock over the tower, 10 points will be subtracted from your score at the end.

PATH 1



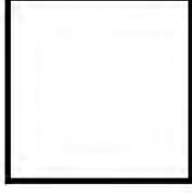
Liquid **evaporates** into water vapor.



Water vapor **condenses** to form clouds.



Water **precipitates** from clouds as rain or snow.



12 points if completed

PATH 2



Liquid water **flows** across land.



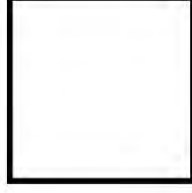
Water then **collects** in rivers, lakes, the soil, and other places.



Plants **uptake** the water from the soil.



Water then **transpires** from plants into the atmosphere.



16 points if completed

PATH 3



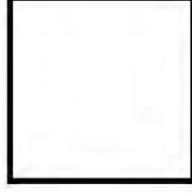
Ice can turn directly water vapor through **sublimation** into the atmosphere.



Water vapor **condenses** to form clouds.



Water **precipitates** from clouds as rain or snow.



12 points if completed

STUDENT SCORE SHEET: OPTION 3

<input style="width: 100px; height: 50px;" type="text"/> PATH 1 POINTS	+	<input style="width: 100px; height: 50px;" type="text"/> PATH 2 POINTS	+	<input style="width: 100px; height: 50px;" type="text"/> PATH 3 POINTS	-	<input style="width: 100px; height: 50px;" type="text"/> KNOCK DOWN PENALTY	=	<input style="width: 100px; height: 50px;" type="text"/> TOTAL SCORE
--	---	--	---	--	---	---	---	--

<input style="width: 100px; height: 50px;" type="text"/> PATH 1 POINTS	+	<input style="width: 100px; height: 50px;" type="text"/> PATH 2 POINTS	+	<input style="width: 100px; height: 50px;" type="text"/> PATH 3 POINTS	-	<input style="width: 100px; height: 50px;" type="text"/> KNOCK DOWN PENALTY	=	<input style="width: 100px; height: 50px;" type="text"/> TOTAL SCORE
--	---	--	---	--	---	---	---	--

<input style="width: 100px; height: 50px;" type="text"/> PATH 1 POINTS	+	<input style="width: 100px; height: 50px;" type="text"/> PATH 2 POINTS	+	<input style="width: 100px; height: 50px;" type="text"/> PATH 3 POINTS	-	<input style="width: 100px; height: 50px;" type="text"/> KNOCK DOWN PENALTY	=	<input style="width: 100px; height: 50px;" type="text"/> TOTAL SCORE
--	---	--	---	--	---	---	---	--



Level Up

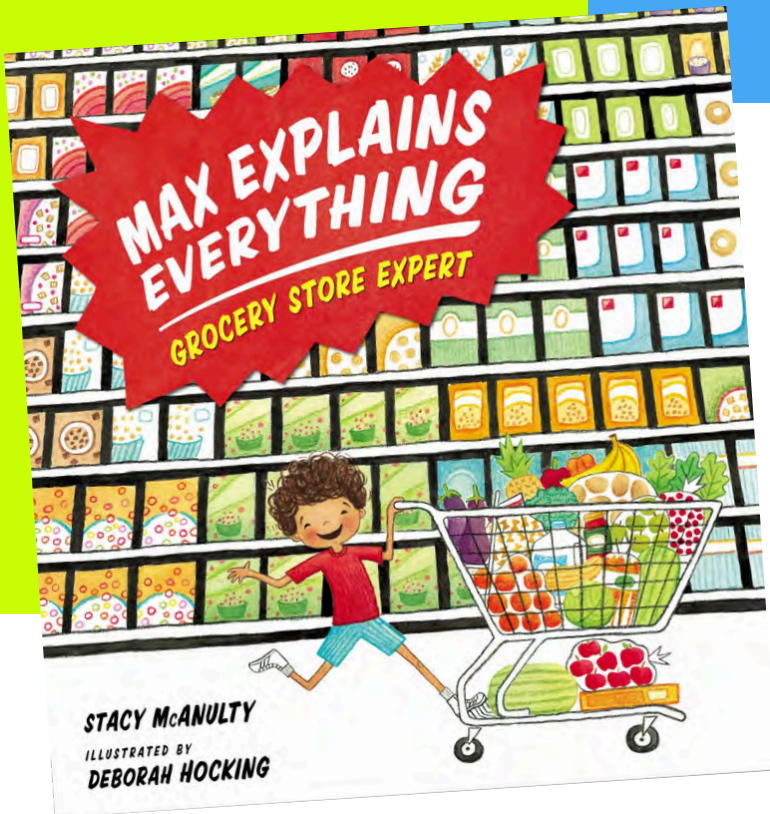
At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



Max Explains Everything: Grocery Store Expert Stacy McAnulty



Max knows everything about trips to the grocery store because his parents make him go All. The. Time. Even when they run out of little things . . . like toilet paper. So he's pretty much an expert. Whether it's choosing the right breakfast cereal or surviving the obstacle course that is the produce section, Max is here to help. Having trouble talking mom into finally getting that puppy she promised? Picking up a bag of dog food might just be the push she needs! And always remember to keep your eyes on the prize--the checkout lane is your last chance to grab the real essentials. Candy!

Indoor BINGO

This fun at-home activity expands students' knowledge of co-products and by-products in agriculture.

See following page(s) for lesson plan!

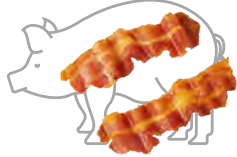
Indoor BINGO!

Illinois
AGRICULTURE
in the ClassroomSM

Soda/Pop



Ham or Bacon



Cheese



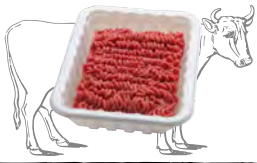
Make-up



Shaving Cream



Hamburger or Steak



Cooking Oil



Matches



Soybean Candle



Wool Clothing



Lotions



Football

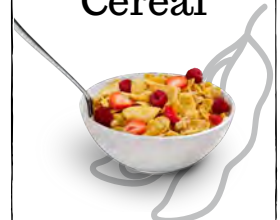


**FREE
SPACE**

Ice Cream



Cereal



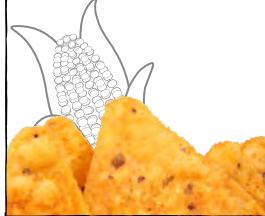
Peanut Butter



Shampoo



Chips



Chewing Gum



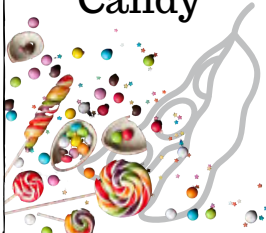
Butter



Milk



Candy



Bandages



Ketchup



Chalk



Level Up

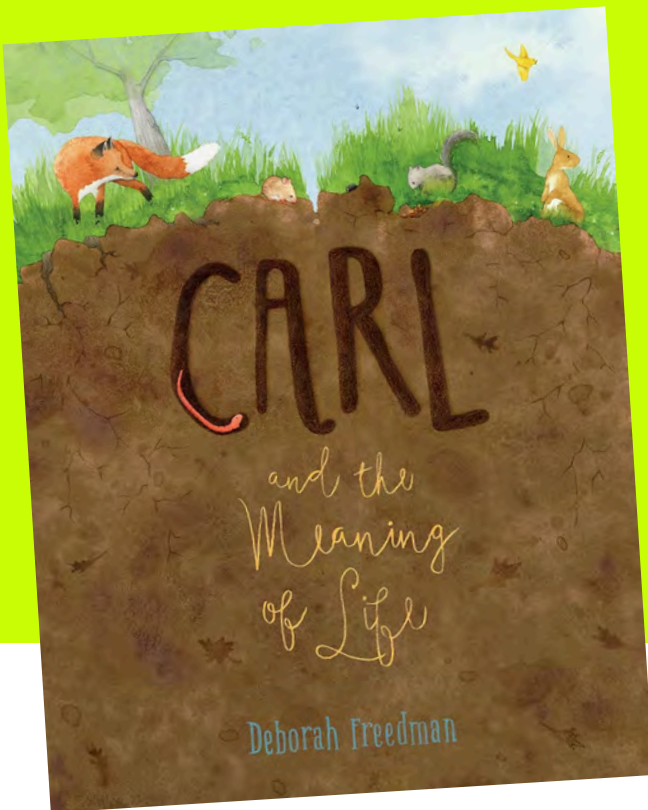
At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



Carl and the Meaning Of Life Deborah Freedman



Carl is an earthworm. He spends his days happily tunneling in the soil until a field mouse asks him a simple question that stops him short: "Why?" Carl's quest takes him on an adventure to meet all the animals of the forest, each of whom seems to know exactly what they were put on this earth to do, unlike the curious Carl. But it's not until the world around him has changed that Carl begins to realize everyone, no matter how small, makes a big difference just by being themselves.

Beneficial Bugs Scavenger Hunt

Let students explore the natural world and find as many beneficial bugs as they can!

See following page(s) for lesson plan!

Beneficial Bugs Scavenger Hunt



POLLINATORS



Butterfly



praying Mantis



Bee



Ladybug



DECOMPOSERS/RECYCLERS



Pill Bug
(Rollie Pollie)



Earth
Worm



Ground
Beetle



Fly



Level Up

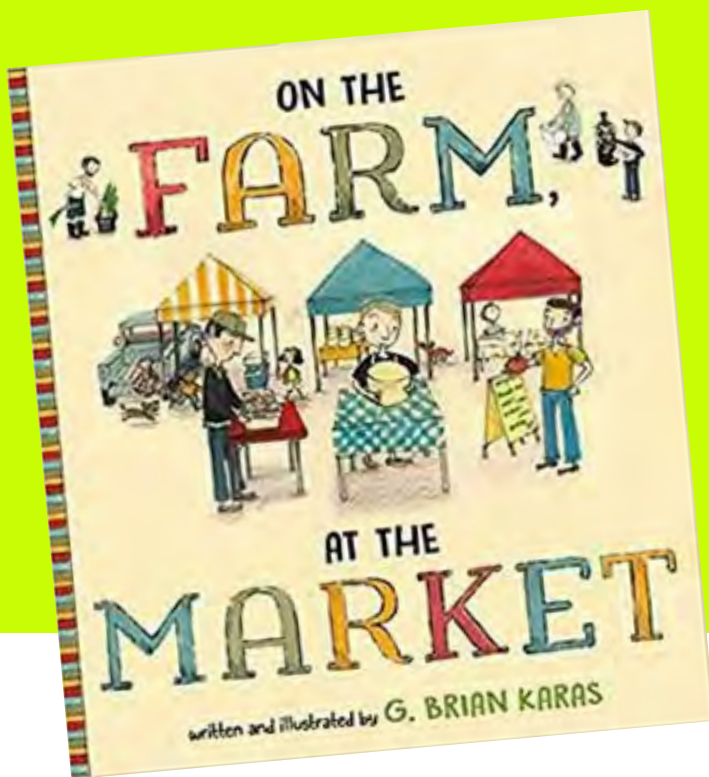
At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



On the Farm, At the Market G. Brian Karas



On the farm, workers pick vegetables, collect eggs, and make cheese. At the market the next day, the workers set up their stands and prepare for shoppers to arrive. Amy, the baker at the Busy Bee Café, has a very special meal in mind—and, of course, all the farmers show up at the café to enjoy the results of their hard work.

This informative book introduces children to both local and urban greenmarkets and paints a warm picture of a strong, interconnected community.

Farmers Market Scavenger Hunt

Learn more about locally grown products and meet the farmers who grew them with this Farmers Market scavenger hunt!

