

[ELEMENTS OF STORY TIME STEM]

Books are an opportunity to explore ideas, concepts, and themes found in everyday events.

1

Children see math, science, and literacy in their everyday lives. When we teach children to see the math, science, and literacy in picture books, we support their understanding of how these processes and events occur. Reading books multiple times is important for exploring different aspects of a story and deepening understanding.

Children are natural scientists, mathematicians, and observers:

2

Children ask questions about the world and are naturally curious about the events, objects, and living organisms around them. Using books allows us to explore math and science ideas through discussion.

Children bring valuable ideas to discussions.

3

Children are capable of the majority of the discussion talk and ideas. Use children's everyday ideas and experiences during discussions to explore science, math, and literacy topics and questions. Here, educators take on the role of guide and facilitator.

Open-ended questions support and engage children in productive discussions.

4

Use open-ended questions and activities to engage children in discussion about their emerging ideas as they explore math, science, and literacy.

Learning is a process - understanding is something that occurs over time.

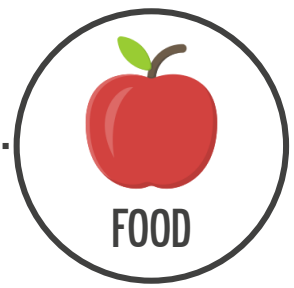
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Just as it is important for young learners to explore the joy of reading before they are able to read, it is important they explore the joy and wonder of math and science even without complete understanding of a concept. This is also true for adults!

All adults are capable of teaching.

6

All adults are teachers whom children can learn from. Use these books and materials as an opportunity to become inspired by picture books to engage with children in math, science, and literacy concepts. Anyone can use stories to have meaningful, exciting discussion that support children's learning.



CONTENTS: FOOD KIT

Materials in this Story Time STEM Kit:

Guide

- 3-Ring Binder of Resources

Shared Reading Books with 4 Bookmark Guides

- *Round is a Tortilla* by Roseanne Thong
- *Feast for 10* by Cathryn Falwell
- *Plants Feed Me* by Lizzy Rockwell
- *The Lion's Share* by Matthew McElligott

Resource Books

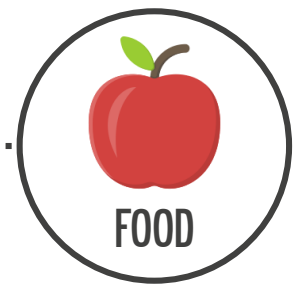
- *Animals are Delicious* by Sarah Hutt and Dave Ladd
- *What are Food Chains and Webs?* by Bobbie Kalman and Jacqueline Langille

Extension Activity Materials

- Magnifying Glass

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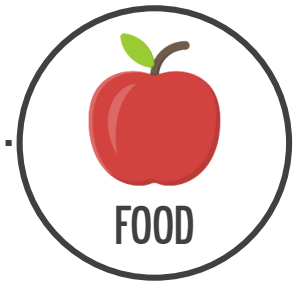
GUIDE CONTENTS

This guide is your resource for science information about food and for exploring science, math and literacy ideas. Each part of the guide serves a different purpose and can be used flexibly to suit your needs and goals with young learners:

- **Conceptual overview:** Provides general information about food, as well as how this concept is addressed as themes in each of the shared reading books.
- **Shared reading book information:** Provides themes, science concept overviews, and math ideas for each of the four shared reading titles (planning guides for the shared reading are in the front pocket of the 3-ring binder).
- **Resource book information:** Explores science concepts about food with factual information, diagrams, and a glossary.
- **Extension activities and resources:** Provides ideas for activities you can do with children to extend their exploration of plants.
- **Connections to Standards:** Makes links to the Next Generation Science Standards (NGSS), Common Core State Standards in Mathematics (CCSS-M), and Common Core State Standards in English Language Arts (CCSS-ELA)



[STORY TIME STEM]



INTRODUCTION

Story Time STEM kit uses shared reading experiences to explore plants, something that is part of daily life in many ways! Children experience literacy, math, and science concepts in their daily lives too. There are many math, science, and literacy concepts within each book in this kit, providing opportunities for engaging in rich discussions with young learners.

Discover some of the following STEM themes together:

- **Energy**
- **Fractions & fair shares**
- **Shapes**
- **Food preparation**
- **Plants**
- **Food for people**
- **Food for animals**
- **Food chains**
- **Counting, skip-counting**
- **Classifying objects**
- **Comparing quantities and groups of objects**

Bookmarks

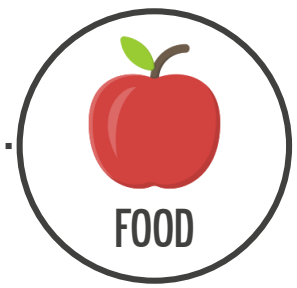
The included bookmarks offer questions about science, math, and literacy. Each has a different focus:

- **Guiding Questions or Questions as Refrain:** Questions to ask children to help them think about ideas and be part of meaningful discussion. These can be asked with any book at any time! What do you wonder? (These bookmarks are in the front pocket of the 3-ring binder.)
- **Integrated:** Questions and prompts to use before, during and after reading that address key science, math, and literacy ideas in the story.
- **Math/Science:** Questions and prompts to use before, during, and after reading that focus on math and science ideas in the story. What (numbers, patterns, shapes) do you see?
- **Literacy:** Questions and prompts to use before, during, and after reading that focus on literacy ideas and language in the story. What do you think will happen next?

Read the books more than once!

1. Read the story a first time using some of the questions and prompts from the 'Questions as Refrain' or 'Integrated' bookmarks. Enjoy the story!
2. Then, based on children's interests, read the story again - at that moment or a different time - using the math/science or literacy bookmark. Children love to explore good books many times!





