My World and Me™

Living Things and Their Needs

The Math Link

Written by Barbara Tharp, M.S., and Nancy Moreno, Ph.D.

The Living Things and Their Needs educational unit is comprised of the student storybook, *Tillena Lou's Day in the Sun,* the *Living Things and Their Needs Teacher's Guide,* and two integrated supplements: *The Reading Link and The Math Link*. These materials, along with teaching slide sets and presentations for classroom use are available at www.k8science.org.

For more information on this and other educational programs, contact the Center for Educational Outreach at 713-798-8200, 800-798-8244, or visit www.bcm.edu/edoutreach.

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This Math Link contains ready-to-use mathematics activities that are aligned with the My World and Me: Living Things and Their Needs integrated unit. It is not intended to represent a comprehensive mathematics program. The activities are related to mathematics objectives common to many curricula and cover a range of grade and ability levels. Teachers may wish to select from these activities those that are most appropriate for their own students.

BioEd℠

Teacher Resources from the Center for Educational Outreach at Baylor College of Medicine.

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Mathematics

The following activities and strategies are designed to incorporate science concepts related to the story into grade-level appropriate mathematics activities.

ADDITION: Warm-up

Give each student two photocopies of the "My Drawing" student page. Have them solve the following.

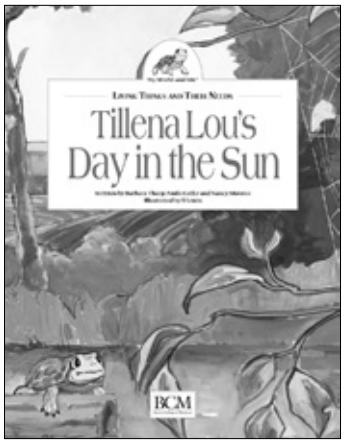
- Tillena and Tee each have four legs. How many legs do they have altogether?
- If Tillena and her three brothers were all on the log, how many feet would be on the log?
- The mother robin has three hungry baby robins in her nest. The mother can only carry one worm to the nest at a time. How many trips will she need to make to give each baby bird two worms? Explain your answer with a drawing.
- Ants can carry twice their weight. If you could carry twice your weight, how many pounds could you carry?
- Twelve ducklings and their mother equal how many ducks? Draw the duck and ducklings.

ADDITION: Insects and Spiders

1. Discuss how all insects have six legs, but spiders have eight legs.
2. Give each student one photocopy of the "Insects and Spiders" student page. Have students draw legs on the bodies of the insects and spider.
3. Using recyclable materials, have pairs of students create either an insect or a spider that is symmetrical. Give students pipe cleaners to use for legs.
4. Give each student a copy of the "Spider Web" student page. Have them solve the following.
   - How many legs would a bee and the ant have altogether?
   - If a spider caught two flies in his web, how many legs would be on the web? Draw your answer on the spider web.
   - Tillena dreams she is a turtle bee. How many more legs would Tillena have as a turtle bee?
   - Create a concrete graph of insects and spiders.

MEASUREMENTS: Recipes and Tools

1. Discuss with students how animals in the story find their food in their environment. Ask students, *Where do you find your food?* Follow by contrasting this process with where/how we get the ingredients for common items in our diet. Ask, *Where do we get honey? Who else eats honey?* (bees and bears). Continue the discussion using ingredients in the "Crispy Balls" recipe (see sidebar, right).
2. Create and show students a large copy of the recipe using pictures and words.
3. Discuss recipe measurements. Hold up a large, four-cup measuring cup and a large stirring spoon. Ask, *Will these work to measure the recipe ingredients? Why?* Discuss the importance of measures.
   - Give each group measuring cups and spoons to examine.
   - Give each group a large bag of dried beans or rice. Let them practice measuring with cups, half cups and teaspoons.



Read the storybook, *Tillena Lou's Day in the Sun,* with students before completing this activity.

Crispy Balls

- 3 or 4 boxes of cereal (Rice Crispies, Cocoa Puffs, or Trix type cereals)
- 1-1/2 cups of dry powdered milk
- 1-1/2 cups of wheat germ
- Cup of honey
- Cup of peanut butter
- Teaspoon of cinnamon

Wash hands. Mix first five ingredients together and roll into balls. Roll balls in cereal.

Individual hands-on activities from the *Living Things and Their Needs Teacher's Guide*, the student storybook, *Tillena Lou's Day in the Sun*, and *The Reading Link* language arts supplement also are available for free download (PDF format) from www.bioedonline.org.