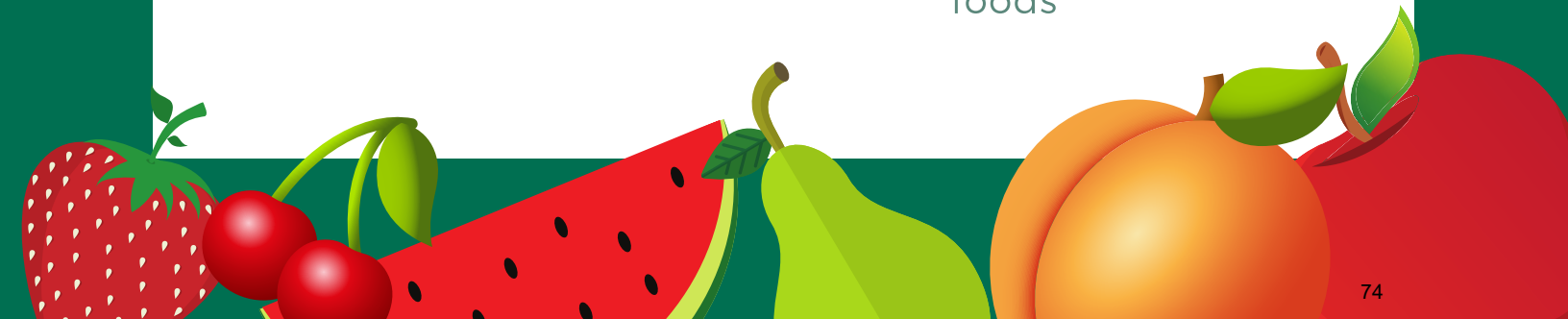
See following page(s) for lesson plan!



FARMERS MARKET SCAVENGER HUNT

CHECK OFF ALL THE ITEMS YOU
CAN FIND AT TODAY'S MARKET!

- vegetable you've never tried
- something red
- dessert ingredient
- eggs in a carton
- say hello to a farmer
- bouquet of flowers
- something yellow
- dairy product
- something that grows on a vine
- person who sells meat
- salad greens
- something sweet
- loaf of bread
- jelly in a jar
- honey
- one of your favorite foods



Level Up

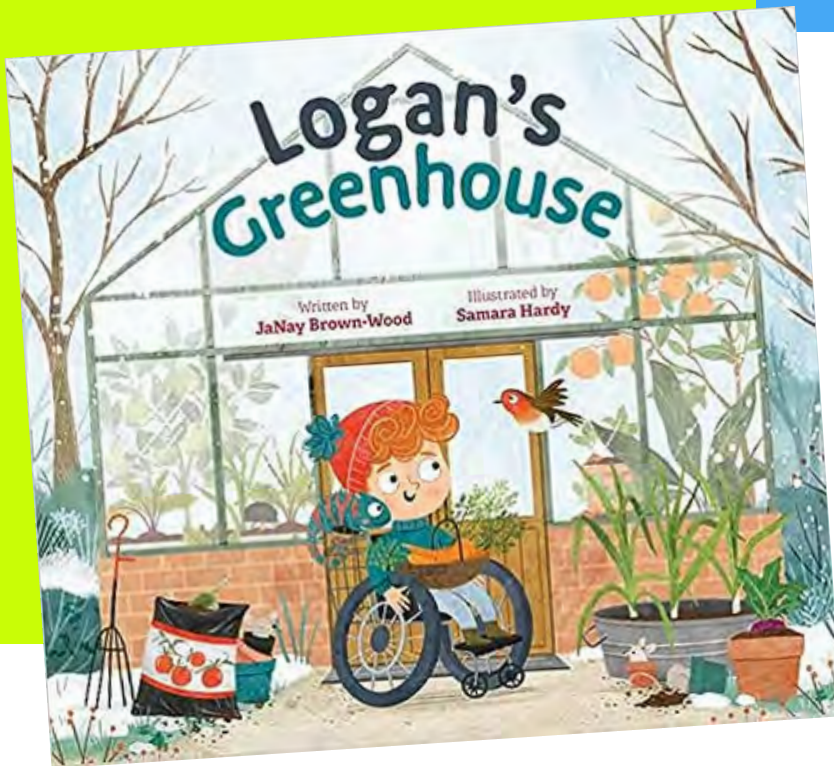
At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



Logan's Greenhouse JaNay Brown-Wood



The third title in JaNay Brown-Wood and Samara Hardy's *Where in the Garden?* series stars Logan, a young boy who uses a wheelchair and accessible tools while gardening in his greenhouse. Playful text guides young readers to hunt for visual clues and compare and contrast the unique characteristics of carrots against sweet potatoes, leeks, turnips, and other produce that grows in Logan's greenhouse.

Ins and Outs

Think you know what the "ins and outs" of the fruits and vegetables you eat look like? Test your knowledge with this fun matching activity!

See following page(s) for lesson plan!



INS AND OUTS

Grade Level

K-6

Length of Lesson

30 minutes

Objective

By the end of this lesson, students will have a better understanding of plant parts, and which parts of plants we eat.

Materials Needed

- Scissors
- Glue or tape
- Copies of Ins and Outs cards

Standards

NGSS

1-LS3-1; 2-LS4-1; 3-LS3-1

Lesson Summary

This lesson is a fun, hands-on activity designed to help students recognize the differences in physical appearance between the plant, the outside of the fruit or vegetable, and the inside of the fruit or vegetable.

Suggested Sequence of Events:

1. Set Up: Print and cut enough copies of the cards so that each student or group has one complete set. Mix each set up and place each mixed set in bags or containers for easy distribution. Laminate for multiple uses.
2. Read through the IAITC Seasons Ag Mag to learn more about the different specialty crop grown here in Illinois.
3. Complete the activity following the procedures:
 - We might know the name of what fruit or vegetable we're eating, but do we know what the plant looks like that it comes from? What about the inside of that fruit or vegetable?
 - Have students work individually or with a partner.
 - Hand out a complete set of pre-cut and mixed cards to each student or pair.
 - Have students try to match the four plant cards together. For each fruit or vegetable, there will be one card that shows the common name, a second card that shows the plant, a third card that shows the fruit/vegetable, and fourth card that shows the inside of that fruit/vegetable.
4. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Extension Ideas:

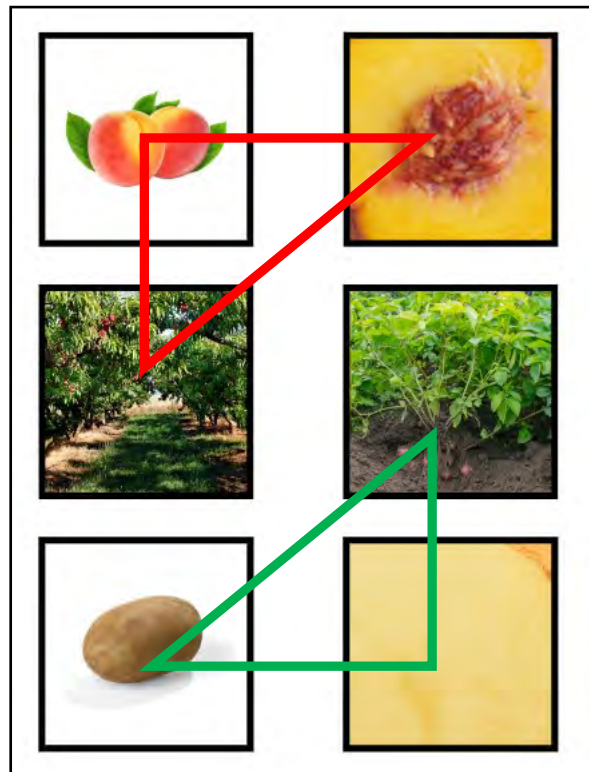
- Show a diagram of a plant and talk about all the different parts. Compare different plants to see that various plants have the same parts, but are unique to those individual plants.
- Talk about their favorite fruits and vegetables. Where are those crops grown? Are any of them grown in Illinois? Which state produces the most of those various crops?
- Invite a local specialty crop farmer who grows vegetables into your classroom to talk about growing food.
- Learn about locally grown foods and farmers markets. Challenge students to complete the AITC Farmers Market Scavenger Hunt worksheet.
 - What other commodities besides fruits and vegetables can be found at a farmers market?
- Learn more about gardening and grow vegetables or flowers in your classroom.
- Have students design their own garden. What would the dimensions be? What would they plant in their gardens?
- Learn more about pollinators and their role in agriculture.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!

ANSWER KEY

Each sheet has six images. The top two images and the middle-left image will all go together. The middle-right image and the bottom two images go together.

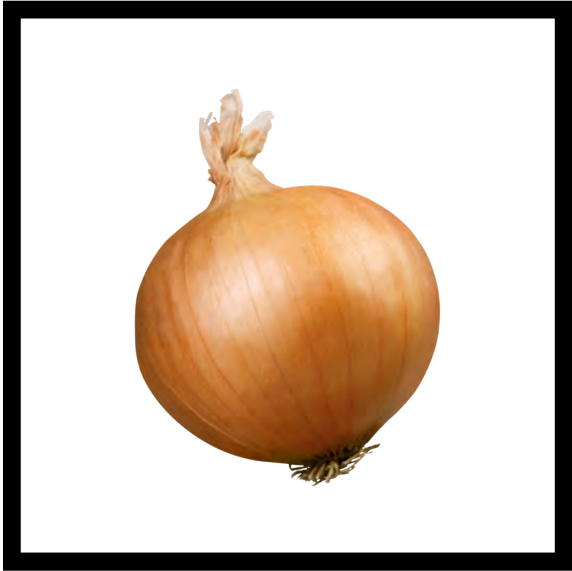
Each sheet is designed the same way. You will find all the cards with the common names at the very end of the document.

Project the **full answer key** on the board! This is a separate PDF that can be found on our website.