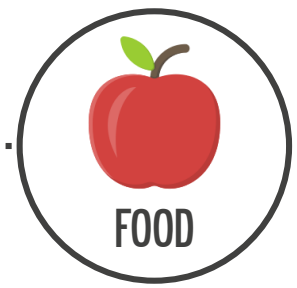
CONCEPTUAL OVERVIEW

Children from all backgrounds and children of all ages have observational skills that they use in their daily lives. Children are natural investigators and can readily ask questions about the events and process occurring in the natural world. Young learners are primed to use their experiences, observation skills, and natural questioning abilities to engage with math, literacy, and science concepts explored during shared reading experiences with picture books.

Children experience literacy, math, and science concepts simultaneously during their daily lives. All children are young scientists, mathematicians, and readers as they experience their world - during mealtimes, going shopping at the grocery store, or playing outdoors.

Integrating literacy, math, and science concepts within this kit allows for creating a flexible space in which young learners can authentically engage in math and science storytelling. These experiences are intended to deepen children's understanding of the ways that they can see the math, science, and literacy in our everyday interactions with food.





TITLES OVERVIEW

Many of the questions in this guide are open-ended. These types of questions are important to learning because they allow children to share ideas they are thinking about as they engage with the story. By asking open-ended questions, adults can learn about the ways children are making sense of concepts and encourage multiple solutions. Asking open-ended questions also signals to children that their ideas are worth listening to and worth discussing. As children come to see their own ideas as valuable, they are encouraged to think more deeply—whether or not an adult is present. Sometimes an open-ended question results in an unexpected answer. Allowing for a flexible and inclusive discussion space offers the opportunity for children to “practice” sharing ideas as they learn how to participate productively during shared reading times.

The following books all have food as a central focus. There is a wide variety of math, science, and literacy concepts within each book, providing many opportunities for discussing ideas with young learners.

The guides support adults by offering questions that help children think about, explore, and discuss the text and illustrations in each book. In some cases there are multiple stopping points within each book. Consider your audience's age and developmental skills when determining which questions to focus on, and how to extend the learning through the included after-reading activities. Look for cues throughout the guide for ideas about how to target your use of this kit to different ages and developmental levels. We encourage you to try some questions you may not feel entirely comfortable with, as well as to try any other activities that you imagine together with your children!

Shared Reading Titles:

Round is a Tortilla by Roseanne Thong: A colorfully illustrated book about shapes in the world around us with food from Latino culture featured as many of the shapes.

Feast for 10 by Cathryn Falwell: A counting book following an African American family's shopping and cooking efforts to create a traditional family feast.

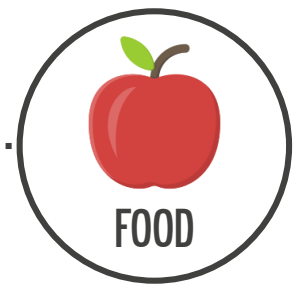
Plants Feed Me by Lizzy Rockwell: A beautifully illustrated book that provides details about the kinds of foods from plants that humans eat.

The Lion's Share by Matthew McElligott: A fictional tale of a feast attended by animal guests where everything goes delightfully wrong.

Resource Book Titles

Animals are Delicious by Sarah Hutt and Dave Ladd

What are Food Chains and Webs? by Bobbie Kalman and Jacqueline Langille



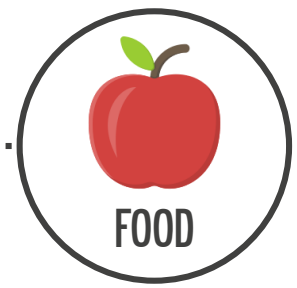
SCIENCE CONCEPTS

Exploring the stories in this kit gives children opportunities to learn, reflect, and focus on food as a central science concept. Books in this kit focus on different aspects of food. *Round is a Tortilla* exposes readers to the cultural connections that people have with food while engaging in an exploration of shapes. In *A Feast for 10* learners count along as a family shops, prepares, and shares a meal together. *Plants Feed Me* uses beautiful illustrations to show children how our food is inherently connected to plants. Children will enjoy thinking about fractions of cake in *The Lion's Share*. Animal food chains in the air, the forest, and the ocean are explored in *Animals are Delicious*. Finally, *What are Food Chains and Webs?* provides readers with food facts, pictures, and information about energy and food that plant eating and meat eating animals need to survive. These books and guiding questions allow educators, parents and facilitators the opportunity to integrate the science, literacy, mathematics, and storytelling through the use of picture books.

Big science ideas in this kit include:

- Interdependent relationships between animal survival, plants, and food.
- Energy
- Food Chains
- Making Observations
- Asking Questions
- Social interactions and group behavior





SCIENCE CONCEPTS

Food is an important concept for young learners to engage with because it is part of their everyday life. In thinking scientifically about food we must think about the centrality of energy in this kit. Energy is defined as the ability to do work; it powers everything in nature. Energy warms and cools our homes, fuels our cars, and powers our electronic devices. And it takes energy for us to walk, talk, digest, and breathe. Trees and other green plants are the energy basis for all animal life to grow and function. Through the process of photosynthesis, plants convert light (solar energy) from the sun into chemical energy that is stored in the plant as carbohydrates (sugars) as it grows. All animal life, including humans, depend on that stored energy. When you eat an apple, the chemical energy stored within the fruit becomes the energy that allows you to work, run, play, and grow. Every living creature either gets its energy directly from plants or depends on other species that depend on plants.

Animals (including people) have special cultural and social relationships with food. Culture is the organized ways in which animals engage and make sense of the world through participation in the everyday activities and practices, of our communities. Eating, gathering, and preparing food are part of everyday practices that many animals do on a daily basis. These relationships are present in food traditions found all over the world.