MEASUREMENTS: Using Cups and Teaspoons

You will need measuring spoons, six measuring cups, two small bowls (to hold measured powdered milk and wheat germ), sheet of wax paper, tape or glue, kraft or butcher paper, and one small plastic bowl per student. You also will need the ingredients for the "Crispy Balls" recipe found on page 1.

1. Have students wash their hands. Measure the first five ingredients. Ask students if the measures are correct. Make some of your measurements wrong, so students can correct you.
2. Mix the correct amounts of the measured ingredients in a large mixing bowl to make the "dough." Place about one tablespoon of dough on wax paper in from of each student.
3. Give each student a small bowl with about three tablespoons of cereal of their choice. Have at least three choices so that they can later graph their cereal selections. Students' should be able to make two round balls (spheres). Students may eat their treats.
4. At the front of the room, create a graph for the different cereal choices. Have each student place (tape, glue) one piece of his or her cereal choice in the correct column. Ask, *What does the graph tell us? Is this a good way to gather information. Would it be easier to just raise hands? Would we have the information to use later and to use to make a decision about favorite cereals?*

PROBLEM SOLVING

Give each student two photocopies of the My Drawing student page, and about 25 paper clips. Have students solve each question below. For kindergarten students, only consider using two pots for item 3 below.

- Bees eat the nectar found in flowers. One bee visits many flowers in order to eat each day. There are only four bees in the field. The field has 20 flowers. How many flowers could each bee visit? Draw your answer.
- If you have five flower pots and need to plant three seeds in each pot, how many seeds will you need? Draw the pots and seeds you will need.
- In one week, all the plants grew, but not the same amount (rate). Which plant is tallest? Smallest?

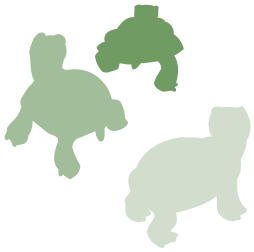
Pot 1 One plant, 2 paper clips tall
Pot 2 Two plants, 3 paper clips tall
Pot 3 One plant, 5 paper clips tall
Pot 4 Two plants, 7 paper clips tall
Pot 5 Three plants, you decide how tall

Make up a question for students to solve using the animals in the story.

MEASUREMENTS: Length

You will need one candy "gummy" worm, one sheet of paper, tape, small paper clips and a pair of scissors for each student.

1. Give each student a candy "worm." Have students measure the candy worm using paper clips. (One piece of candy is about the length of three small paper clips.)



2. Have students cut out strips of paper the length of the worm.
3. Have students work in groups of four to make a worm chain, putting all their worms together. How long is their worm chain? (12 paper clips)
4. Ask students, *If three groups of students lined up their worm chains to make one big worm, how many small worms would they use? How many paper clips would they need to measure the worm?*
5. Have student locate objects in the classroom that are about the size of a worm.

SUBTRACTION

Have students solve the following: The red fish found twelve minnows swimming in the pond. He could only catch five. How many minnows are still swimming in the pond?

GRAPHING

1. Using Post-it® style notes, have students create a graph on the board, examining different kinds of animals.
2. Create a graph of the classes' favorite animals. Place the animals in order of size, based on prior knowledge.

SEQUENCING

Photocopy the Animals, Animals page, which shows all the animals Tillena encountered over the course of the story. Read the story and instruct students to lay the appropriate picture on a long strip of paper you have placed on the floor. Students should follow the same order as the animals are mentioned in the story, creating one long sequence.

PATTERNS

Make enough photocopies of the "Animal Pattern Strips" page, so that each student will have two "strips" of different animals. Students work alone, then in groups of four.

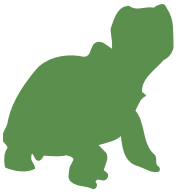
1. Give each student two strips (different animals). Instruct them to cut the strips apart and make one pattern with the pieces.
2. Have group members share their patterns and work together to change any duplicate patterns. After students create four different patterns, the should paste them to a sentence strip.
3. Show students how to name a pattern, like "121212" or "abababab." Then have them write their pattern sentences below the pattern.