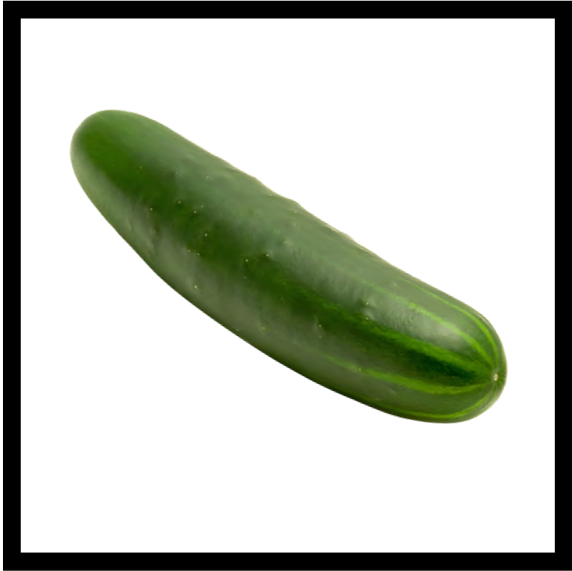




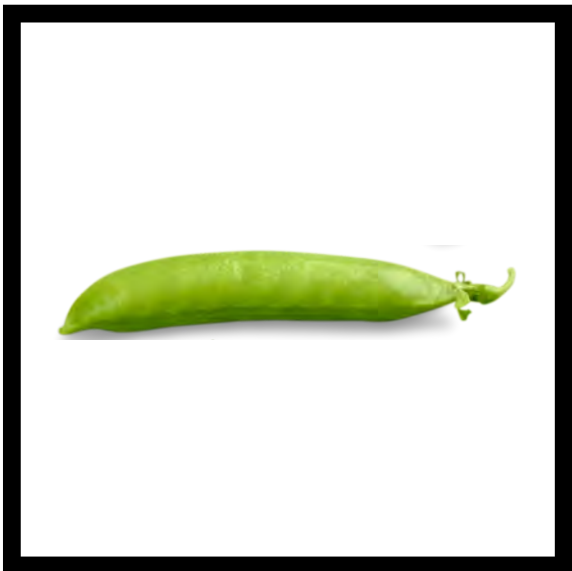




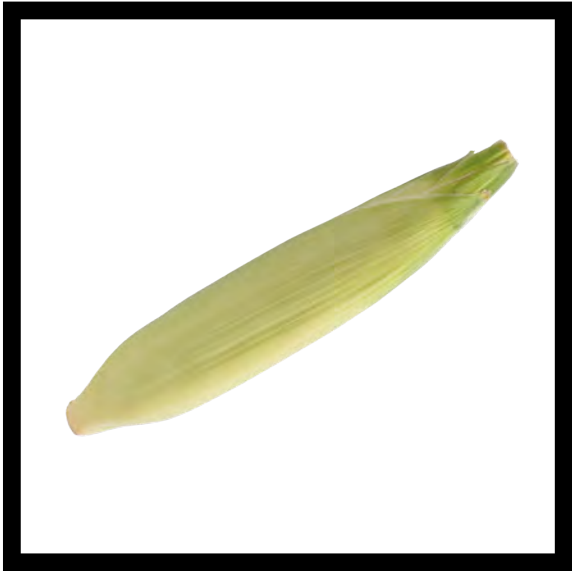


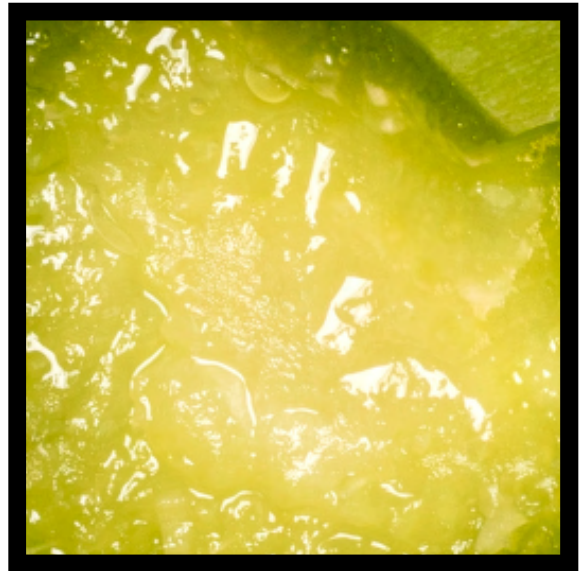
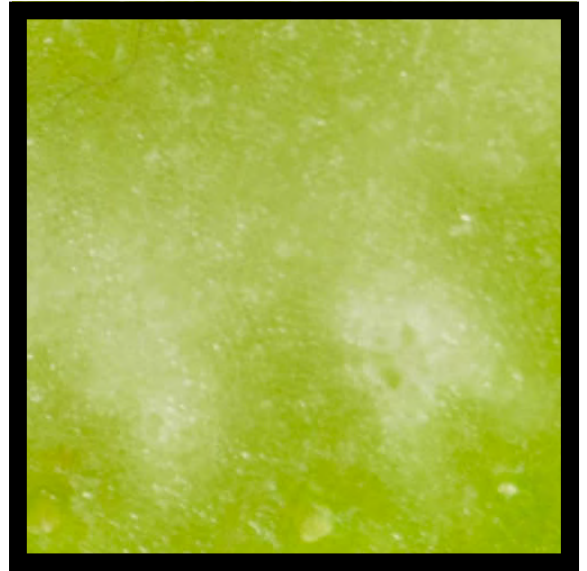
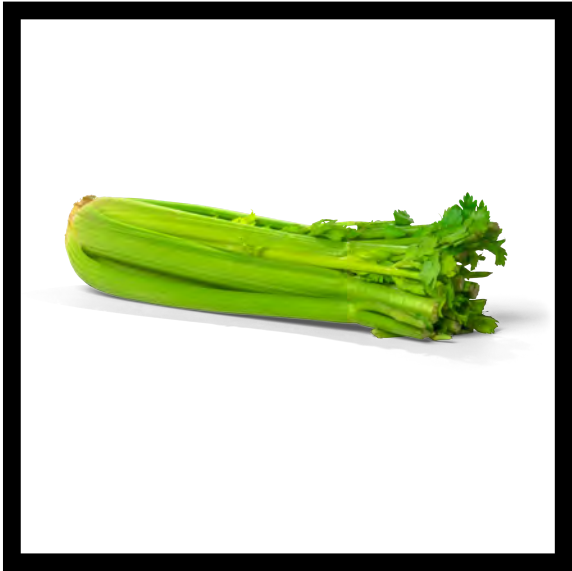


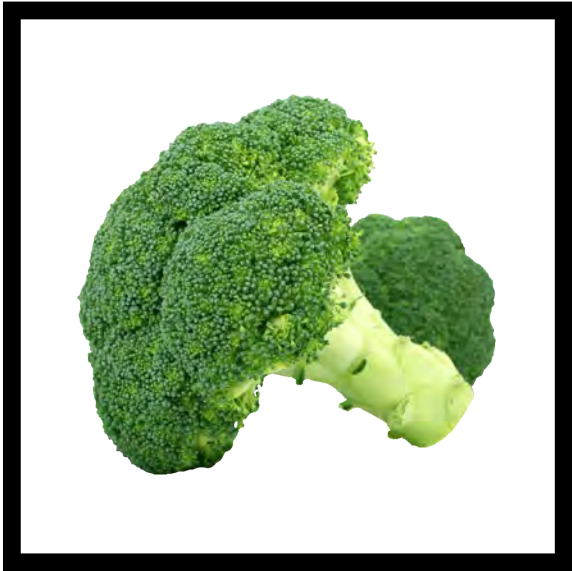


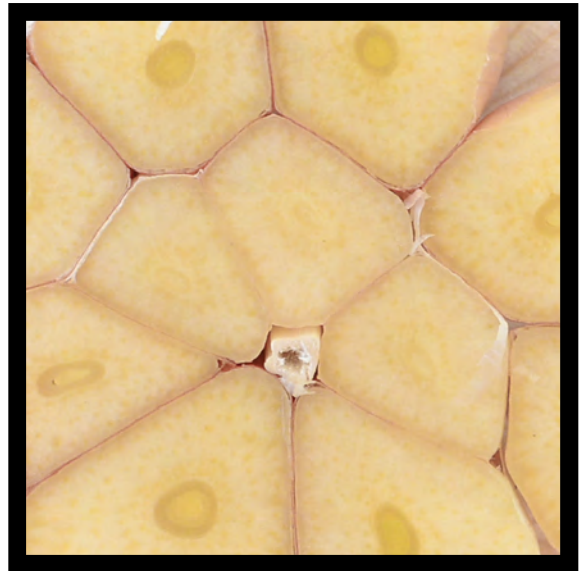












PEACH

POTATO

**BRUSSELS
SPROUT**

PEPPERS

APPLE

ONION

PUMPKIN

BEET

STRAWBERRY

CUCUMBER

RADISH

CARROT

TOMATO

PEAS

LETTUCE

ARTICHOKE

**SWEET
CORN**

WHEAT

CELERY

ASPARAGUS

BROCCOLI

CAULIFLOWER

HORSERADISH

GARLIC

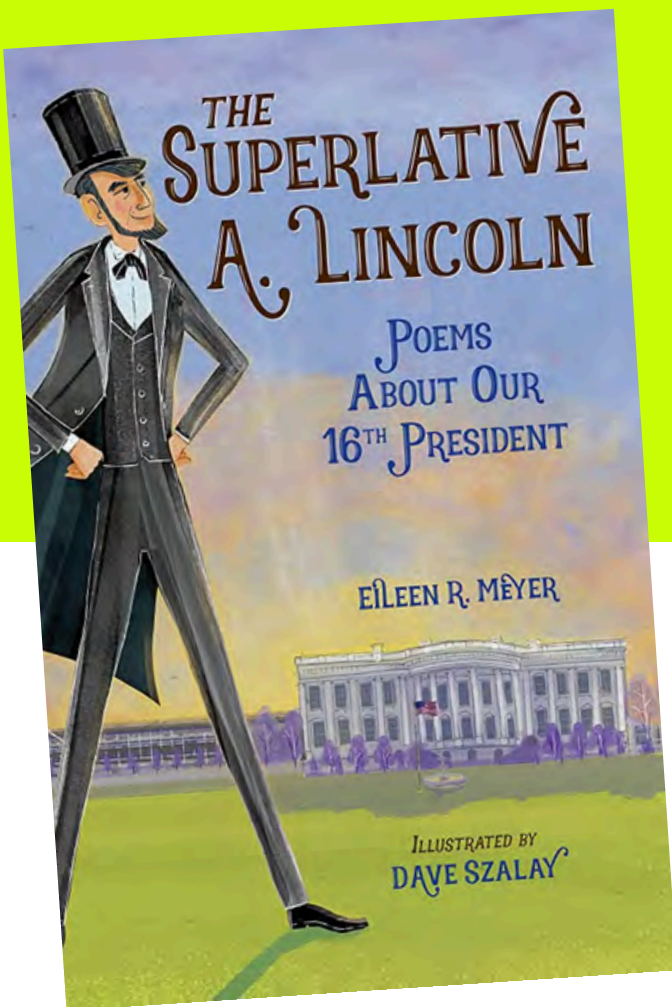
Level Up

At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from

A *Illinois*
AGRICULTURE
in the ClassroomSM



The Superlative A. Lincoln Eileen R. Meyer

Abraham Lincoln is famous for many extremes: he was the **TALLEST** president, who gave the **GREATEST** SPEECH and had the **STRONGEST** conviction. But did you know that he was also the **MOST** DISTRACTED farmer, the **BEST** wrestler, and the **CRAFTIEST** storyteller? Nineteen poems share fascinating stories about events in Lincoln's life, while history notes go even deeper into how he excelled.

Tinfoil Flat Boat

Help students learn more about buoyancy, density, and other science concepts with this fun, hands-on STEM activity.

See following page(s) for lesson plan!



TIN FOIL FLATBOAT

Grade Level

1-7

Length of Lesson

60 minutes

Objective

By the end of this lesson, students will have a better understanding of using riverways to transport goods.

Materials Needed

- Tin foil
- Water basin
- Water
- Pennies
- Towel
- Device with internet access

Standards

Common Core

CCSS.ELA-Literacy.RI.1.5; RI.2.5; RI.3.5

CCSS.Math.Content.k.CC.A.1; K.CC.B.4; K.CC.B.5

NGSS

K-5-ETS1; MS-ETS1

Lesson Summary

This lesson is a fun, hands-on activity designed to help students understand the important role that rivers play in the transportation of agricultural goods from place to place. This is also a perfect lesson to connect to Illinois history and Abraham Lincoln.

Suggested Sequence of Events:

1. Set Up: Fill a tub or bin with water for students to test their boats in. A clear tub or bin is suggested so that all your students can see. Put a towel to the side for groups to set their boats on after testing.
2. Read through the IAITC Illinois History Ag Mag to learn more about transportation and Illinois history. Interactive online versions can be found on our website.
3. As a class, watch this [video](https://vimeo.com/203606737) (1:00 minute long) to learn about how boats and waterways play an important role in transporting IL commodities. Video available at: <https://vimeo.com/203606737>
4. Complete the activity following the procedures:
 - Put students into groups of two or three.
 - Explain that they will be designing a boat using tin foil. They will be using pennies to see whose boat will hold the most weight.
 - Have each group talk about the shape of the boat and the construction process.
 - Give each group a piece of tin foil.
 - Once the boats are built, have each group come to the water basin, one at a time, and set their boat in the water.
 - If the boat sinks, have the group go back to their desk and revise their design.
 - If the boat floats, have them start slowly placing pennies on it, one at a time, until the boat sinks.
 - Make sure each group collects their pennies from the bottom of the water basin after it sinks.
 - Then, have students use a scale to weigh the pennies and calculate the weight their boat could hold before sinking. (The penny that causes the boat to sink should **not** be counted as a part of the weight)
5. Whole class discussion and reflection of activity. Suggested post-activity discussion questions can be found on the teacher resources page.