One of the important benefits of animals living socially in groups is that being in a group helps them learn to obtain food, defend themselves, and cope with changes in their surroundings. Obtaining and preparing food are processes that take time and energy. Working and living within a group allows animals to be more successful in finding, catching, killing-hunting, or purchasing food. In addition, the younger members of a group are learning how to select, choose, cook, and eat food by being present and participating in their group's social food practices. Through this socialization, animals learn behaviors that allow them to survive.

People are not the only animals that have cultural traditions with food. Animals such as Orca whales and their sub-species also have developed unique tastes to certain foods. These tastes are passed down to their calves as they learn how to hunt, kill, and eat, socially, according to their pods (families). Over millions of years Orcas have evolved a complex culture with a set of behaviors learned from one another. They communicate with distinctive calls and whistles. They can live 60 years or more, and they stay in close matrilineal groups led by older females that model specific behaviors to younger animals. Scientists have found increasing evidence that culture shapes what and how orcas eat, what they do for fun, even their choice of mates.

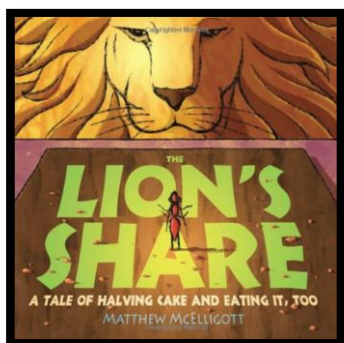
All living organisms need to eat food in order to remain healthy and have the energy needed to perform daily activities. The books in this kit illustrate the social and cultural nature of food and hidden within the pages are discussion opportunities to talk about the science behind food. Some of this hidden science includes pollination stories, socializing young group members to learning about food, sharing food in a group for particular events, and thinking about how certain food grow. Allowing time for these discussions and having children draw about their ideas promotes their participation within scientific practices of asking questions, making observations, and constructing arguments.

[STORY TIME STEM]



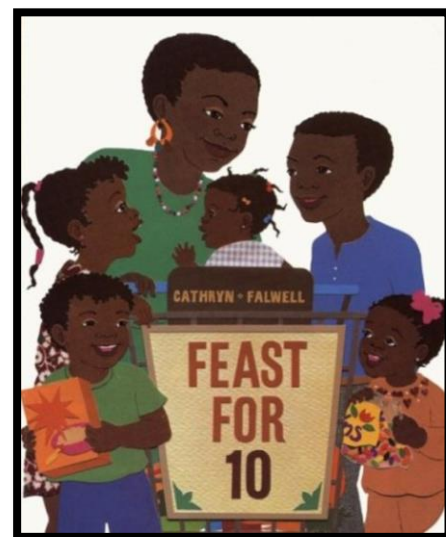
MATH CONCEPTS

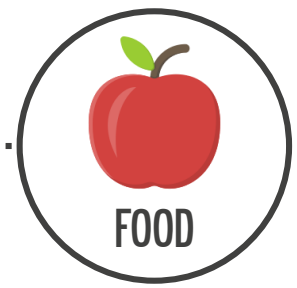
Story time is an exciting time to have mathematical conversations with children! All books, whether math is central to the story or not, offer opportunities for thinking about mathematics. Through the story contexts and engaging illustrations, children can notice and reason about a wide range of mathematical ideas. The open-ended questions built into the reading guides are designed to prompt children's mathematical thinking and nurture their identities as mathematicians!



For example, in the book *The Lion's Share* children can explore ideas of fairness, fractions, doubling numbers and cutting them in half. We can invite children to discuss if half of the cake is a fair amount for the elephant to have. What about the ant? Children can also explore numbers that double. Young children might notice how quickly the numbers grow, and older children might try figuring out how many cakes will be on the next page. Inviting children to ask their own questions, as they notice and wonder, nurtures their sense of self as mathematicians--people who observe and ask questions about their world.

The book *Feast For 10* offers opportunities for very young children to count objects. While counting seems straightforward, we can still encourage children to think about open-ended ideas. You might ask, what if we count these tomatoes first? Will there still be the same amount? Children approaching school age can start to make sense of ways to make up numbers (for example, the number 8 can be made up of 4 and 4, or of 2 and 6.) Children might notice and compare the number of chickens versus the number of beans that were cooked to feed the family.



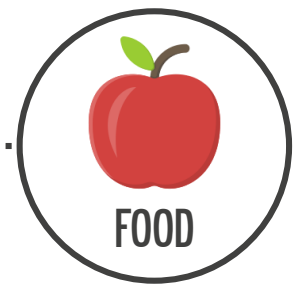


MATH CONCEPTS

The different kinds of foods and food related experiences explored in all of the books in this kit offer excellent opportunities for children to describe shapes, compare attributes (such as color or type of food), and classify foods into categories (such as how foods grow or are prepared for eating). Have lots of fun exploring the ideas that children seem most interested in talking about! Below is a list of ideas that you might explore together. Sometimes you might just wonder about a concept, while at other times you might talk more deeply about an idea. Both are useful.

The math ideas in the food kit books include:

- Representing and solving addition and subtraction problems
- Making sense of problems and persevering in solving them (for example, we might ask, "What is happening in this story? Why do you think the children and their mom are buying more beans than chickens at the grocery store?" Or, "Why might a family of 10 people only need 9 chairs at the dining table?") Helping children make connections to how math ideas might be impacted by practical life circumstances.
- Constructing viable arguments (for example, "I think there are 6 because there are 2 on this page and 4 on this page, and 2 plus 4 equal 6")
- Extending ideas about numbers (for example, considering fractional amounts such as what "one half" means, and considering how numbers grow when being doubled)
- Describing, comparing and analyzing attributes of shapes
- Classifying objects (for example, grouping different types of foods, classifying how they grow -underground, on the ground, or in trees)



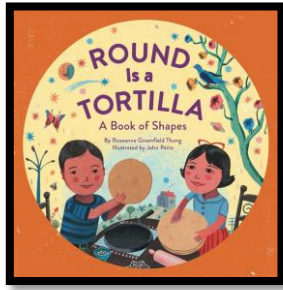
LITERACY CONCEPTS

Each of the four shared reading books in this kit feature information about food with connections to the lives of people. Stories address food in different ways, from planning a family meal (*Feast for 10*), exploring community events where food is present (*Round Is a Tortilla*), to funny stories where animals are eating food that is really only fit for people (*The Lion's Share*).