COUNTING: Sorting

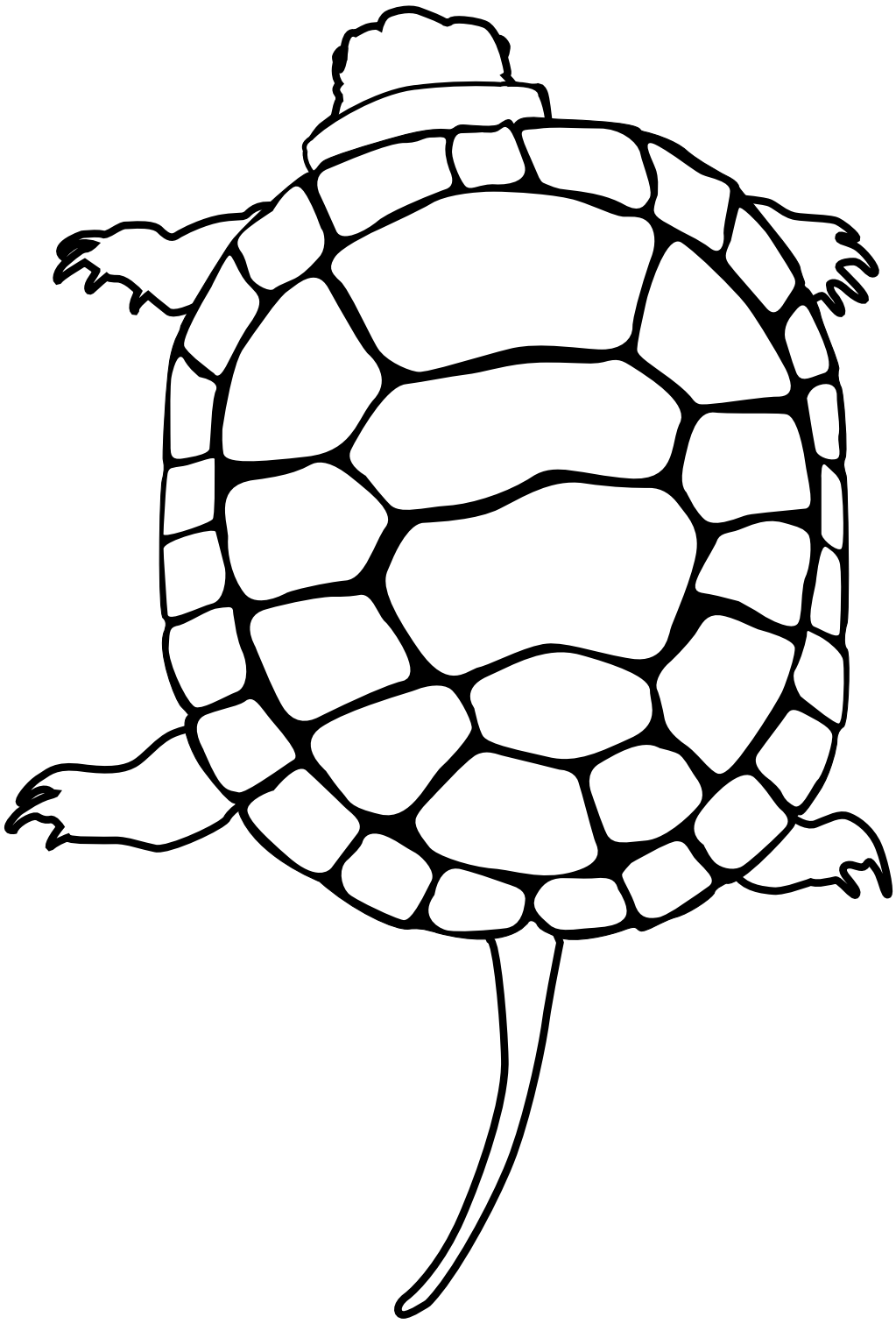
Paint lima beans green to represent turtles; use brown beans to represent toads and plain lima beans to represent lizards. Have students sort the beans into three piles. Next, tell a number story for students to follow using the beans and a pond (yarn circle glued on construction paper, with trees, rocks…). For example, tell students that five turtles jumped in the pond. Students should place five green beans in the circle. Next, tell students two lizards climbed a tree, and one turtle climbed out of the pond. Ask, *How many turtles are in the pond?*

Students also can make bean patterns and bean graphs.