TEACHER RESOURCES

Background Information:

One of Abraham Lincoln's first jobs was to steer flatboats down the Mississippi River to New Orleans. This was also his first time seeing enslaved people being bought and sold. This experience helped shaped his social views, which ultimately led to the ending of slavery in the United States.

Today, the Illinois and Mississippi Rivers continue to play an important role in exporting Illinois commodities. Many agricultural products are loaded onto large boats, called barges, and shipped up and down the rivers for low costs.

This activity suggests students work in small groups but can easily be adapted for students to work individually or even with larger groups. Materials and time allotment for this activity can also be adapted in a variety of ways to meet the needs of your classroom.

Post-Activity Discussion Questions:

- What type of shape of the boat worked best?
- What are some things your group discussed before building your boat?
- How is the use of rivers for transporting goods similar or different than the use of roads and rails? What are the pros and cons of each type of transportation?

Extension Ideas:

- For higher grades, or to dig deeper into STEM, provide a variety of materials for students to pick from to create their boats.
- For lower grades, have students use the pennies to practice counting.
- Use the pennies as manipulatives to do math equations on the table.
- Read [*The Superlative A. Lincoln*](#) by Eileen R. Meyer, [*Lincoln Clears a Path*](#) by Peggy Thomas, and [*Where Lincoln Walked*](#) by Raymond Bial to learn more about Abraham Lincoln.
- Read through the following Ag Mags to learn more about transporting agricultural goods: IL History, Water, Soybean, Dairy, Corn, and Urban.
- Have students read and research more about the different types of transportation.
- For older students, have them research the supply chain. How do agricultural products end up in our grocery stores?
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!

Level Up

At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



The Great Pumpkin Smash

Lori Haskins Houran

For Luke, autumn in Florida feels weird. There are no changing leaves, no cider, and worst of all, no pumpkin chucking! But maybe he can engineer a way to bring pumpkin spice to the south. Tying into the popular Makers Movement, Makers Make it Work is a series of fun easy-to-read stories that focus on problem-solving and hands-on action.

With bright, eye-catching art and explanatory sidebars with additional information on the topic, these books show kids how to use their hands, their heads, their creativity, and their problem-solving skills to overcome every challenge facing them.

Pumpkin Catapult

Students will love this engaging STEM activity where students must figure out how to launch a tiny pumpkin.

See following page(s) for lesson plan!



PUMPKIN CATAPULT

Grade Level

4-6

Length of Lesson

2 class periods

(1 day of building, 1 day of testing)

Objective

By the end of this lesson, students will learn more about the design and use of simple machines.

Materials Needed

- Large popsicle sticks
- Rubber bands
- Plastic Bottle Caps
- Hot Glue
- Assorted additional building materials
- Small pumpkin-shaped candy
- Protractors
- Container or bin (“wagon” for challenge)
- Copies of student worksheet

Standards

NGSS

4-PS3; 3-5-ETS1; MS-ETS1-1; MS-PS3-2

Lesson Summary

This lesson is designed to help students learn more about simple machines and provide opportunities to design and test their own pumpkin catapult. Additionally, there is a design for a large catapult made from PVC pipe that will launch small pumpkins up to 40 feet.

Suggested Sequence of Events:

1. Set Up: Teachers may also want to build their own example to inspire students’ creations.
2. Read [The Great Pumpkin Smash](#) by Lori Haskins Houran to capture student interest and introduce the concept of catapults.
3. Read through AITC Pumpkin Ag Mag to learn about pumpkins. Interactive online versions can be found on our website.
4. Watch a short pumpkin harvesting video to show students some of the machines used to harvest processing pumpkins in Illinois. Here is one good example: <https://youtu.be/5Ac98DrsKmY>
5. Complete the activity following the procedures:
 - Discuss the concept of a catapult and the simple machines used to make a catapult work.
 - Pass out the student worksheets to each student and read the “STEM Challenge” together. Explain that they will be trying to catapult a candy pumpkin into a container.
 - After passing out the necessary building materials have students brainstorm how the pieces work together and then draw a blueprint. They should do this before they start building.
 - Provide students time to build, discuss, and test their creations. *See Background Information on the Teacher Resources page.
 - Complete the STEM Challenge as a class and see whose catapult can launch the candy pumpkin into the wagon!
6. Additionally, the teacher could construct a PVC Pumpkin Catapult and have students experiment with launching small pumpkins outside.
7. Whole class discussion and reflection of activity. Pair students together and have them share their catapult designs with their partner. What variables can be changed to make the pumpkins launch farther?

TEACHER RESOURCES

Background Information:

A part of STEM fields is the testing that takes place behind the scenes! Your students are trying to launch a candy pumpkin into a container placed at a specified distance, determined by you. Students will need to test their catapults to determine the force needed to launch the pumpkin the correct distance. Meaning, what is the best angle or how many posicle sticks need to be stacked for the correct force. They will choose two angles to test and complete three trials for each, then find the average of those trials for each angle. This will help them determine the angle they need for the challenge.

Extension Ideas:

- Have students define the bolded words on their student worksheets.
- Talk about why the pumpkin doesn't stay in the air, what happens to the pumpkin's motion when it hits the ground, and what causes the pumpkin to travel a further distance.
- Add another variable into their tests and have students use objects of different weights to compare results.
- Read "[Pick a Pumpkin](#)" by Patricia Toht. Look at the pictures and have students analyze the images.
- Have students write pumpkin facts from the AITC Pumpkin Ag Mag on their catapults.
- Have students create a comic strip including pumpkin facts.
- Watch a time lapse video of a pumpkin growing.
- Watch a video from a local farmer discussing pumpkin growth and harvest.
- Take a field trip to a pumpkin patch and pick your own pumpkins.
- Take a closer look at squash bees and other pollinators. What is pollination? Why is it important for pumpkins?
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



Catapult made with instructions



Catapult designed by a 1st grader



PVC Catapult



PUMPKIN CATAPULT

STUDENT WORKSHEET

STEM Challenge: There's been a machine breakdown! A farmer needs help getting his pumpkins into the wagon. Can you design and build a *Pumpkin Catapult* to launch those pumpkins into the wagon?

The **distance** and **speed** of the pumpkin is going to depend on the **force** of the machine. The force is determined by how far back your catapult is pulled before releasing.

How will you adjust the force of your catapult?

Look at the materials your teacher has given you for your build. Draw and **label** some possible designs (blueprints) for your catapult in the box below.



PUMPKIN CATAPULT

STUDENT WORKSHEET

Time for your **hypothesis**. This should include your ideas on the relationship between force of your catapult and the distance your pumpkin will travel.

My Hypothesis:

Just as scientists and engineers do, you are going to complete a series of tests before trying to get your pumpkin into the wagon! Fill out the information below as you complete your testing trials.

Angle: this is the number of popsicle sticks and/or the angle measured with a protractor.

Distance: this is the amount of space (in inches) measured from the base of the catapult to the spot where your pumpkin **landed** – this does NOT include where the pumpkin stops after rolling!



Angle of Launch =

Trial 1	inches
Trial 2	inches
Trial 3	inches



Angle of Launch =

Trial 1	inches
Trial 2	inches
Trial 3	inches

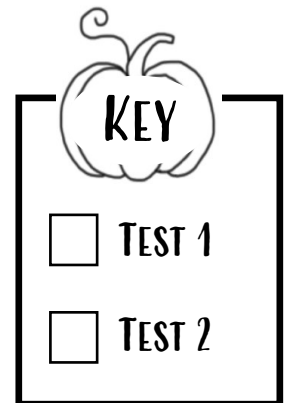
Now, calculate the average distance traveled for each angle you tested.



PUMPKIN CATAPULT

STUDENT WORKSHEET

Use the data you collected to create a visual representation of those measurements! You will need to add the information for the bar graph, and use two different colors to represent the two angle tests you completed. Make sure you label your graph!



Reflection Questions:

1. Why do scientists and engineers revise their original designs? Did you have to revise yours?
2. For this activity, what worked well and what was challenging?
3. Did your catapult work for getting the pumpkin into the wagon? Why or why not?
4. How would adding a heavier or lighter object change the angle needed for making it into the wagon?



PUMPKIN CATAPULT

BASIC INSTRUCTIONS

Materials:

- Seven (7) large popsicle sticks
- Four (4) rubber bands
- Plastic bottle cap
- Hot glue



Follow these steps to build a basic pumpkin catapult:

1. Stack five (5) popsicle sticks together and wrap rubber bands around each end until tight.
2. Stack the remaining two (2) popsicle sticks together and wrap a rubber band around one end until tight.
3. Spread apart the two (2) popsicle sticks on the end opposite the rubber band and insert the stack of five (5) popsicle sticks in between.
4. Push the stack of five (5) sticks down until it reaches the rubber band holding the two (2) popsicle sticks together.
5. Wrap another rubber band around the spot where the two (2) stacks of popsicle sticks meet.
6. Carefully glue a plastic bottle cap to the upper popsicle stick to create a pumpkin basket for your catapult.
7. Allow to dry, then place a candy pumpkin inside the bottle cap.
8. Use your finger to pull down the popsicle stick. Release your finger and see how far your pumpkin flies!

Now that you have built a basic catapult, how can you improve the design? Can you make a more powerful catapult with a new design?



PUMPKIN CATAPULT

PVC CATAPULT INSTRUCTIONS

Materials:

- Fourteen (14) feet of 1" diameter PVC pipe
- Five (5) 1" diameter PVC "T" connectors
- Seven (7) 1" diameter PVC 90 degree connectors
- PVC primer and glue (often sold together)
- One (1) bungee cord
- One (1) 3" bolt and nut
- Small plastic container

Tools: Hacksaw or power saw, tape measure, drill and drill bit, permanent marker



Follow these steps to build a PVC pumpkin catapult:

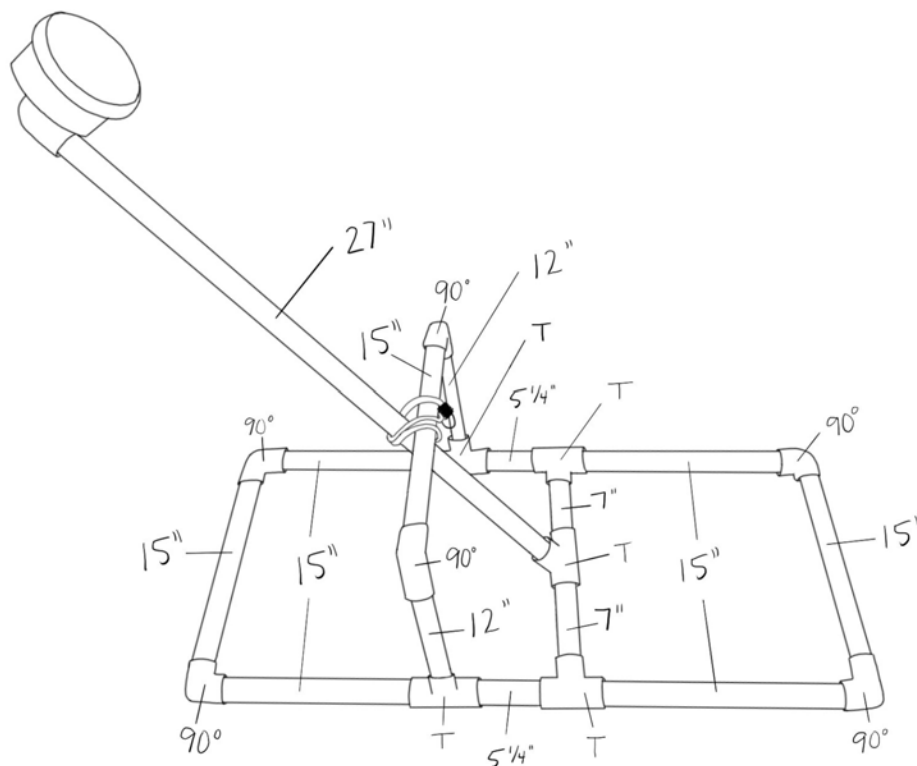
1. Begin by cutting your PVC pipes into the following lengths:
 - Seven (7) 15" long pieces
 - Two (2) 7" long pieces
 - Two (2) 5 1/4" long pieces
 - Two (2) 12" long pieces
 - One (1) 27" long piece (this can be shortened or lengthened to change the catapult's launching ability)
2. Follow the diagram on the following page to attach the pieces of your catapult. **Do NOT use the PVC glue at this time!**
3. Drill a hole through the 90 degree connector on the catapult's throwing arm large enough for your bolt to fit through.
4. Drill a hole through the bottom of your plastic container and then attach using the bolt and nut.
5. Before gluing, you may want to test out your catapult to see if you want a longer or shorter throwing arm. To test, wrap the bungee cord around the throwing arm and attach to the horizontal upright. The more you wrap it, the further your catapult should launch.
6. If you are happy with your throwing arm's ability, it's time to get ready to glue. Before disassembling your catapult, use a permanent marker to mark each pipe and connector union. Draw a straight line across each union. When you glue your pieces together, you will need to make sure you match these lines up again. This is a very important step, as you only get one chance to glue!



PUMPKIN CATAPULT

PVC CATAPULT INSTRUCTIONS

7. Lay down cardboard to protect your surface from the PVC glue. It is recommended to do the gluing in a well-ventilated area. You should also wear rubber gloves to protect your skin.
8. Unscrew the bottles of PVC primer and glue. You should notice that the lids have brushes attached to them.
9. On each connector, rub the PVC primer brush on the interior where the pipe will be inserted.
10. Then, rub the PVC glue brush on the same spot.
11. Insert the correct PVC pipe, making sure to line up your permanent marker lines as you push the pipe in as far as it will go. Take your time with this step!
12. Continue for each piece until your catapult is reassembled.
13. Let dry thoroughly before using.
14. Students can experiment with this catapult as well. Try pumpkins of different weights and sizes and see if the distance changes. Set up a wagon and see if students can hit it. Try placing the catapult on different inclines to see if the trajectory changes.



Level Up

At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



Off Like the Wind! The First Ride of the Pony Express Michael P. Spradlin



In 1860, the first Pony Express rider set out on a trail from Missouri to California.

With him, he carried a special delivery: the first mail ever carried by hand to the West. Over the next eleven days, he and many other riders would endure harsh weather, dangerous animals, and more,

but nothing would diminish their unflagging determination and courage.

This story brings to life an adventurous journey, full of suspense and excitement, that celebrates America's can-do attitude and pioneering spirit.

Walking Paper Horse

Students can create a paper horse that walks itself down an incline with this exciting STEM activity.

See following page(s) for lesson plan!



Science



Math

WALKING PAPER HORSE

Grade Level

2-6

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will have a better understanding of motion.

Materials Needed

- Cardstock or construction paper
- Pencils
- Scissors
- Rulers
- Foam poster board
- Books or box for ramp
- Copies of Student Worksheet
- Copies of Horse Template (optional)

Standards

Math

CC.2.MD.1-1; CC.2.G.1

NGSS

K-PS2-1; K-PS2-2; 3-PS2-1; 3-PS2-2; 4-PS3-1; 5-PS2-1; MS-PS2-2; MS-PS2-4

Lesson Summary

This lesson is a fun activity to help students use basic shapes to recognize the role gravity has when it comes to motion. Students will have to figure out what adjustments need to be made to get their horse to walk!

Suggested Sequence of Events:

1. Set Up: For younger students or to save time, print the provided template out ahead of time to give to your students.
2. Read through the IAITC Horse Ag Mag to learn more about horses! Interactive online versions can be found on our website.
3. Complete the activity following the procedures:
 - Have students use their rulers to draw their horse template, following the directions on the Student Worksheet.
 - Next have them cut out the perimeter of the rectangle, cut on the dotted lines, and also cut the diagonal lines on the corners.
 - Fold the four “legs” down at a ninety degree angle. Fold the base of the “head” upward (this would be the “neck” of the horse) and then fold a small part of the top of the “head” down to create a face. Lastly, curl the ‘tail’ upward.
 - Set up the ramps and test the horses! Students will need to make adjustments to their horse and/or the ramp if their horse doesn’t walk right away.
4. Whole class discussion and reflection of activity. Ask students what adjustments they had to make in order to get their horse to walk down the ramp.

TEACHER RESOURCES

Background Information:

When the horse is placed at the top of the ramp, it has potential energy. Once the horse is nudged and it begins 'walking' down the ramp due to being pulled by gravity, the horse then has kinetic energy. The material you place on the ramp will determine the amount of friction there is, causing the horse to move faster or slower.

The 'walking' is due to the angles that were cut on the 'hooves' of the horse. These angles allow the horse to rock back and forth like a rocking chair. As the horse rocks to the right side, the left legs are lifted and gravity pulls them forward. The horse then rocks to the left side and the right legs are lifted and pulled forward.

Extension Ideas:

- Have students go to [this](http://afs.okstate.edu/breeds/horses/) website and learn about a variety of horse breeds! Website can be found at <http://afs.okstate.edu/breeds/horses/>
 - Have students color their templates to match their favorite horse coat color.
- Have students convert measurements into mm and/or inches. Have students find the area of all the squares and rectangles within the template.
- Learn about the Kentucky Derby and have students give their paper horses a derby name. When their horse is ready, have them race their horses down the ramp.
- Learn about the different types of gaits of horses and how horses are trained.
- Take a closer look at horses on farms and ranches. What are some of the purposes of having a horse? How are they used for work, for hobby, or for sport? How are horses useful beyond the farm?
 - Take this a step further and learn about how the use of horses has changed over time.
- Have students complete the "Ag-Venture With Horse" worksheet that pairs with the Horse Ag Mag to strengthen student non-fiction skills while learning more about horses.
- Read "[Horses](#)" by Gail Gibbons to learn more about horses and their history.
- Show a labeled diagram of a horse and have students label their own horse diagram.
- Invite a horse handler into the classroom.
- Have students tell a fictional story about a horse.
- Learn about what it takes to care for a horse.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





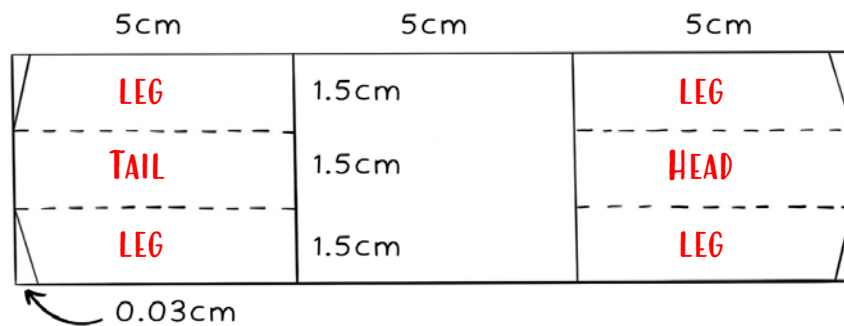
WALKING PAPER HORSE

STUDENT WORKSHEET

Can you engineer a walking paper horse? The answer is YES! With some basic supplies, a ramp, and patience, you can have a walking paper horse in no time. Follow the directions below to create your own walking paper horse.

Measuring:

1. Use a ruler to measure out a 15cm x 4.5cm rectangle. Finish drawing your template, using the diagram below for the correct measurements.



Cutting:

1. Cut around the perimeter of the rectangle.
2. Cut the triangles off of the four corners.
3. Cut on the dotted lines of the outside squares up to the center square.

Folding:

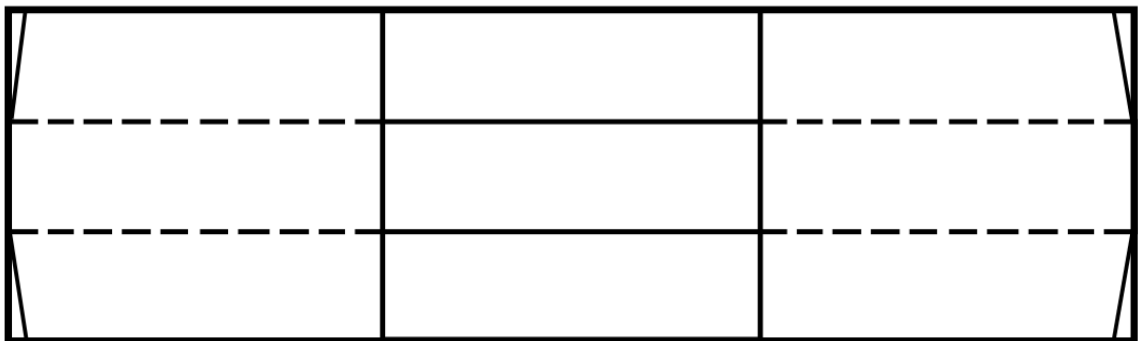
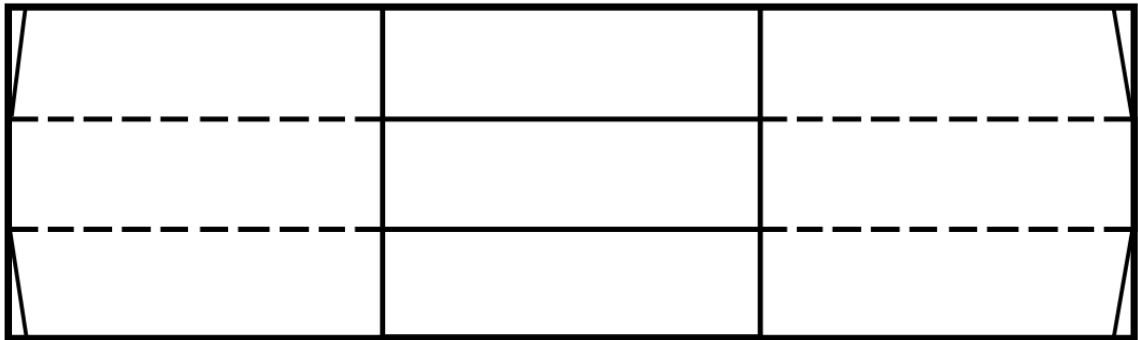
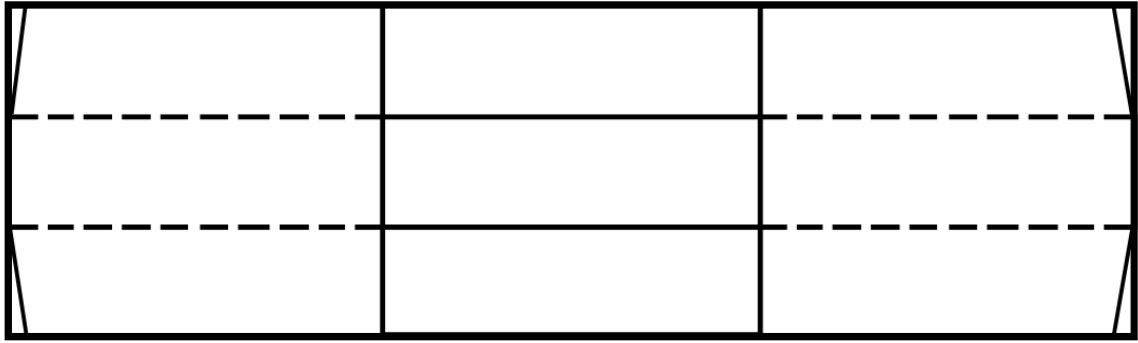
1. Bend the 'legs' downward at a ninety degree angle, perpendicular to the body.
2. Bend the 'tail' upward and use your finger or the edge of the table to curl it a little.
3. Bend the 'head' upward. Then, fold the top of the head downward to create a 'face'.

