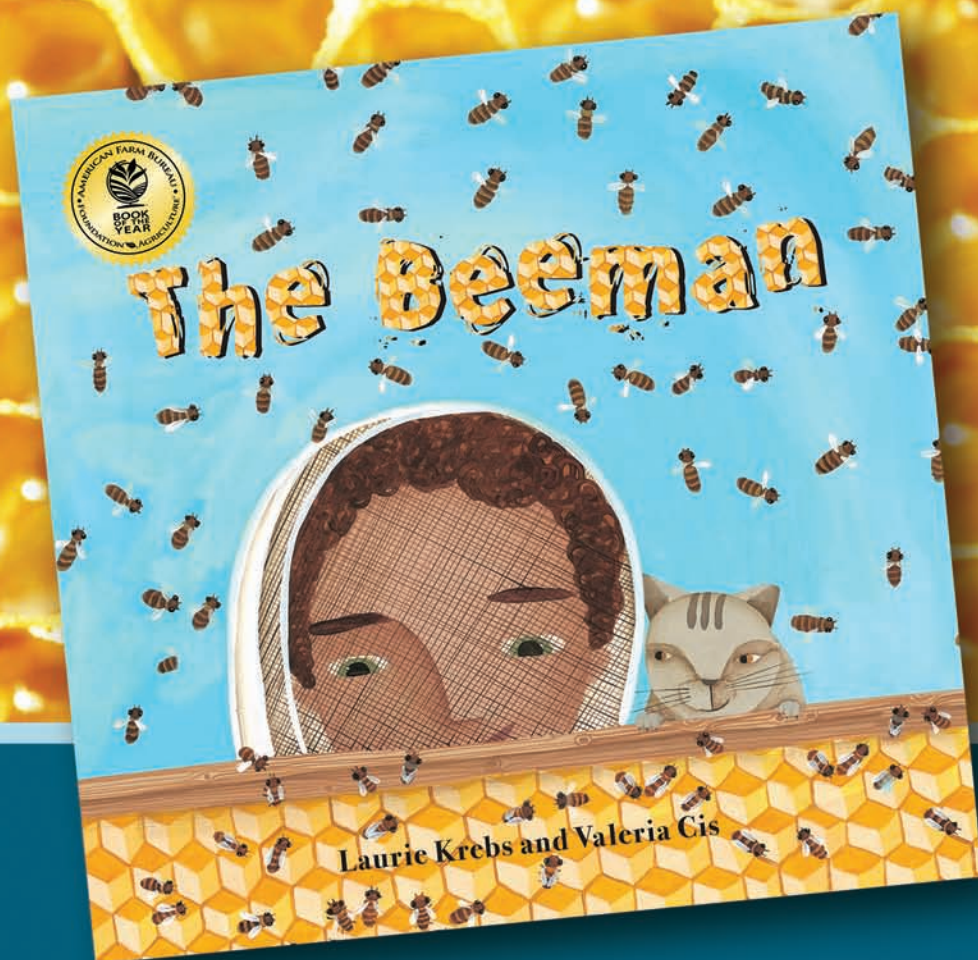




AccurateAg Books ELEMENTARY



EDUCATOR'S GUIDE



Acknowledgements

This publication is produced by the American Farm Bureau Foundation for Agriculture with a special thanks to the dedicated efforts of the American Farm Bureau Women's Leadership Committee for test piloting the materials.

Special thanks to Irene Sprick of Virginia for her expertise in the creation of the content and collaboration of this educator guide.

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FOUNDATION FOR AGRICULTURE

The American Farm Bureau Foundation for Agriculture® is building awareness, understanding and a positive public perception of agriculture through education.

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Welcome Educators!

Snapshot

This educator's guide was developed to help professional and volunteer educators provide opportunities for students to experience *The Beeman* by Laurie Krebs. This engaging book introduces students to honeybees and pollinators. The educator's guide provides background information and standards-based instructional strategies for introducing these agricultural topics to young learners.

Grade levels: K-2

Common Core Standards:

- **CCSS Math:** K.CC.A.3, K.CC.C.6, 1.OA.D.7, 2.OA.C.3
- **CCSS ELA Literacy:** RI.K.1; RI.K.2 ; RI.K.3; RI.K.4; RL.K.4; RF.K.3; RF.K.3c; RF.K.3d; RI.1.4; RI.1.7; RF.1.3; RF.1.3b; RI.2.4; RL.2.1

Next Generation Science Standards:

- LS2.a; LS1.c; 2LS2-2

Physical Activity:

- Dancing
- Puppet show

Materials:

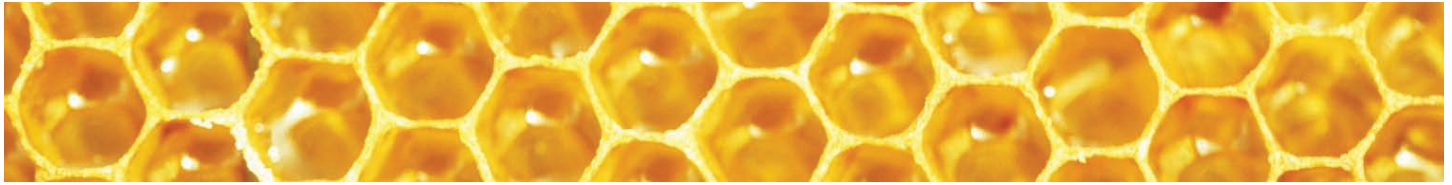
- *The Beeman*, by Laurie Krebs
- Different colors of chalk (orange, yellow, red, etc.)
- Scissors
- Cotton balls
- Paint sticks or rulers
- Tape and glue
- Poster board (if desired)
- Copies of the activities
- Different kinds of honey
- Optional: "Flight of the Bumblebee" song



Ideas for Classroom Instruction

This educator's guide is designed to make your job easier! Standards-based alignment of activities helps validate and guide implementation of this book. Check out these specific suggestions for implementation:

- Read the book at the start of the month and do one activity each week to reinforce concepts.
- Invite a local farmer, rancher or beekeeper into your classroom to answer questions.
- Create a bulletin board with pollinator puppets or have students bring them home to start conversations with their families.



Suggestions for Volunteer Educators

You don't have to be a teacher to benefit from this guide! Whether you are a farmer, rancher or someone simply interested in sharing the story of American agriculture, you can leverage this tool to help engage young learners. Review the following suggested steps to begin sharing this resource!

- Familiarize yourself with the educator guide.
- Contact local K-2nd grade teachers and identify at least 1 hour to meet with students.
- Use the guide to read the book to students and complete one or more activities depending on time.
- Leave a copy of the book or encourage the instructor to find a copy at the local library. Also leave the educator's guide and encourage the instructor to use the remaining activities. You may also wish to schedule subsequent visits with students in the future to facilitate more activities.

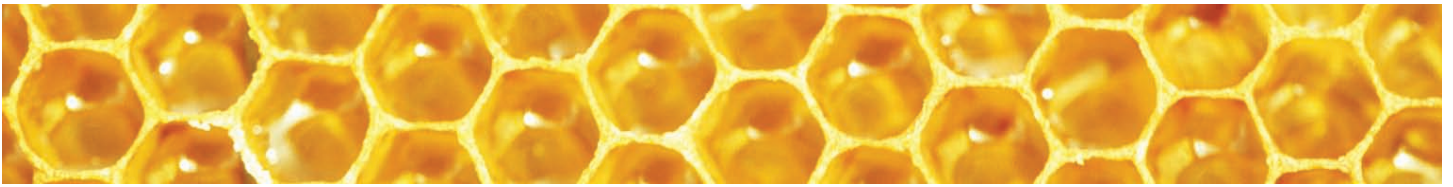
Introduction

Before you read the book, begin with a brief discussion. Try to include the following:

- Does anyone like honey?
- Where does honey come from?
- What can you tell me about bees? (Try to include that they are insects, they can sting people, they live outside, etc.)
- Can bees help people?
- What do honeybees give people?

Read *The Beeman*, by Laurie Krebs. After the story, read the section on facts about bees. While this section may not keep the attention of the youngest classes, the presenter should review it. Try to relate it back to the story to keep students engaged.





Activities

ACTIVITY 1: Bee Dances

TIME ESTIMATE: 10-15 minutes

SUBJECT: RI.K.2; RI.K.3; RI.1.7 Students will follow oral directions to recreate the basic dances bees perform. Physical activity.

MATERIALS: Space for students to move around. Optional: Copies of the “Find the Nectar Maze.” Optional: “Flight of the Bumblebee” song on CD or found on YouTube.

OUTLINE: After reading the story, direct discussion with the following questions:

1. Play “Flight of the Bumblebee,” if available. Ask students to imagine how bees might fly to this music.

2. Discuss communication: “Why do people talk to each other?” (Include: to communicate, tell stories, to share information, to ask questions, to give directions.) Do bees talk to other bees? How do you think one bee might communicate with another bee?

3. Reread the section at the back of the book on **Bee Dancing**.

4. Did the story tell us how bees communicate? *Yes, they perform dances to tell other worker bees where to find nectar.*

5. Review:

Round dance – If food is nearby the bees fly in circles, first one way and then the other way.

Wagtail dance – The length of the waggle time tells how long the trip to the nectar will

be. The bees fly in half circles and then waggle in straight lines, then fly in another half circle in the opposite direction.

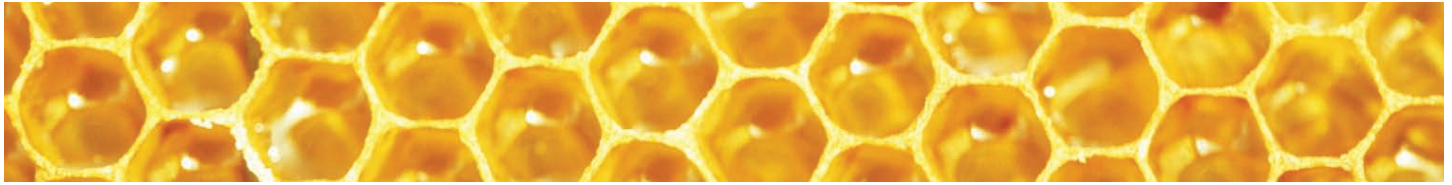
6. Demonstrate how to act out the bee dances. Ask students to line up, leaving space between each other. Lead them in the dances, similar to “Follow The Leader.”