The following concepts may be emphasized when exploring these books with children:

- Making connections between text and illustrations
- Retelling events and details in a story and identifying important ideas
- Comparing and contrasting different food features or attributes
- Making connections between information in the books and personal knowledge and experience

The resource books are informational texts that explore ideas about food chains. *Animals are Delicious* is a boxed set of three fold-out food chain sequences from different ecosystems; each side of the fold-out shows a different progression of food chain elements, from tiny organisms to increasingly large predators. The other resource book, *What are Food Chains and Webs?*, explores food chain concepts and elements in a more traditional format--an informational text with featured vocabulary, tables and diagrams, and a glossary. Discussing these books would help explore ideas about food chains and address the same literacy concepts listed above.



ROUND IS A TORTILLA

By: Roseanne Thong



Science Conceptual Overview

In this beautifully illustrated book, which focuses on culture, food, shapes and rhyming, readers explore the interaction between families and food. Food is an important part of family life and cultural traditions.

This book offers reader an opportunity to explore some aspects of food in the Latino culture. The importance of corn in this book presents itself across many of the pages as readers see an image of corn growing, children eating corn chips, and quesadillas. Asking questions and engaging in conversation allows young learners to build understanding around the connections between plants and food and culture.

[FOCUS THEMES]

- Corn
- Food & Culture

Mathematics Conceptual Overview

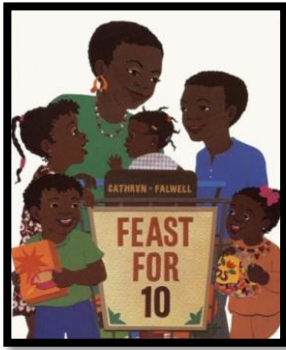
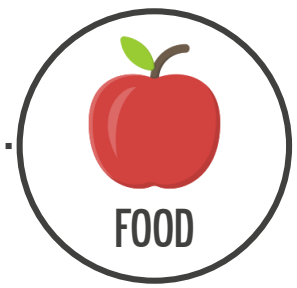


Round is a Tortilla offers opportunities for young mathematicians to explore ideas about shapes. Young children often think about shape as overall impression without connection to formal rules about shapes - they might notice a corn chip or a sail are triangles without yet understanding that triangles have 3 sides and 3 angles. Asking questions about shapes' attributes such as the number of sides and angles, introduces ideas about mathematical conceptions of shape. Is this shape a triangle? Why or why not?

Note that identifying non-typical formation of shapes, such as triangles that are not equilateral, or very skinny triangles (like the sun's rays in the story), can be difficult for young children. This develops over time with exposure to a broad variation of shapes.

Round is a Tortilla helps children think about shapes in our everyday lives. Where do you see triangles and circles as you look around the world?

[STORY TIME STEM]



FEAST FOR 10

By: Cathryn Falwell



Science Conceptual Overview

[FOCUS THEMES]

- Food & Culture
- Patterns

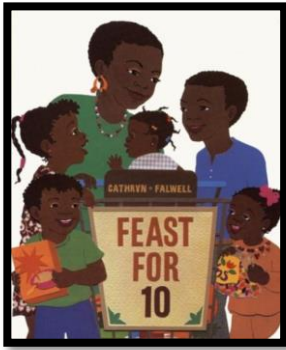
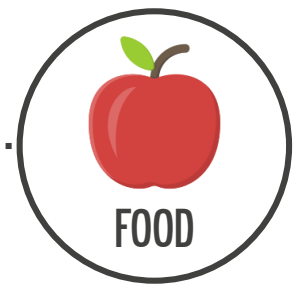
Feast for 10 is a beautiful story which follows an African-American family shopping and preparing a meal. There is a counting theme present in the pages and this allows readers to identify an increase in number with the turn of each page. Identifying number patterns is important in science as scientists regularly use numeric data to learn more about events in the world.

This book also illustrates the social behavior of people as they gather food at the store and use heat to prepare food. One unique feature of this book is how multiple generations are included in the story from grandparents, to parents, and young children. There is an inclusive and cooperative nature illustrated that connects to the science concept of animals needing to engage in social behaviors to survive, such as food gathering and preparation.

Reading this book with children allows them to engage with the following science practices & concepts:

- Social interactions and food
- Asking questions
- Making observations
- Using mathematical thinking

[STORY TIME STEM]



FEAST FOR 10

By: Cathryn Falwell

Mathematics Conceptual Overview

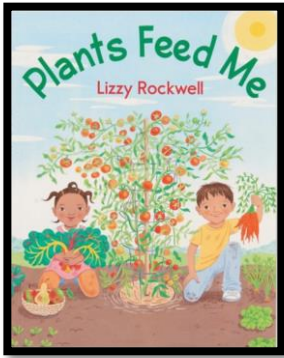
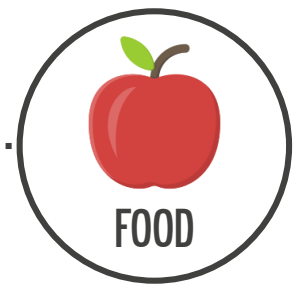


Feast for 10 is a counting book allowing mathematicians to explore combinations for numbers 1-10 as the family shops for and prepares a feast. For example, children might decide there are six bunches of greens placed in the shopping cart by counting them, or by adding the different groups they see ($5 + 1$ or $3 + 2 + 1$). You could read this story with a mathematical lens by having children notice how many items are on each page and share how they figured it out.