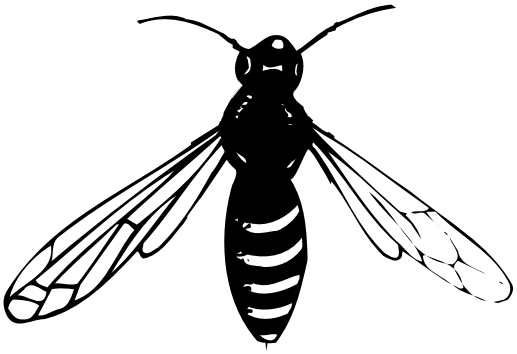
My Drawing

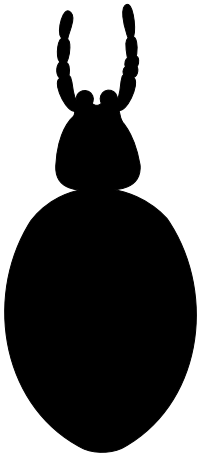


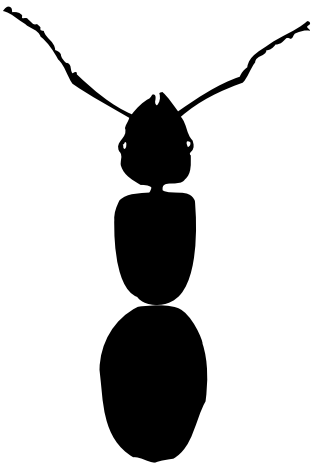
My Turtle

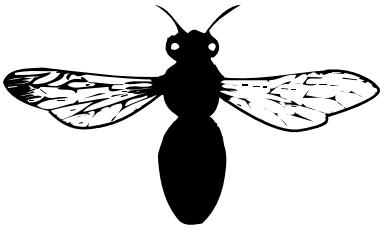


Insects and Spiders

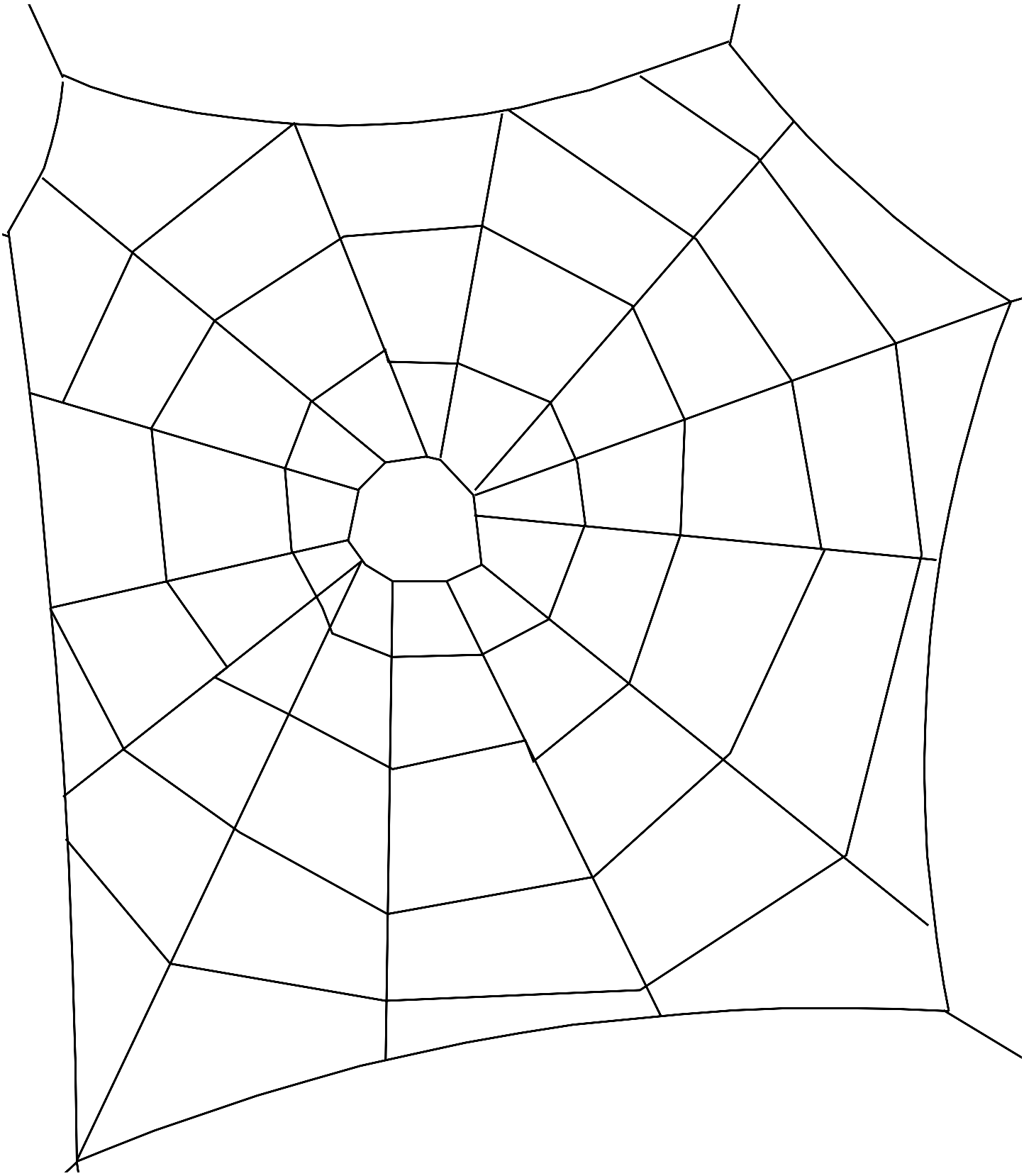




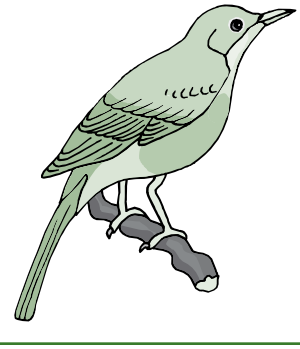


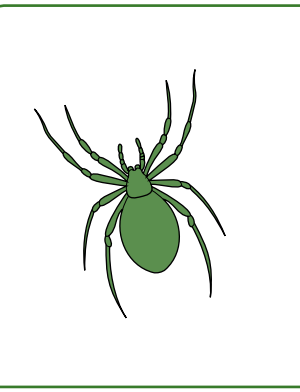