7. **Round Dance** – Run in small circles, first one way (clockwise) and then reverse (counter clockwise) and run the other way. Review the purpose of this dance: It gives other bees a smell and taste of what was found. A faster dance indicates that the supply of nectar is better.

8. **Wagtail Dance** – Standing in a line, first make a half circle, and then start to walk in a straight line from the corner of the circle. Turn sharply, make another half circle in the opposite direction and waggle back (to complete the figure eight). Review that this dance tells the worker bees which direction to fly and how far it is to the flowers and nectar.

9. Conclusion: How do bees communicate? What are the two examples of their communication?

Find the Nectar Maze. This may be used in class or sent home. It reviews how bees go from one flower to another in search of nectar.



ACTIVITY 2: Bee Vocabulary

TIME ESTIMATE: 10-15 minutes

SUBJECT: Language Arts/Literacy RI.K.4; RL.K.4; RI.1.4; RI.2.4 Students will learn the meanings of specific words through the context of the story.

MATERIALS: A copy of Activity 2 “Bee Vocabulary” per student or projected onto an interactive white board

OUTLINE: Discuss the basic bee vocabulary with the students, using the context of the story or the pages after the story.

1. VOCABULARY

Hive – where bees live and keep their honey

Honeycomb cells – the six-sided cells where bees store their honey in the hive

Queen bee – the one bee who lays eggs for the colony

Worker bee – the bee who is responsible for leaving the hive to find the nectar, that is brought back to the hive to be made into honey

House bee – the young worker bee who uses its wings to dry the nectar in the hive

Drone bee – a bee who mates with the queen so she can lay eggs

Nectar – the sweet liquid that the worker bees collect from flowers and the basis for honey

Extractor – a tool “the Beeman” uses to extract (take honey out of) the honeycombs

Honey – a golden-colored sweet food produced by honeybees from nectar

Insect – a small animal with six legs and a body formed in three parts (head, thorax, abdomen)

2. After students are familiar with specific words for the subject matter, share the word game by handing out copies to each student or projecting the statements on an interactive white board.

3. Review the word list if necessary and point out that not all words will be used in the answers.

4. The answer for the starred question will come from the letters that are in the hexagons of questions 1-5. (**Honey**)

ACTIVITY 3: Beehive Math

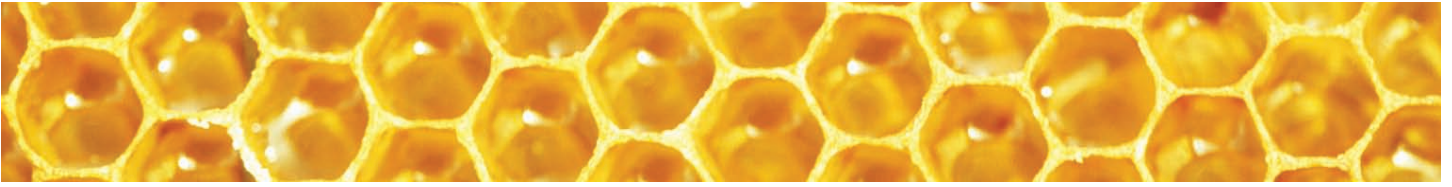
TIME ESTIMATE: 5-10 minutes

SUBJECT: Math K.CC.A.3; K.CC.C.6; 1.OA.D.7 Students will identify numbers 1-20 and perform addition and subtraction problems.

MATERIALS: A copy of Activity 3 “How Many in the Hive?” per student or projected on an interactive white board

OUTLINE: Discuss the importance of numbers in learning about honeybees. The cells in a honeycomb have six sides. Thousands of worker bees find the flowers in order to provide nectar for their hive.

1. Project (or distribute copies of) the worksheet. Students may answer the problems in a group or individually.



2. ANSWERS

- a. $7 + 9 = 16$
- b. $10 - 8 = 2$
- c. The beehive with the most bees is the bottom left (10).
- d. The beehive with the least amount of bees is the top left (7).

ACTIVITY 4: Bee Poetry!

TIME ESTIMATE: 10 minutes

SUBJECT: Language Arts/Literacy RF.K.3; RF.1.3; RF.1.3b; RF.K.3c; RF.K.3d Students will learn rhymes of words through vowel sounds.

MATERIALS: A copy of Activity 4 “Bee Poetry” per student or projected on an interactive white board

OUTLINE Part 1:

The Beeman is a rhyming book. Review rhyming and what a “poem” is. Rhyming words have similar sounds. An example would be hat/cat. Ask students if they can hear the rhyme. The two words have a sound that matches “at” (h-at c-at).