Young mathematicians can participate in problem solving with the family as they go through the process of shopping, cooking and setting the table, all in preparation for the feast. While the family shops, children can predict the quantities needed (Will the family share one pumpkin, need one per person, or need several per person? What about beans? Chickens?) Children can also consider who can help in the different tasks of preparing the meal. At what age do children and adults stir, taste, wash, chop, use the oven, or set the table? Is this the case in all families? What about your family? Children can predict and count the silverware, chairs and other items needed for the feast. Will there be more or fewer of these items than there are people at the feast? Why do you think that?

Hear, enjoy, and celebrate the questions your mathematician comes up with!

[STORY TIME STEM]



PLANTS FEED ME

By: Lizzy Rockwell

Science Conceptual Overview



[FOCUS THEMES]

- Food & Place
- Plants as Food

Plants Feed Me is a book that allows readers to explore plant parts and think about many different kinds of plants that are eaten by people. This story highlights a diverse group of children demonstrating how plants are a very central part of our diets.

This book engages young scientists to think about the specific plant parts that we eat and make food connections back to land. Gardens and farms are places in this book that readers will explore as they turn the colorful pages. Young readers will enjoy asking questions and making observations about all of the beautiful illustrations that detail how food gets to our table.

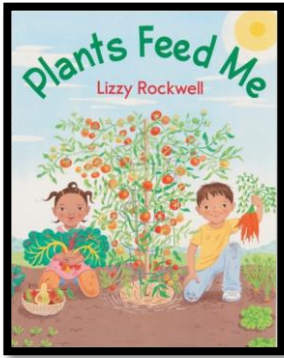
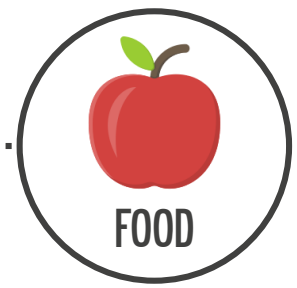
Reading this book with children allows them to engage with the following science concepts & practices:

- The structure and function of plants and their edible parts
- Energy
- Pollination
- Interdependent relationships between people, plants, land, and insects
- Making observations
- Asking questions

Mathematics Conceptual Overview



Living Sunlight offers rich opportunities for comparing. For example, children can compare the length and width and height of the plants to one another. They might also make comparisons between root systems and the part of the plants we can usually see. There are also opportunities to consider very large quantities, such as the number of leaves on trees.



PLANTS FEED ME

By: Lizzy Rockwell

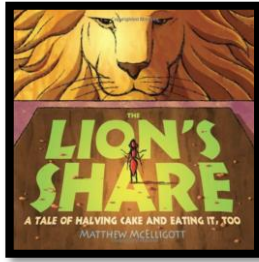
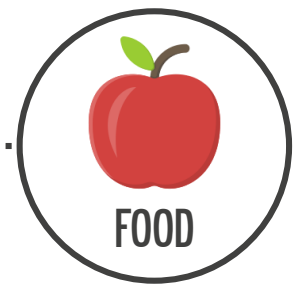
Mathematics Conceptual Overview



Plants Feed Me offers rich opportunities for mathematicians to problem solve, classify, and count small and large quantities.

Children can problem solve by predicting quantities needed if they were harvesting for a family. By considering the size of the plant, they can make educated guesses. If you were picking apples, would a family share one apple, need one for each person, or need several for each person? What about tomatoes? Beans? Heads of lettuce?

- As described in the Science Overview for this book, *Plants Feed Me* offers opportunities for children to classify plants by identifying which parts we often eat. Making categories is an important mathematical skill whether or not numbers are involved.
- We can ask children what they notice and wonder about the plants in the book. We can invite children to estimate how many seeds they see (or leaves, or beans), to count the seeds, and to explain how they are keeping track of the number of seeds. The numbers of leaves and seeds that each plant has offers opportunities for mathematicians to count larger quantities and think of what large quantities look like.
- Inviting children to ask their own questions as they make observations and wonder, nurtures their sense of self as a mathematician.



THE LION'S SHARE

By: Matthew McElligott



Science Conceptual Overview

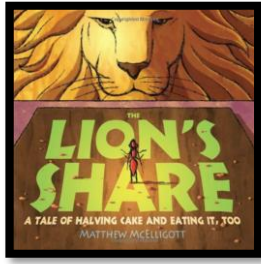
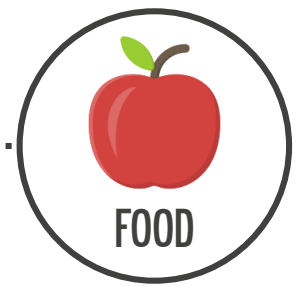
The Lion's Share provides young scientists with opportunities to think about patterns and size with different slices of cake. Amidst a diversity of story characters ranging from an ant to a gorilla, readers will enjoy making observations of the different animals and the sizes of their cake pieces. Identifying sizes and patterns through observations are very important scientific skills to develop over time.

[FOCUS THEMES]

- Patterns
- Size
- Diversity of Species

Big practices in Science:

- Using mathematical and computational thinking
- Obtaining, evaluating, and communicating information
- Asking questions



THE LION'S SHARE

By: Matthew McElligott

Mathematics Conceptual Overview

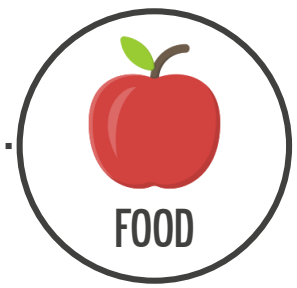


The Lion's Share offers opportunities for children to consider fractions, shares (fair sharing), and patterns in halving and doubling. As the animals cut the cake, we can invite young mathematicians to notice how/where each animal is cutting and what happens to the size of the cake as it is cut in half over and over again. Ideas can begin to emerge about fractions, such as equal shares, describing the whole and parts, and the idea that more shares creates smaller pieces. Children may begin to name fractions such as one half and one quarter.