Testing:

1. Using the materials you have, build a ramp.
2. Place your horse at the top of the ramp and give it a slight nudge to start moving.

Science and engineering is all about trial and error so stay patient if your horse doesn't start walking right away—it's a part of the process. If your horse isn't walking, consider some of these variables and make adjustments until your horse is walking:

- The angle of the 'hooves'
- The angle of the ramp
- The folds of the 'legs'
- The material of the ramp



Level Up

At Your Library

Summer 2025

An iREAD Summer
Reading Companion
from



Pizza! A Slice of History Greg Pizzoli



Join award-winning author and illustrator Greg Pizzoli as he travels through time and around the globe to discover the mouth-watering history of pizza. Bursting with color, flavor, fun facts, and a family-friendly English muffin pizza recipe, *Pizza! A Slice of History* reveals the delicious story of the world's best food.

Solar Oven

Learn how to harness the power of the sun to cook food with this fun STEM activity.

See following page(s) for lesson plan!



SOLAR OVEN

Grade Level

4-8

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will better understand the power of the sun's energy and how humans can use that power.

Materials Needed

- Cardboard pizza box
- Aluminum foil
- Black construction paper
- Clear kitchen plastic wrap
- Scissors
- Glue
- Stick or pencil

StandardsNGSS

3-5-ETS1-2; 4-PS3-2; 4-PS3-4; 4-ESS3-1, 4-ESS3-2, 3-5-ETS1-2, MS-PS3-3; MS-PS1-4; MS-PS3-3-4

Lesson Summary

This lesson is designed to provide students an opportunity to build a solar oven in order to cook food using solely the sun's energy.

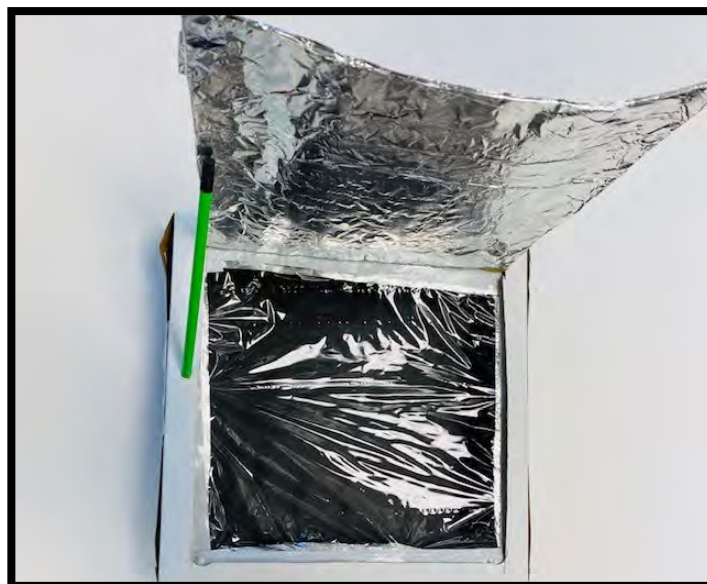
Suggested Sequence of Events:

1. Read *Time to Shine* by Catherine Daly to learn more about how solar ovens can be built and used to cook food.
2. Complete the activity following the procedures:
 - Give each group the necessary materials to build their own solar ovens.
 - On the lid of the pizza box, use scissors or a box knife (with help from an adult!) to cut through the cardboard on three sides, leaving about an inch between the sides of the flap and the edges of the lid. Fold this flap out on the uncut side so that it stands when the box lid is closed.
 - Cut aluminum foil to fit on the inside of this flap. Use glue to attach.
 - Cut clear plastic wrap to fit the hole from the flap in the lid of the box. Attach from the underside of the lid with tape or glue.
 - Next, line the inside of the box with foil adhered with glue.
 - Then, cut black construction paper to the size of the bottom of the box and glue to the foil.
 - Use a pencil or stick to prop open the flap of the solar oven. Place food, such as a piece of pizza or a s'more, into the oven and position to maximize the reflection of the sun's rays into the oven chamber beneath the clear plastic.
 - Allow students to experiment by changing the types of food, the angle of the flap, and attempting to cook with different outside temperatures and cloud cover.
4. Whole class discussion and reflection of activity. In what types of situations might this solar oven be useful? What are ways this design could be perfected to cook food more efficiently? What is the purpose of the plastic wrap in the solar oven?

TEACHER RESOURCES

Extension Ideas:

- Learn more about the types of thermal transfer: radiation, conduction, and convection. This activity uses radiation—the transfer of heat without direct contact between the two objects.
- Discuss how the solar oven traps the sun's heat (thermal energy) inside to raise the temperatures.
 - Keep in mind that extreme physical changes in the food may not occur but that the temperatures of the food will increase. Recording the temperature of the food before and after would show the trapping of the heat of the sun.
- Learn more about how temperature affects the properties of materials and sometimes those changes cannot be undone.
 - For example, heating chocolate will cause melting, but a decrease in the temperature will cause the chocolate to become a solid again. But a marshmallow heated over a fire will brown and the change in properties cannot be undone.
- Learn more about renewable energies and the concept of greenhouse gases.
- Learn about how the sun's energy is important for many different reasons. Can they trace the flow of the sun's energy through the food chain? Can they explain how the sun's energy drives the water cycle?
- Discuss the pros and cons of using the solar oven for cooking their food.
- Incorporate the IAITC Pizza and Nutrition Ag Mags into this lesson to provide background information on how some of our favorite foods are grown and transported to our tables.
- Use thermometers inside the solar ovens to test how hot they can get on days with different environmental conditions.
- Provide students with materials to make their own versions and see which design is most effective in heating up food.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



Level Up

At Your Library

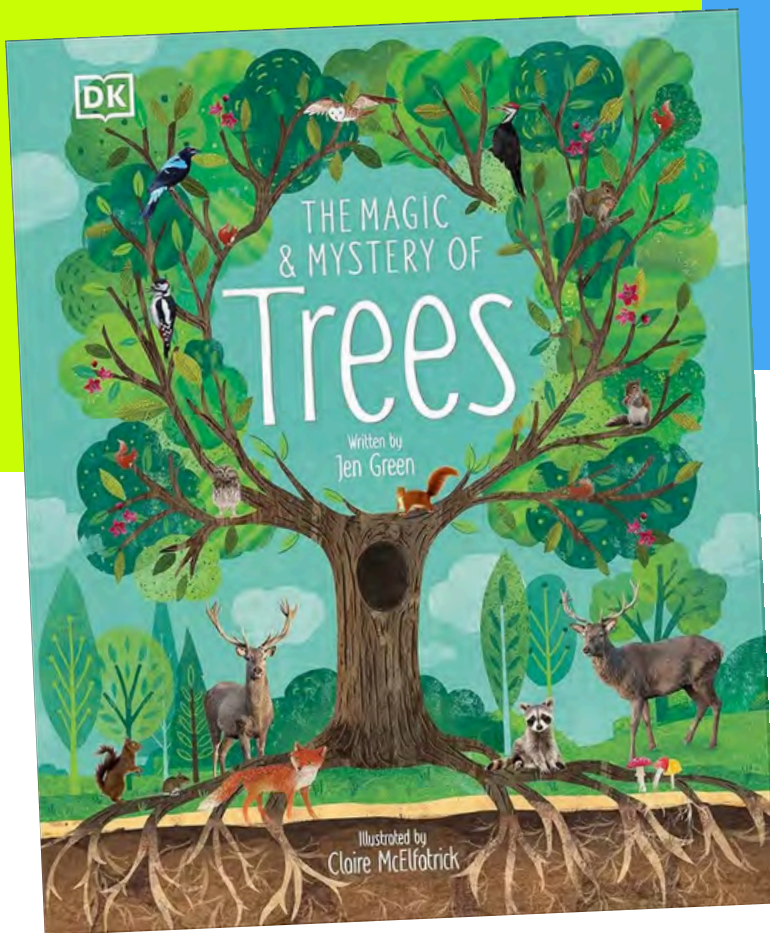
Summer 2025

An iREAD Summer
Reading Companion
from

A *Illinois*
AGRICULTURE
in the ClassroomSM

The Magic and Mystery of Trees Jen Green

From the highest branch and leaf down to the complex "wood wide web" of roots, it's no wonder every part of a tree plays an important role in its own growth and the habitat of the whole forest or woodland. *The Magic & Mystery of Trees* is a nature book that takes children on a fascinating journey of exploration, showing them just how special these mighty organisms are.



Healthy Trees: Apple Addition

Get students out of their seats to learn about the many factors necessary to grow healthy apple trees.

See following page(s) for lesson plan!



HEALTHY TREES: APPLE ADDITION

Grade Level

2-3

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will better understand factors that influence tree health.

Materials

- Poker chip set with at least 10 different colors ([this is the one we purchased](#) - if you have a different one, you may have to modify the colors on the worksheet)
- Student handouts

Standards

Common Core

CCSS.Math.Content.2.OA.1, 2.OA.2, 2.NBT.5, 2.NBT.6, 3.OA.3, 3.OA.7

NGSS

3-LS4-3, 3-LS4-4

Lesson Summary

This lesson is designed to help students better understand the many factors necessary to grow healthy apple trees, all while practicing multiple step math equations.

Suggested Sequence of Events:

1. Set Up: Print student handouts for each student.
2. Read through the [IAITC Apple Ag Mag](#) to learn more about apples. Interactive online versions can be found on our website. Additional books to pair with this lesson can be found on the Teacher Resources page.
3. Ask students to spread out in the classroom (or on the playground). They should stand with enough room to "spread their branches." Once they have evenly spread out, they are now apple trees and are "rooted" to the ground.
4. Randomly throw out the poker chips to scatter the floor around the students. Each student should be able to grab some chips, but do not worry about making it exactly even.
5. Following the order on the student worksheet, ask students to quickly pick up the poker chips of that color after you say "go." Students cannot move their feet (they are trees, after all) and must only gather what they reach from their position.
6. After each color has been collected, explain to students what that color represents and why it is important to consider for apple tree growers focused on the health of their apple tree. Use the "Tree Health Indicators" handout to assist with this. Some colors are beneficial to the tree, and others are harmful. It is important to not tell students ahead of time what each represents, so they will always attempt to gather as much as they can.
7. Once all colors have been collected, have students return to their seats to start counting their chips and completing the math equations on the Student Handouts. The students with the highest scores managed to grow into the healthiest trees in the orchard.
8. Discussion: Discuss with students why each of these factors is important to tree health. What can farmers and growers do to help their trees become as healthy and strong as possible?