1. Ask students to think of two more words that rhyme with cat. (Bat, mat, sat, fat, etc.)
2. Use the word “bee” to try a second rhyme: see, tree, me, free, gee, he, knee, etc.
3. Ask students to complete the rhyme in this sentence: If I told you a joke about honey, you’d laugh because it was ____ (funny).
4. Remind students about the different types of bees. (Reread the pages on queen bee, drone bee, worker bee, and house bee before you begin.)

5. Read the poems on Activity 4, and use the clues in each poem try to figure out which type of bee the poem is describing.

6. After each poem ask students to identify the rhyming words. Students may draw a circle around the rhyming words in the poem or identify them on the white board.

ACTIVITY 5: Pollinator Puppets

TIME ESTIMATE: 30-45 minutes (See shortened activity directions below)

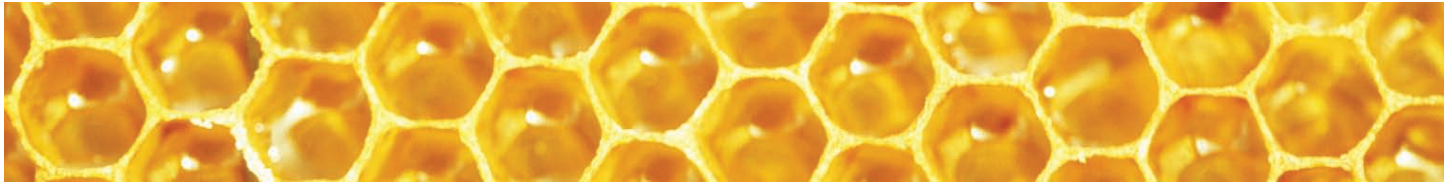
SUBJECTS: Language Arts/Literacy RL.1.1 A; RL.2.1; RL.K.4 & Science: 2-LS2-2 Students will learn the bees’ part in the pollination of plants.

MATERIALS: Copies of the bees, flowers and hive; paint sticks or rulers, cotton balls, glue, different colors of chalk, tape, scissors. (Copies of “Find the nectar maze” for each student or access to an interactive white board may also be used if not completed as part of Activity 1.)

OUTLINE: Briefly discuss pollination to establish student knowledge. (Insects are very important in the process of pollination. We would not have many fruits, vegetables and flowers without the work of bees.) Review questions may include:

- **What** is pollination? Review pollination in the back of the book.

When honeybees land on flowers, their legs brush up against the part of the flower that holds pollen. This pollen is collected on their legs and body. When the bees fly to the next flower, some of the pollen from the first flower is transferred onto the second flower. This pollinates the flower, which allows the flower to grow its fruits, nuts or vegetables.



- **Who** benefits from pollination? (We eat the fruit and vegetables created.)
- **Why** do bees visit flowers? (To drink nectar)
- **How** do flowers attract bees? (Color and smell)
- **Where** does the bee go after it collects pollen? (To another flower or back to the hive)
- **When** is the best time of year for bees to collect pollen? (Spring is a great time for bees to collect nectar from all of the blossoming flowers.)
- **Are there** any other insects that visit flowers? (Butterflies)

Pollinator Puppet Show will demonstrate how bees carry nectar and pollinate in the process.

- Make copies of the bee for six students.
- Make copies of the flower for all the other students.
- Make a poster of a beehive by enlarging the hive on page 12 or printing it on standard paper.
- An adult should color the center of each flower heavily with chalk. Try to use multiple colors of chalk with one color per flower.
- Have students cut out the bees and flowers, time permitting.
- Glue or tape the bees and flowers to rulers or paint sticks.
- Glue a cotton ball to the back of each bee.

Presentation:

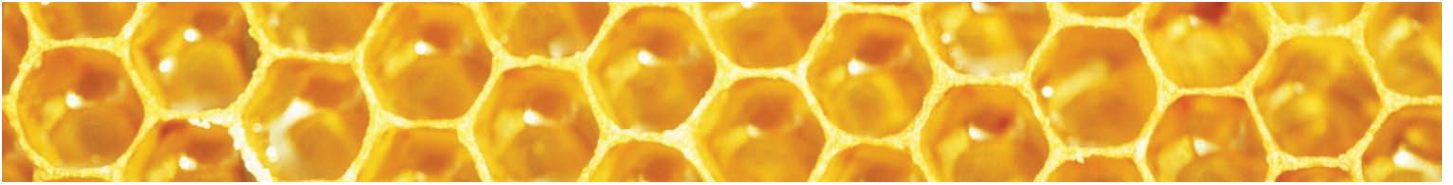
- Flower students stand along a wall (because plants do not move).

- Bee students gather by the hive before going to visit the flowers.
- Adults may need to help students gather pollen by transferring chalk from the flower to the cotton ball.
- Bee students return to the hive after visiting two or three flowers.