This book also opens up opportunities to explore relationships between the ideas of fairness and equality. We can invite children to discuss if half of the cake is a fair amount for the elephant to have. What about the ant? Should all the animals have an equal sized piece? In the story, is "half" always the same size?

Children can also explore numbers that double. As the animals bake cakes, young children might notice how quickly the numbers grow, and older children might try figuring out how many cakes will be on the next page.

Inviting children to ask their own questions, as they notice and wonder, nurtures their sense of self as mathematicians--people who observe and ask questions about their world.



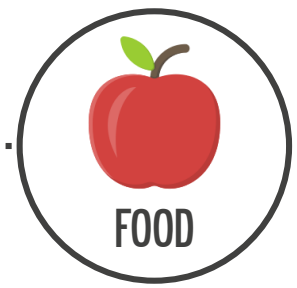
RESOURCE BOOKS

Overview

Animals are Delicious and *What are Food Chains and Webs?* both expand our perspective to include the food of animals and other living organisms. These books allow the reader to focus on particular habitats. An important element of these resource books is how they point to the energy needed by animals, obtained through food webs in order to live.

All animals need to eat in order to live and different animals obtain food in different ways. Food webs contain all of the food chains within a particular ecosystem such as the ocean. Plants, water, animals, insects, fungus, and sunlight are just a few important components of a food web. Food webs are defined by their biomass. Biomass is the energy contained within living organisms. In a healthy food web there are more autotrophs (plants) than herbivores (plant eaters), and more herbivores than carnivores (meat eaters) and omnivores (plant & meat eaters). This balanced systems helps to maintain and recycle biomass and since every link in a food web is connected to two others when one link is threatened some of the other links are threatened or stressed. When links in a food web are struggling then the biomass of an ecosystem declines.

While these books focus on particular kinds of animals, it is important to keep in mind that humans are also part of food chains and food webs. Humans have a unique role in maintaining a healthy ecosystem full of functioning food webs for all living organisms on Earth. Ecosystems can be maintained by limiting the number of trees cut down in a forest or avoiding paving over grasslands or wetlands with concrete. We can remove dams to restore river habitats and choose biodegradable cleaning products that we put down our drains as chemicals largely cannot be filtered out prior to entering larger waterways. Lastly, one important action that all people can do to maintain healthy food webs is to eat lower on the food chain more regularly. This means adopting more vegetables into our diets. This has been supported as a recommendation by the United Nations as a way to slow climate change, sustain ecosystems, and limit global warming.

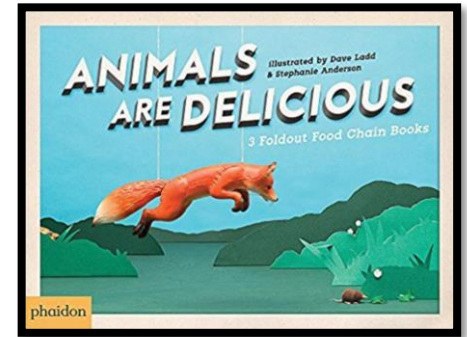


RESOURCE BOOKS

Animals are Delicious

By Sarah Hutt and Dave Ladd

Food chains are a simplified version of food webs which are highly detailed and include many more factors than food chains. This set of three accordion-foldout board books portray food chains from three habitats; the forest (land/terrestrial); the air (avian); and the sea (aquatic). Each fold-out provides young learners with simple visual representations of animals within different food chains. The simplicity of the visuals allow learners to focus their observations to be able to engage in conversation about their questions, their noticings, and ideas. Some children might like to use the pictures to narrate their own story.



There are many different ways to use this book because of its unique design. Both sides of the foldouts present readers with interesting visuals and information. Each side opens up different conversations about food, animals, size, and food catching skills to emerge.

Some of the concepts that we want children to notice using the illustrations is that scale matters in food chains and webs; smaller animals are eaten by the larger animals. In addition, many of these meals require an animal to use its' senses to find food and they use their body parts to gather, catch, eat, and chew the food. You might help children to understand that for some animals these skills are learned when the young animal spends time with its family. Correlations can be made to how children learn to eat at the dinner table surrounded by one or more family members.

Questions:

- Why do you think the books shows pretend animals instead of real animals?
- What do you notice about the animals and their size?
- Can you look at the pictures and tell the animal food story?
- Have you ever seen an animal eat something? Can you tell us more about that?
- What did you learn? Was there anything that you learned that surprised you?

Activities

Take a walk: Spend time outdoors looking for animals and talking about what kinds of foods that animal eats. Example: Look at crows, seagulls, bird, ants, squirrels, or other common animals in your area. Spend time looking at the animal and draw or write a list of food related activities that young children notice that animal taking part in such as scavenging for garbage, collecting nuts, searching for worms.

Draw a food web: Using a piece of paper and a pencil, sit down with your young learners and think of the food you ate recently. Draw the plant or animal that the food came from and find connections between what you ate and how that food was able to grow. Example: Beef-Cow-Grass-Water-Sunlight or Apple-Bees-Sunlight-Water. More links can be made by talking about your food stories in a whole group setting, during partner talks, and in one-on-one conversations.