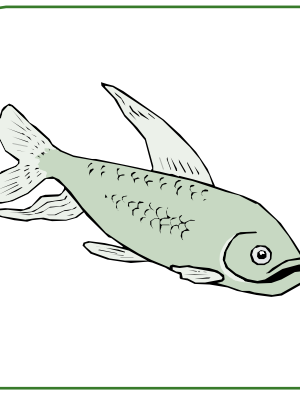
Spider Web

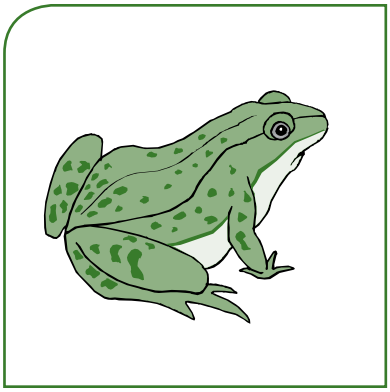


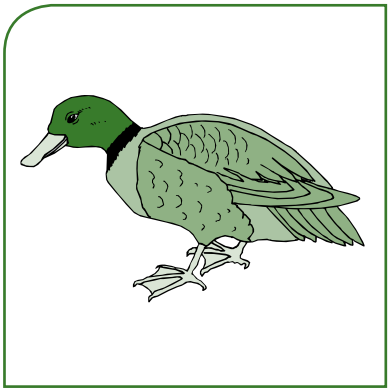
Animals, Animals

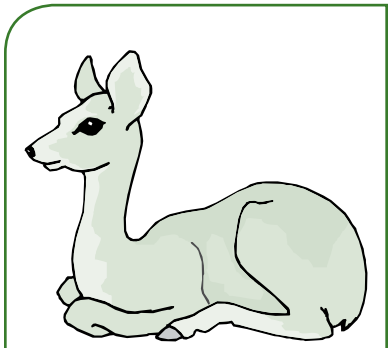


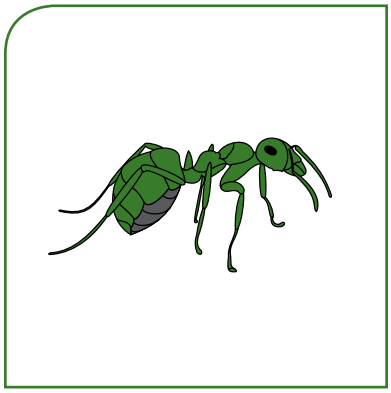


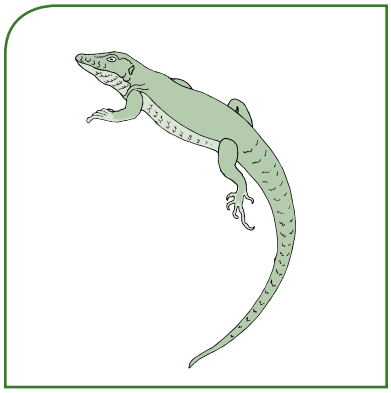












Animal Pattern Strips