To modify for a shorter time period or larger class, the presenter should prepare two to three bees and five to six flowers ahead of time. Ask several students to demonstrate the pollination process by following directions from the presenter.

Conclusion:

- What happens when a bee lands on a flower? (It picks up pollen and drinks nectar.)
- What happens when the bee visits another flower? (Chalk from the first flower got on the second flower and the bee picked up more chalk.)
- What is this process called? (Pollination)
- If not used with Activity 1, the “Find the Nectar” maze can be a follow-up activity, or handout for the teacher to distribute. This may be very useful for the kindergarten and first grade classes.
- You can also use the puppets to make a pollinator bulletin board.
- Take a photo of your classroom with the puppets and tag us at @AgFoundation on Twitter. Be sure to use the hashtag #pollinatorpuppets and we will retweet you.



ACTIVITY 6: Taste Honey

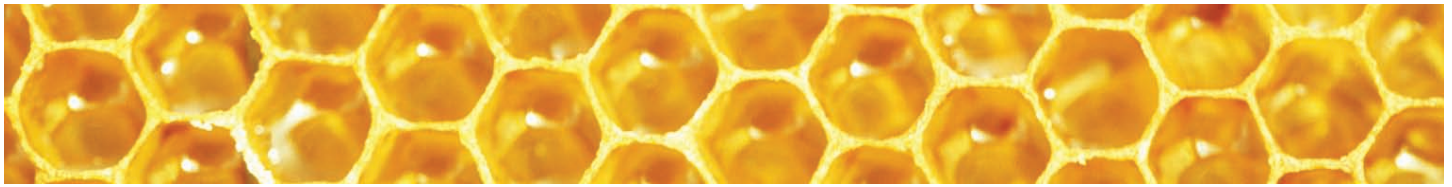
TIME ESTIMATE: 10 minutes

MATERIALS: Different types of honey, honey sticks and or honey comb, spoons. *Note: if the school has a policy regarding food for students open the jars of honey and only have them smell it.

1. Tell students that they will be making some observations about honey. Have students taste the different kinds of honey using spoons.
2. If you can bring in 2 types of honey such as clover and orange blossom you can have students try to taste the difference.
3. Honey from different flowers might also be different hues (colors).
4. After students have tried the honey ask them to describe it by using sensory words.
 - **Sight:** golden
 - **Smell:** sugary
 - **Taste:** sweet
 - **Touch:** sticky
5. Why do you think that these honeys look and taste differently? (Different nectar from different flowers.)
6. When would you use the sense of hearing around bees and honey? (Listening to the buzzing of bees.)

You can also find honey recipes on www.honey.com





ACTIVITY 2 – Vocabulary Word Game

Directions: Fill in the blanks for each statement using words from the list.
Not every word will be used.

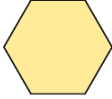
gloves
insects

worker
honeycomb

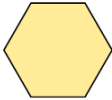
hive
fly

smoker
nectar

1. Bees live in a  _____ where the young are raised.

2. Bee colonies include the queen bee, house bees, drone bees and
 _____ bees.

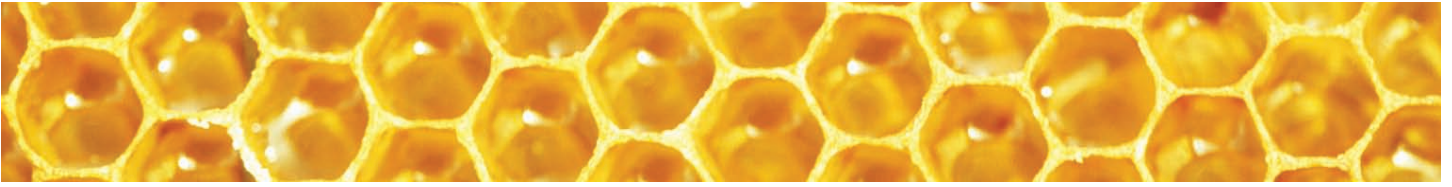
3. Bees drink  _____ from flower blossoms.

4. Honeybees are in the animal group with wasps, ants, grasshoppers and
other  _____.

5. Bees may  _____ a long distance to gather food.

Write the letters in each honeycomb to answer this question: What do bees provide for the Beeman and everyone to enjoy?





ACTIVITY 3 – How Many in the Hive?

Directions: Count the bees at each hive. Put that number on the line.
Answer the math problem that follows each line.



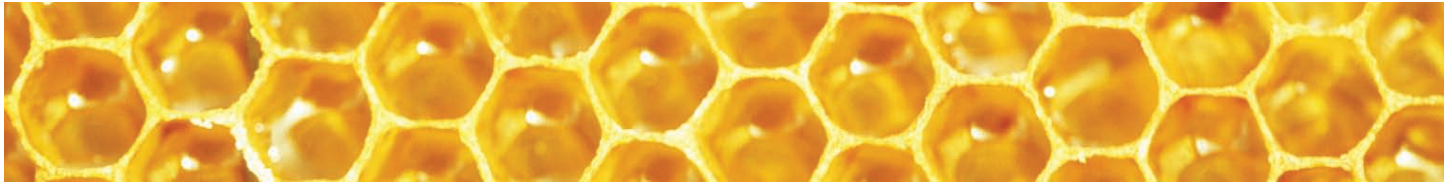
1. A _____ + B _____ = _____



2. C _____ - D _____ = _____

3. Circle the hive that has the most amount of bees.

4. Put an X through the hive with the least.



ACTIVITY 4 – Bees in Poetry

Directions: Read the poem and use the clues to fill in the blank in the last line.