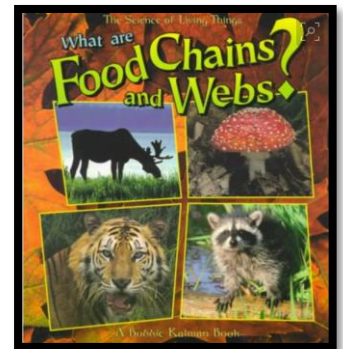
RESOURCE BOOKS

What are Food Chains and Webs?

By Bobbie Kalman and Jacqueline Langille

This book provides readers with non-fiction text that may be a helpful resource for answering the questions from young learners. It contains a wealth of information related to a variety of different kinds of food chains and food webs. There are facts, photographs, illustrations, vocabulary, and even a game for readers to enjoy.

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Questions:

- What do you notice about the size of the animals?
- What do you see happening?
- What does _____ (animal) eat?
- Why do you think animals eat other animals?
- What kinds of food do you eat?
- Where does your food come from?

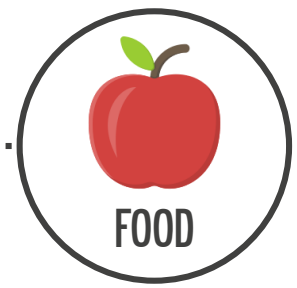
Activity:

1. Digital Food Chain Games: go online to allow young children to interact with food chains using a digital platform.
 - <http://interactivesites.weebly.com/food-chains.html>
 - <https://www.brainpop.com/games/foodchaingame/>

Extension Activities

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EXTENSION ACTIVITIES

The following activities and allow young learners to get excited about animals and food and open up opportunities for interacting with food in purposeful ways. There are numerous activities that you can do at home, at a park, at the grocery store, or at schools that relate to food. Something as simple as a conversation in the kitchen about the food in your fridge creates wonder and excitement for children to begin making connections to the food they eat.

Activity #1: Observation of Food through Sensory Explorations

Visit a grocery store, local garden or open up your fridge and explore sizes, shapes, colors, & observable patterns of different foods.

This activity is meant to be a natural part of your everyday life with young children as they enjoy foods brought to school or are eating a snack at home. Spend time with children talking about the difference in color, size, and shapes of the foods they are eating or observing. Spend time in discussion about the differences and similarities between the foods. Math ideas can be brought in when discussing how much of each food to serve or cook, and while cutting the food into portions.

Questions:

- Where do you think this _____ came from? (garden, farm)
- How do you think this food grew? What plants did this food come from?
- How much should we make for dinner? How much if Grandma joins us?
- When I cut it in half, how many pieces do we have?

Activity 2: Make a fruit salad and explore seeds

Cut up a single piece of fruit or make a fruit salad with an audience of young learners. Spend time exploring the different seeds that emerge from each fruit. Spend time in discussion about the differences and similarities between the seeds. For example apples keep their seeds in the middle of the fruit and each of these seeds has a hard seed coat to protect itself, while berries have seeds that are located closer to the outside of the fruit and without hard seed coats. Asking children to wonder about these ideas actively engages their critical thinking skills about foods they regularly eat.

Materials:

- 1-5 different kinds of fruits or vegetables (apples, pears, plums, berries, banana, mango, papaya, rice, corn, avocado, broccoli)
- Knife
- Bowl/plate
- Magnifying Glass



EXTENSION ACTIVITIES

Activity #3: Thinking and talking about food is a natural conversation to have with young learners because they engage in hands-on observations and daily sensory experiences with foods.

Looking at Apples: Apples are a very versatile and durable food, found in many regions of the world which also makes this fruit an accessible concept. This activity involves a discussion around apples with apples available for young learners to be able to use their five senses to make observations. Using more than one kind of apple allows young students the opportunity to be thinking and learning about the biodiversity that exists in our natural world.

In this activity students will examine apples using scientific tools and engage in a class discussion about the parts and functions of an apple using their observations, informational text, and scientific drawings. The educator can read "How Do Apples Grow" by Betsy Maestro at the end of this lesson or as an added mini-lesson.

Time: 2 sessions of 20-30 minutes

Materials

- White board or Chart Paper
- Books: "How do Apples Grow" by Betsy Maestro
- Parts of an apple worksheet or blank piece of drawing paper
- Pencils, colored pencils, thin markers, optional crayons
- Different types of apples
- Hand lens (plastic hand held microscope)

Procedure

1. Have at least 3-4 different kinds of apples cut in half vertically to show the core with the seeds. Allow students to make observation of the parts of an apple with a hand lens or magnifier for a few minutes as students may need time to settle into the hands-on activity before their noticing skills produce scientific observations. Preferably it is useful to have the stem still attached.
2. **Class/Group Discussion:** Engage students in a class discussion for 5-10 minutes and allow students to share their ideas and experiences about the parts and functions of an apple. At the top of a piece of chart paper write "Parts of an apple" and students can be called up to draw and label parts of an apple. Students may already know a majority of the names of the parts of an apple but during this lesson the importance of observing the apple focuses on the function of the parts as part of the story on apple reproduction. Once a suitable apple diagram has been drawn on the chart paper, now begin to elicit student ideas regarding the functions of the parts of an apple.

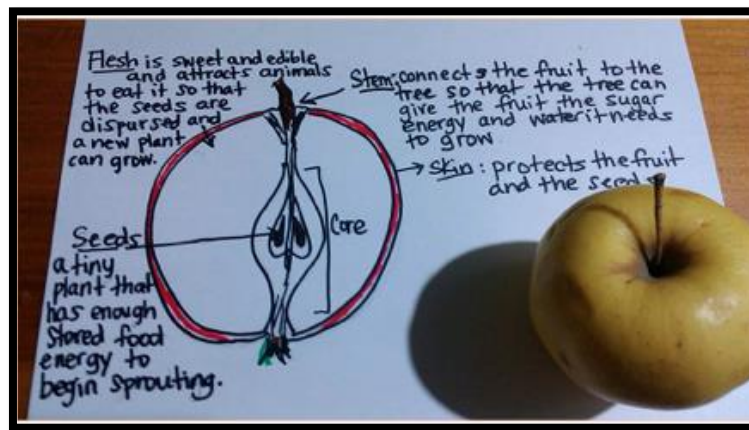
Sample questions to elicit ideas include:

- What do you think the stem is for?
- Why do apples have skin?
- Why are many apples that we eat sweet? Who/what eats apples?
- Why do you think the seeds are in the middle?