TEACHER RESOURCES

Extension Ideas

- Learn more about each of the "Tree Health Indicators" from this lesson. Are these helpful and/or beneficial for other trees, flowers, and crops?
- Learn more about the life cycle of apple trees.
 - Show a labeled diagram of a blossom and of an apple.
 - Watch a time lapse video of an apple growing. How long does the actual process take?
- Take a field trip to a nearby apple orchard and learn more about apple farming. What do apple farmers do throughout the year to take care of their orchards?
 - Take a virtual field trip to Braeutigam Orchard in Belleville, Illinois, and learn more about apple farming. This video can be found on our [website](#).
- Have students write a story that takes place at an apple orchard.
- Learn about Controlled Atmospheric Storage and how apples are kept ripe after they are harvested.
- Do all apples look and taste the same? Have students use their senses to compare different varieties of apples.
- Are apples native to the United States? Learn about the history of apples.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!



TREE HEALTH INDICATORS



YELLOW - SUNLIGHT

Trees need sunlight for photosynthesis in order to create their own food for energy.

GREEN - SOIL NUTRIENTS

Trees get vital nutrients from the soil through their roots. If the soil doesn't have many nutrients, farmers add fertilizer to the soil or to irrigation water.

PINK - HARMFUL INSECTS

Apple trees have many harmful pests that can impact tree health throughout the entire growing season.

ORANGE - POLLINATORS

Pollinators are vital for apple crops. Honeybees and other native IL pollinators help blossoms turn into apples for us to eat.

WHITE - KILLING FROST

Many different plants are sensitive to temperature changes. On cold spring and summer nights, some growers spray their apple trees with water during cold spells to insulate sensitive blossoms.

PURPLE - DISEASE

A combination of heat and humidity is the perfect environment for many microorganisms to grow, some of which cause plant diseases. Some microbes can live in the soil for many years.

BLUE - WATER

Trees need substantial amounts of water, especially young trees, but most don't like their "feet wet".

RED - EFFECTIVE PRUNING

Effective pruning of apple trees is essential for tree and fruit health. Apple trees need a leader branch and a lot of room between branches for airflow and sunlight.

BLACK - PROPER THINNING

Apple trees must be properly thinned to allow fewer number of fruits to reach maturity. This helps the remaining fruit grow larger and protect the tree limbs from being too heavy.

FUCHSIA - STAKING & TRELLISING

Young trees are not as strong as mature trees. Using a trellis or stake to hold it upright will help the young tree stay standing if it gets really windy outside.





Name: _____

HEALTHY TREES: APPLE ADDITION

Just like all other plants, apple trees need certain things to be healthy! But there are also things that can be harmful to apple tree health. Each color chip represents something that is either beneficial (good) or harmful (bad) for the overall health of an apple tree. Complete the math equations below based on the number of chips you collected to see how healthy your tree is!

- Sort the color chips you collected into separate piles.
- Record (write) the number of chips collected into the box labeled with the same color. That number of chips represents how each thing affects your tree's overall health.
- Fill in the remaining blanks in the box to write the multiplication equation.

YELLOW = SUNLIGHT
Beneficial, earn double points!

Number of chips collected: _____

↻ _____ x 2 = _____ ↻
The number of color chips collected Total score for the color

WHITE = KILLING FROST
Harmful, lose triple points!

Number of chips collected: _____

↻ _____ x 3 = _____ ↻
The number of color chips collected Total score for the color

ORANGE = POLLINATORS
Beneficial, earn double points!

Number of chips collected: _____

↻ _____ x 2 = _____ ↻
The number of color chips collected Total score for the color

PURPLE = DISEASE
Harmful, lose double points!

Number of chips collected: _____

↻ _____ x 2 = _____ ↻
The number of color chips collected Total score for the color

GREEN = SOIL NUTRIENTS
Beneficial, score equals number of chips collected!

Number of chips collected: _____

↻ _____ x 1 = _____ ↻
The number of color chips collected Total score for the color

PINK = HARMFUL INSECTS
Harmful, score equals number of chips collected!

Number of chips collected: _____

↻ _____ x 1 = _____ ↻
The number of color chips collected Total score for the color



Name: _____

HEALTHY TREES: APPLE ADDITION

Just like all other plants, apple trees need certain things to be healthy! But there are also things that can be harmful to apple tree health. Each color chip represents something that is either beneficial (good) or harmful (bad) for the overall health of an apple tree. Complete the math equations below based on the number of chips you collected to see how healthy your tree is!

- Sort the color chips you collected into separate piles.
- Record (write) the number of chips collected into the box labeled with the same color. That number of chips represents how each thing affects your tree's overall health.
- Fill in the remaining blanks in the box to write the multiplication equation.

YELLOW = SUNLIGHT
Beneficial, earn double points!

Number of chips collected: _____

\curvearrowright _____ \times 2 = _____ \curvearrowleft

The number of color chips collected Total score for the color

WHITE = KILLING FROST
Harmful, lose triple points!

Number of chips collected: _____

\curvearrowright _____ \times 3 = _____ \curvearrowleft

The number of color chips collected Total score for the color

ORANGE = POLLINATORS
Beneficial, earn double points!

Number of chips collected: _____

\curvearrowright _____ \times 2 = _____ \curvearrowleft

The number of color chips collected Total score for the color

PURPLE = DISEASE
Harmful, lose double points!

Number of chips collected: _____

\curvearrowright _____ \times 2 = _____ \curvearrowleft

The number of color chips collected Total score for the color

GREEN = SOIL NUTRIENTS
Beneficial, score equals number of chips collected!

Number of chips collected: _____

\curvearrowright _____ \times 1 = _____ \curvearrowleft

The number of color chips collected Total score for the color

PINK = HARMFUL INSECTS
Harmful, score equals number of chips collected!

Number of chips collected: _____

\curvearrowright _____ \times 1 = _____ \curvearrowleft

The number of color chips collected Total score for the color

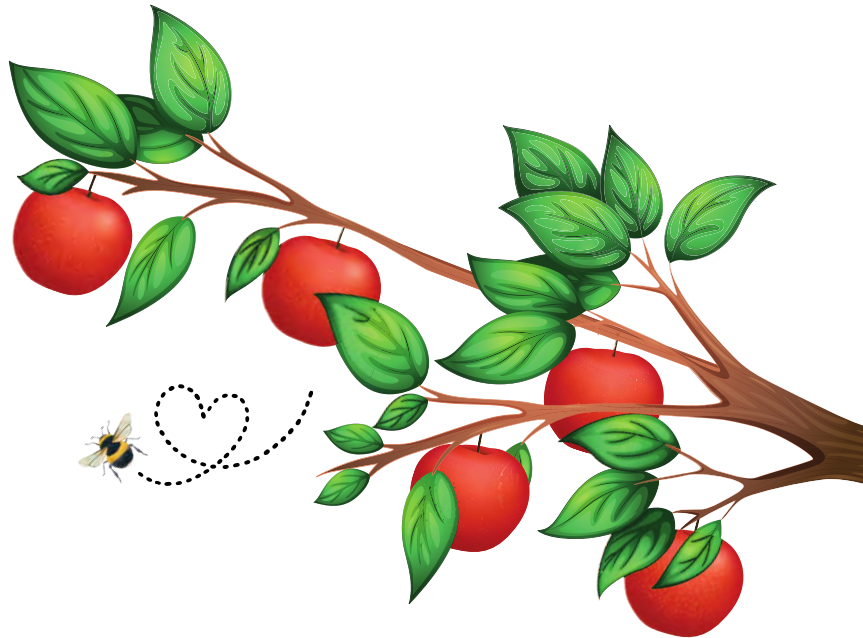
FUCHSIA = STAKING & TRELLISING

Beneficial, score equals number of chips collected!

Number of chips collected: _____

$$\curvearrowright \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected



BLUE = WATER

Beneficial but possibly harmful, complete the equation to find your final score.

Number of chips collected: _____

$$\curvearrowright \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected

Is this number less than or equal to 5? If yes, this is your score for this color.



Is this number more than 5? If yes, then subtract 2 from your answer to find your final score.

$$\curvearrowright \quad \underline{\hspace{2cm}} - 2 = \underline{\hspace{2cm}}$$

Your score from the first box

RED = EFFECTIVE PRUNING

Beneficial but possibly harmful, complete the equation to find your final score.

Number of chips collected: _____

$$\curvearrowright \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected

Is this number less than or equal to 5? If yes, this is your score for this color.



Is this number more than 5? If yes, then subtract 3 from your answer to find your final score.

$$\curvearrowright \quad \underline{\hspace{2cm}} - 3 = \underline{\hspace{2cm}}$$

Your score from the first box

BLACK = PROPER THINNING

Beneficial but possibly harmful, complete the equation to find your final score.

Number of chips collected: _____

$$\curvearrowright \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected

Is this number less than or equal to 5? If yes, this is your score for this color.



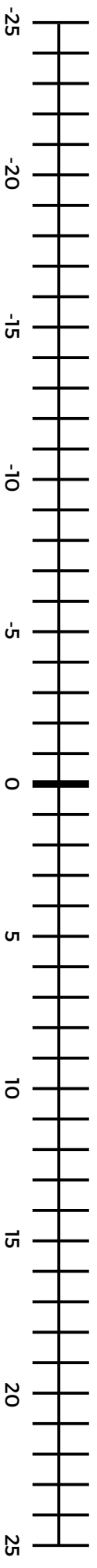
Is this number more than 5? If yes, then subtract 2 from your answer to find your final score.

$$\curvearrowright \quad \underline{\hspace{2cm}} - 2 = \underline{\hspace{2cm}}$$

Your score from the first box



1. Write the total score for each color in the box below. These are the scores for each color from the previous pages.
2. Use the number line to help you determine your overall apple tree health score! Put your beneficial (positive) score on the number line first, then subtract your harmful (negative) score second. This final number is your overall apple tree health!



Yellow	_____
Orange	_____
Green	_____
Blue	_____
Red	_____
Black	_____
Fuchsia	_____

Add all your beneficial totals together to determine your total positive score.

TOTAL _____

White	_____
Purple	_____
Pink	_____

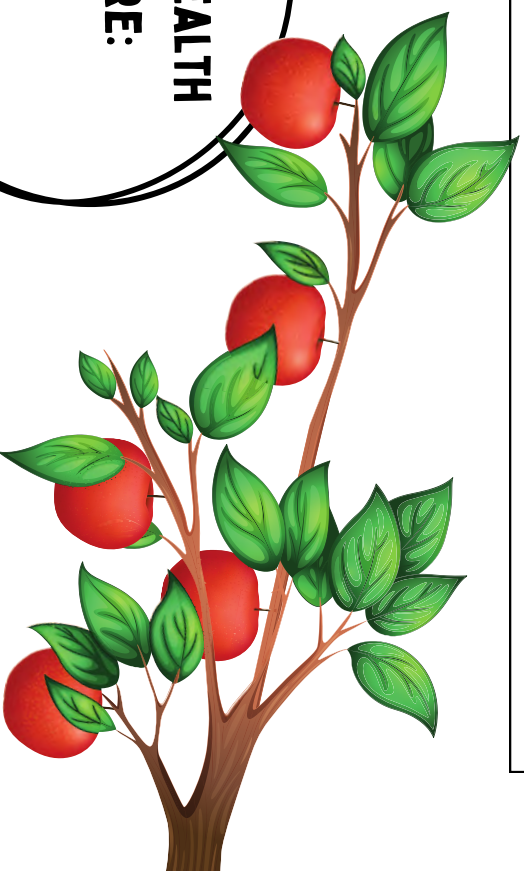
Add all your harmful totals together to determine your total negative score.

TOTAL _____

Using the beneficial total minus the harmful total, write an equation in the box below to show how to find the final tree health score.