I never leave my home
To fly around and roam.
Nectar the workers bring
I dry by moving wings.

I am a _____ bee.

I fly out of the hive every day
To collect nectar from far away.
Then I fly back to my hive,
So we can make honey to survive.

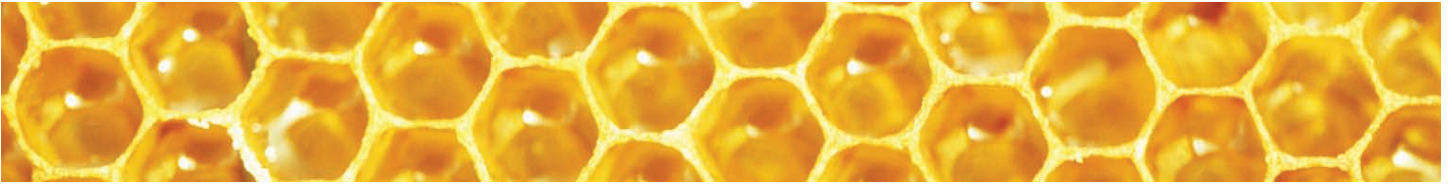
I am a _____ bee.

I am a type of bee.
The queen really likes me.
I am known for this trait -
With her it's my job to mate.

I am a _____ bee.

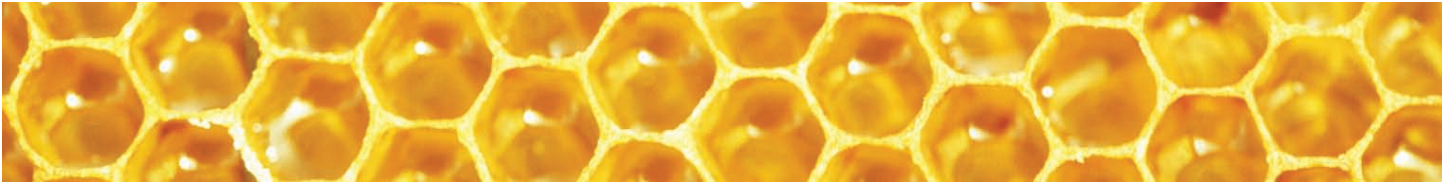
There is only one of me.
I am more than just a bee.
I reign over all I see.
I lay eggs for my colony.

I am the _____ bee.