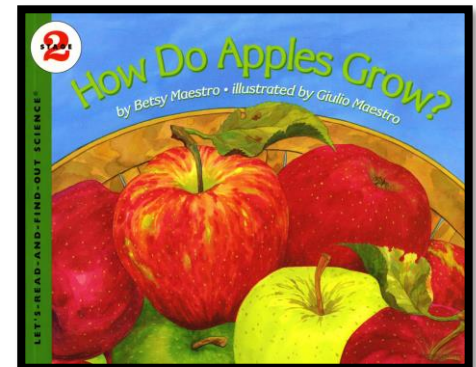


EXTENSION ACTIVITIES

- 3. Scientific Drawing:** Each student can make a scientific drawing of the parts of an apple either during the observation period or whole group. Scientific drawings are hand-drawings with labels/parts/functions appropriately placed on the object. **If an apple blossom is completely pollinated there should be at least 10 seeds inside.*

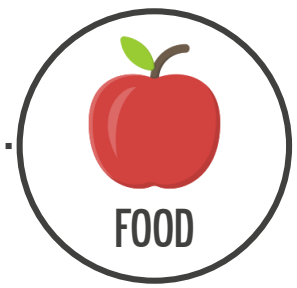


- 4. Read Aloud Book: Educator** can read the whole book or suggested pages 24-32 **“How do Apples Grow” by Betsy Maestro**. Focusing on identifying the parts and function of an apple. **Most important is the information related to what an apple needs to grow on page 26, sunlight/water/air that the leaves use to make a special kind of sugar to feed the fruit with the sugar making from the 50 leaves to make 1 apple! Students can eat the apples during the read aloud, giving them 5-senses access to the informational text!*



Related Videos to Explore:

- **Avocado Pollination:** <https://www.youtube.com/watch?v=Aahzspd1Yzk>
- **Botany of Desire** <http://www.pbs.org/thebotanyofdesire/lesson-plan-sweetness.php>
- **Apples** <https://www.youtube.com/watch?v=zUkQgsMJqHY>
- **Why are Bees Important?** <https://www.youtube.com/watch?v=6CxCTyxRFh0>
- **Bees Pollinating Apple Flowers & the Honey Bee Waggle Dance Video:** 1 min-3min <https://www.youtube.com/watch?v=qXGEQKe0c0M>
- **Bee Pollination Dance Video** http://pollinatorlive.pwnet.org/teacher/links.php?movie_file=DrBugDance.flv
- **“The Bee and Me”** <https://www.youtube.com/watch?v=R5f3RIBjVK0>
- **“Bumble Bee Queen”** <https://www.youtube.com/watch?v=J1IPHie8GLo>



CONNECTIONS TO ACADEMIC STANDARDS (CCSS & NGSS)

[LITERACY STANDARDS]

Shared reading books support engagement with the following CCSS-ELA Standards:

Reading Informational Text

1. Ask and answer questions about key details in a text
2. Identify the main topic and retell key details of a text
3. Describe the connection between two individuals, events, ideas, or pieces of information in a text
4. Ask and answer questions to help determine or clarify the meaning of words and phrases in a text
5. Know and use various text features (e.g., headings, tables of contents, glossaries) to locate key facts or information in a text
7. Use the illustrations and details in a text to describe its key ideas
9. Identify basic similarities in and differences between two texts on the same topic

Speaking and Listening

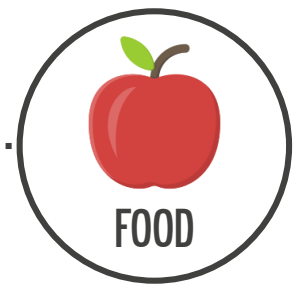
1. Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups
Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one^[SEP] at a time about the topics and texts under discussion).

Build on others' talk in conversations by responding to the comments of others through multiple exchanges.

Ask questions to clear up any confusion about the topics and texts under discussion.

2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media
4. Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly
5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings
6. Produce complete sentences when appropriate to task and situation

[STORY TIME STEM]



[MATHEMATICS STANDARDS]

Mathematical Content

- Know number names and the count sequence. Count to tell the number of objects
- Compare numbers (le: "Are there beans cooked for dinner, or more chickens? How many more?)
- Represent and solve problems involving addition and subtraction.
- Represent addition and subtraction with objects, fingers, mental images, drawings, acting out situations, verbal explanations, expressions, or equations.
- Solve addition and subtraction word problems
- Decompose numbers by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$)
- Describe and compare measurable attributes(such as length or weight)
- Represent and interpret data (categorize types of foods, and note the quantities in each category)
- Introduce ideas of fractions (cutting equal shares, naming quantities with words "one fourth")
- Reason with shapes and their attributes
- use informal language to describe similarities, differences, parts (e.g., number of sides and vertices/"corners", having sides of equal length).
- Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc.

Mathematical Practices

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

[NEXT GENERATION SCIENCE STANDARDS]

K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

LS1.C: Organization for Matter and Energy Flow in Organisms: All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

ESS2-E: Biogeology: Plants and animals can change their environment

LS2-D: Social Interactions and Group Behavior: Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.

Science Practices:

- Asking Questions
- Making Observations
- Using mathematics and computational thinking
- Obtaining, evaluating, and communicating information