TREE HEALTH SCORE:





HEALTHY TREES: APPLE ADDITION

Grade Level

4-6

Length of Lesson

45 minutes

Objective

By the end of this lesson, students will better understand factors that influence tree health.

Materials

- Poker chip set with at least 10 different colors ([this is the one we purchased](#) - if you have a different one, you may have to modify the colors on the worksheet)
- Student handouts

Standards

Common Core

CCSS.Math.Content.4.OA.1, 4.OA.2, 4.OA.3, 5.OA.1, 5.OA.2, 5.NBT.5, 6.EE.1

NGSS

4-LS1-1, 5-LS1-1

Lesson Summary

This lesson is designed to help students better understand the many factors necessary to grow healthy apple trees, all while practicing multiple step math equations.

Suggested Sequence of Events:

1. Set Up: Print student handouts for each student.
2. Read through the [IAITC Apple Ag Mag](#) to learn more about apples. Interactive online versions can be found on our website. Additional books to pair with this lesson can be found on the Teacher Resources page.
3. Ask students to spread out in the classroom (or on the playground). They should stand with enough room to "spread their branches." Once they have evenly spread out, they are now apple trees and are "rooted" to the ground.
4. Randomly throw out the poker chips to scatter the floor around the students. Each student should be able to grab some chips, but do not worry about making it exactly even.
5. Following the order on the student worksheet, ask students to quickly pick up the poker chips of that color after you say "go." Students cannot move their feet (they are trees, after all) and must only gather what they reach from their position.
6. After each color has been collected, explain to students what that color represents and why it is important to consider for apple tree growers focused on the health of their apple tree. Use the "Tree Health Indicators" handout to assist with this. Some colors are beneficial to the tree, and others are harmful. It is important to not tell students ahead of time what each represents, so they will always attempt to gather as much as they can.
7. Once all colors have been collected, have students return to their seats to start counting their chips and completing the math equations on the Student Handouts. The students with the highest scores managed to grow into the healthiest trees in the orchard.
8. Discussion: Discuss with students why each of these factors is important to tree health. What can farmers and growers do to help their trees become as healthy and strong as possible?

TEACHER RESOURCES

Extension Ideas

- Learn more about each of the "Tree Health Indicators" from this lesson. Are these helpful and/or beneficial for other trees, flowers, and crops?
- Learn more about the life cycle of apple trees.
 - Show a labeled diagram of a blossom and of an apple.
 - Watch a time lapse video of an apple growing. How long does the actual process take?
- Take a field trip to a nearby apple orchard and learn more about apple farming. What do apple farmers do throughout the year to take care of their orchards?
 - Take a virtual field trip to Braeutigam Orchard in Belleville, Illinois, and learn more about apple farming. This video can be found on our [website](#).
- Have students write a story that takes place at an apple orchard.
- Learn about Controlled Atmospheric Storage and how apples are kept ripe after they are harvested.
- Scientific Inquiry: Have students complete our "Browning Apples" lesson and test variables to see what might slow the browning of apples once they have been sliced.
- Do all apples look and taste the same? Have students use their senses to compare different varieties of apples.
 - Have students research what apples are best used in different recipes.
 - Introduce genetics and selective breeding with apples and learn more about grafting and budding.
- Are apples native to the United States? Learn about the history of apples.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!



TREE HEALTH INDICATORS



YELLOW - SUNLIGHT

Trees need sunlight for photosynthesis in order to create their own food for energy.

GREEN - SOIL NUTRIENTS

Trees get vital nutrients from the soil through their roots. If the soil doesn't have many nutrients, farmers add fertilizer to the soil or to irrigation water.

PINK - HARMFUL INSECTS

Apple trees have many harmful pests that can impact tree health throughout the entire growing season.

ORANGE - POLLINATORS

Pollinators are vital for apple crops. Honeybees and other native IL pollinators help blossoms turn into apples for us to eat.

WHITE - KILLING FROST

Many different plants are sensitive to temperature changes. On cold spring and summer nights, some growers spray their apple trees with water during cold spells to insulate sensitive blossoms.

PURPLE - DISEASE

A combination of heat and humidity is the perfect environment for many microorganisms to grow, some of which cause plant diseases. Some microbes can live in the soil for many years.

BLUE - WATER

Trees need substantial amounts of water, especially young trees, but most don't like their "feet wet".

RED - EFFECTIVE PRUNING

Effective pruning of apple trees is essential for tree and fruit health. Apple trees need a leader branch and a lot of room between branches for airflow and sunlight.

BLACK - PROPER THINNING

Apple trees must be properly thinned to allow fewer number of fruits to reach maturity. This helps the remaining fruit grow larger and protect the tree limbs from being too heavy.

FUCHSIA - STAKING & TRELLISING

Young trees are not as strong as mature trees. Using a trellis or stake to hold it upright will help the young tree stay standing if it gets really windy outside.





Name: _____

HEALTHY TREES: APPLE ADDITION

Just like all other plants, apple trees need certain things to be healthy! But there are also things that can be harmful to apple tree health. Each color chip represents something that is either beneficial (good) or harmful (bad) for the overall health of an apple tree. Complete the math equations below based on the number of chips you collected to see how healthy your tree is!

- Sort the color chips you collected into separate piles.
- Record (write) the number of chips collected on the first line of the equation in the box labeled with the same color.
- Complete the multiplication equation to find the total score for each color. Use the number line to represent all your leaps.

WHITE = KILLING FROST
Harmful, lose triple points!

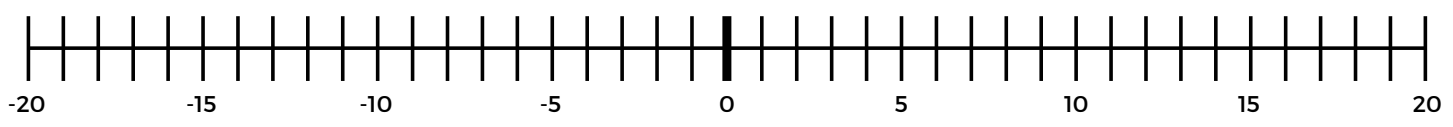
How many chips of that color you collected → _____ x **-3** = _____ ← Total for the color

The negative symbol (-) means to leap to the **left** that many times for each color chip.

YELLOW = SUNLIGHT
Beneficial, earn double points!

_____ x **2** = _____

No negative symbol means to leap to the **right** that many times for each color chip.

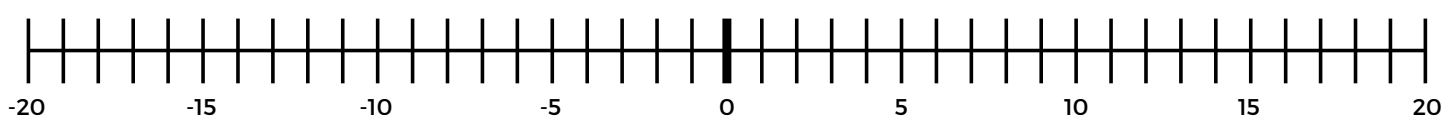


PURPLE = DISEASE
Harmful, lose double points!

_____ x **-2** = _____

ORANGE = POLLINATORS
Beneficial, earn double points!

_____ x **2** = _____

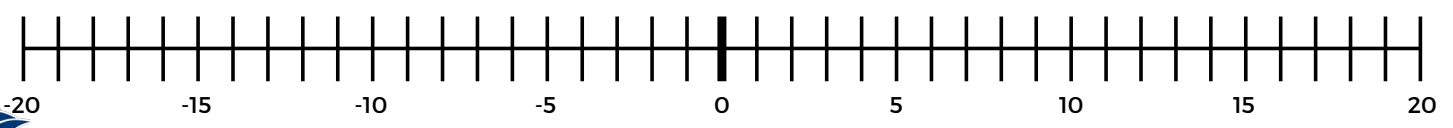


PINK = HARMFUL INSECTS
Harmful, lose one point for each chip collected!

_____ x **-1** = _____

GREEN = SOIL NUTRIENTS
Beneficial, earn double points!

_____ x **2** = _____





BLUE = WATER

Beneficial but possibly harmful, complete the equation to find your final score.

Number of chips collected: _____

$$\text{↻} \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected

Is this number less than or equal to 5? If yes, this is your score for this color.



Is this number more than 5? If yes, then subtract 2 from your answer to find your final score.

$$\text{↻} \quad \underline{\hspace{2cm}} - 2 = \underline{\hspace{2cm}}$$

Your score from the first box

RED = EFFECTIVE PRUNING

Beneficial but possibly harmful, complete the equation to find your final score.

Number of chips collected: _____

$$\text{↻} \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected

Is this number less than or equal to 5? If yes, this is your score for this color.



Is this number more than 5? If yes, then subtract 3 from your answer to find your final score.

$$\text{↻} \quad \underline{\hspace{2cm}} - 3 = \underline{\hspace{2cm}}$$

Your score from the first box

BLACK = PROPER THINNING

Beneficial but possibly harmful, complete the equation to find your final score.

Number of chips collected: _____

$$\text{↻} \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected

Is this number less than or equal to 5? If yes, this is your score for this color.



Is this number more than 5? If yes, then subtract 2 from your answer to find your final score.

$$\text{↻} \quad \underline{\hspace{2cm}} - 2 = \underline{\hspace{2cm}}$$

Your score from the first box

FUCHSIA = STAKING & TRELLISING

Beneficial, score equals number of chips collected!

Number of chips collected: _____

$$\text{↻} \quad \underline{\hspace{2cm}} \times 1 = \underline{\hspace{2cm}}$$

The number of color chips collected

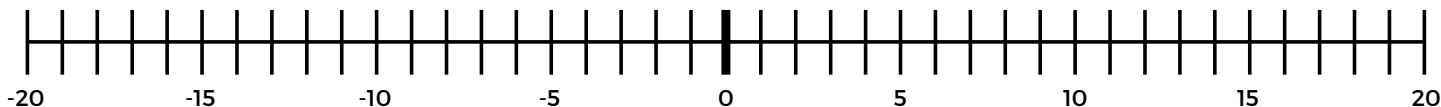
Is this number more than 0? If yes, this is your score for this color.



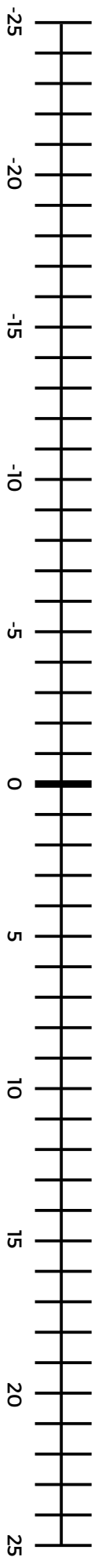
Is this number 0? If yes, then subtract 5 from your answer to find your final score.

$$\text{↻} \quad \underline{\hspace{2cm}} - 5 = \underline{\hspace{2cm}}$$

Your score from the first box

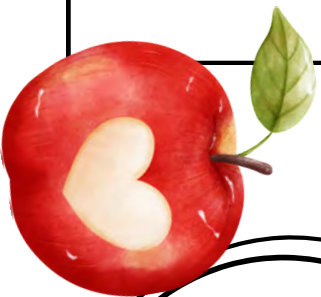


1. Write the total score for each color in the box below. These are the scores for each color from the previous pages.
2. Find the sum of all the individual color scores. This is your overall tree health score! Use the number line and the blank work space to help determine the score.



Yellow	_____
Green	_____
Pink	_____
Orange	_____
White	_____
Purple	_____
Blue	_____
Red	_____
Black	_____
Fuchsia	_____

Math Work Space



**TREE HEALTH
SCORE:**