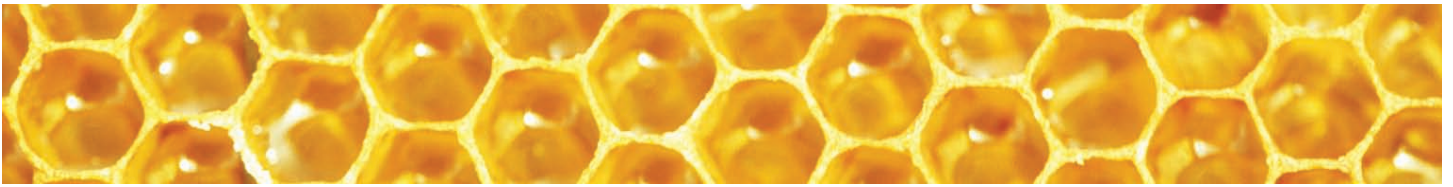
ACTIVITY 5 – Pollinator Puppets



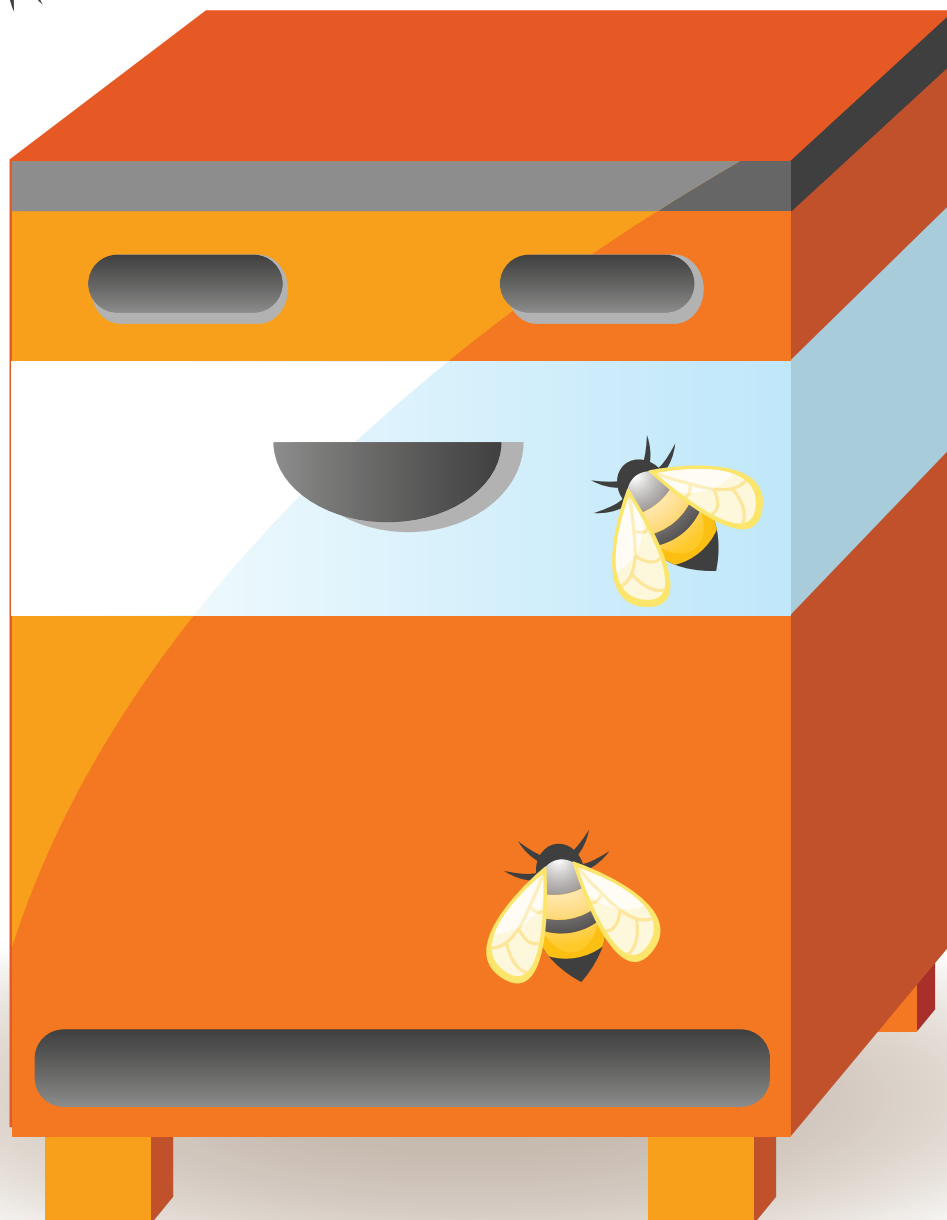


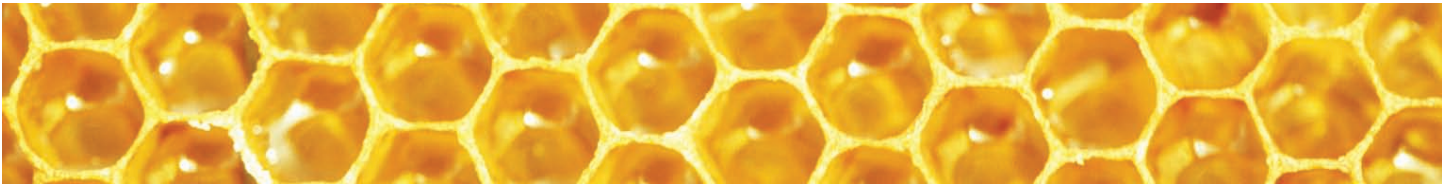
ACTIVITY 5 – Pollinator Puppets



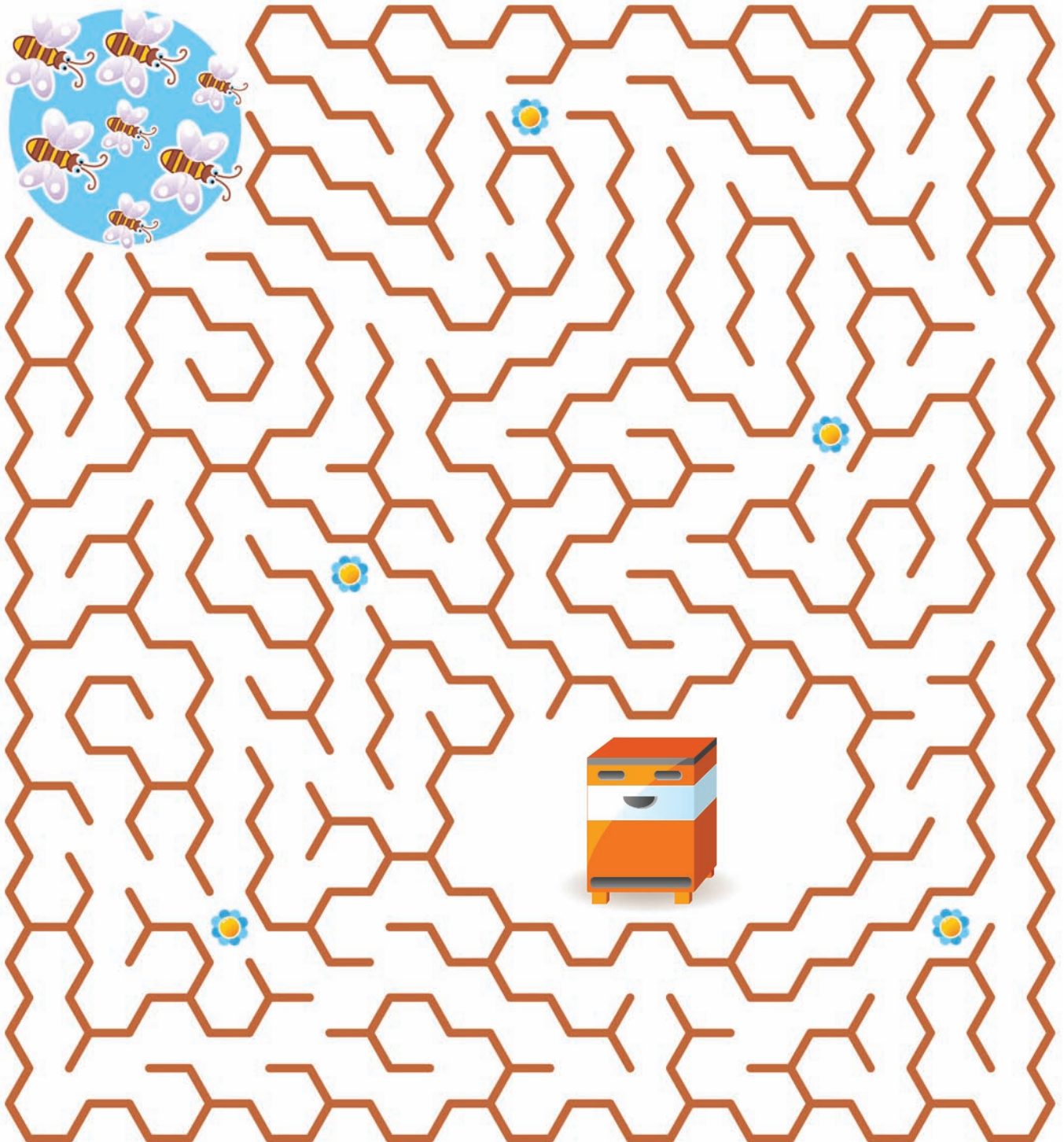


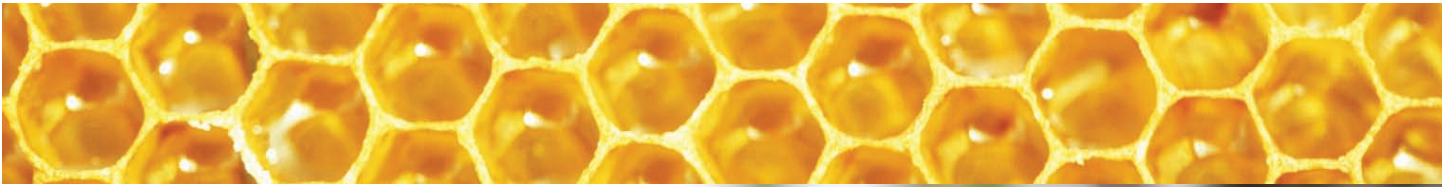
ACTIVITY 5 – Pollinator Puppets





ACTIVITY 6 – Find the Nectar





Bees Bibliography

You can find more information about bees and honey production in these books from the Ag Literacy book database, which is found on the American Farm Bureau Foundation for Agriculture webpage – www.agfoundation.org

- Cole, Joanna, *The Magic Schoolbus Inside a Beehive*
- Gibbons, Gail, *The Honey Makers*
- Heinrichs, Ann, *Bees*
- High, Linda Oatman, *Beekeepers*
- Kalman, Bobbie, *Hooray for Bee Keeping*
- Polacco, Patricia, *The Bee Tree*
- Sexton, Colleen, *The Life Cycle of a Bee*
- Slade, Suzanne, *What if There Were No Bees?*
- Spilsbury, Louise, *How Bees Make Honey*



This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

My American Farm

My American Farm was built for educators, learners and their families with free downloadable resources and fun family activities to explore:
www.myamericanfarm.org

Lesson Extenders: My American Farm Games



That's Life

- Play time 7-10 minutes
- Grades 3-5
- Curriculum Area: Science
- Agriculture Themes:
Farmers feed the world,
Agriculture is everywhere



Load the Lunchbox

- Play time 5-7 minutes
- Grades Pre-K
- Curriculum Area: Health
- Agriculture Themes:
Agriculture is everywhere,
Farmers feed the world



Fact or Fairytale

- Play time: 7 minutes
- Grades K-2
- Curriculum Area: Science
- Agriculture Themes:
Farmers care for animals,
farmers steward the land



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