

# Science Primary / Science 1

HANDBOOK FOR TEACHING COMBINED CLASSES



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Science Primary / Science 1: Handbook for Teaching Combined Classes

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# Introduction

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This resource has been written and designed as a handbook for teachers who have combined science classes of grades primary and 1 students.

Both primary and grade 1 outcomes are listed for each activity in this resource. It is important for teachers of combined classes to address all the outcomes for the combined class because some students may be coming from, or going to, a single grade class.

We suggest that teachers become very familiar with the outcomes of the grades primary and 1 Atlantic Canada science curriculum guides, as well as this handbook, prior to implementing the components. Helpful hints, required materials, assessment tools, procedures, sample recording sheets, resource suggestions, technological supports, student work samples, outcomes, and questions have been provided to assist teachers in designing instruction and assessment.

## Check It Out

- *Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004)  
<https://sapps.ednet.ns.ca/Cart/items.php?CA=15&UID=20070502151011>
- *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005)  
<https://sapps.ednet.ns.ca/Cart/items.php?CA=15&UID=20070502151011>





# Overview

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*Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004) contains the following four components: Exploring the World with Our Senses; Exploring Sand and Water with Our Senses; Exploring Moving Things with Our Senses; and Exploring the World of Living Things with Our Senses. *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005) consists of Physical Science: Materials, Objects, and Our Senses; Life Science: Needs and Characteristics of Living Things; and Earth and Space Science: Daily and Seasonal Changes.

To support instructional planning, this resource includes examples of yearly plans that complement the curriculum guides. A yearly plan is the organization of a sequence of outcomes clustered together in various ways to maximize connections within science, between science and other disciplines, and to the real world. Yearly plans encourage you to develop timelines that help ensure that students have opportunities to achieve all of the outcomes. The examples of yearly plans in this resource are meant to be suggestions only. Teachers may wish to develop their own yearly plans to suit the class to ensure that outcomes from both primary and grade 1 are addressed.

Map out how you would like to section the school year into intervals of time (e.g., months, terms, reporting periods). Listed in Appendix A are the specific curriculum outcomes for grade primary and grade 1. Outcome cards are available electronically for Nova Scotian teachers at <http://educators.ednet.ns.ca>. These allow clustering of all of the outcomes so that you can effectively map out the learning and teaching that will happen in your classroom.

This handbook offers a two-year plan for teachers to address the outcomes for each grade while predominantly focusing on five science components per year. All the science curriculum outcomes for grades primary and 1 are addressed in the first year of the plan and again in the second year of the plan. This allows students who may be in the same classroom for two years to address the outcomes for their grade each year.

From grades primary to 6, students require a minimum of 60 percent of science time to be actively involved in hands-on, minds-on learning experiences. Hands-on, minds-on science experiences in grades primary and 1 provide students with knowledge, skills, and attitudes that give students a solid foundation for scientific inquiry as they engage in, explore, explain, elaborate, and evaluate science. Science learning also provides opportunities for learning across all subject areas.

Making science come alive through thoughtful questions, skills development, and assessment strategies helps young scientists understand the world around them.

# Instructional Planning

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Use this handbook, together with *Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004) and *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005), as a tool to assist you in planning how to address the outcomes in a combined-class setting.

The following sample of a two-year plan includes the components from grades primary and 1. All outcomes from each grade are addressed each year so that both grade primary and grade 1 students address the outcomes for their grade level.

This plan for combined classes allows the teacher to choose to start with either Year 1 or Year 2. Year 1 activities provide a more structured approach than those in Year 2.

## Sample Two-Year Plan

Year 1	Year 2
Component 1: Animals and Me	Component 1: Exploring Plants
Component 2: Materials, Objects, and Me	Component 2: Exploring Moving Things
Component 3: Water and Me	Component 3: Exploring Sand
Component 4: Plants and Me	Component 4: Exploring Animals
Component 5: The Seasons and Me*	Component 5: Exploring The Seasons Every Day*

\*Teachers are encouraged to address daily and seasonal weather changes throughout the year.



# Year 1: Sample Plan

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## Science Primary and Science 1 Combined Class Components

This sample Year 1 is based on activities with questions and procedures to explore the topics. Teachers may decide to use these as they are or modify them to suit the students.

<b>Component 1: Animals and Me</b>	Addresses outcomes in Science Primary: Exploring the World of Living Things with Our Senses Science 1: Needs and Characteristics of Living Things
<b>Component 2: Materials, Objects, and Me</b>	Addresses outcomes in Science Primary: Exploring the World with Our Senses Science 1: Materials, Objects, and Our Senses
<b>Component 3: Water and Me</b>	Addresses outcomes in Science Primary: Exploring Water with Our Senses Science 1: Materials, Objects, and Our Senses
<b>Component 4: Plants and Me</b>	Addresses outcomes in Science Primary: Exploring the World of Living Things with Our Senses Science 1: Needs and Characteristics of Living Things
<b>Component 5: The Seasons and Me</b>	Addresses outcomes in Science Primary: Exploring the World with Our Senses Science 1: Daily and Seasonal Changes



# Component 1: Animals and Me

## Preparation Suggestions

- Provide an interest table (e.g., models of spiders, texts, photos, magnifiers, microscope, viewing jars, books).
- Set up a terrarium. An aquarium with a screened top works best. Items for the terrarium include soil, moss, sticks, a small log, fake plants, a mister for spraying water, and spiders (no more than three, depending on the size of the aquarium).
- Plan ahead by collecting the materials listed in the activities.
- Teachers may wish to refer to *Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004) and *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005) for additional activities, resources, and equipment lists.
- Arrange class visits from various organizations.
- Investigate appropriate speakers or presenters. You may wish to contact Atlantic Science Links Association (<http://atlanticsciencelinks.dal.ca>).
- Investigate students' prior knowledge.
- Plan local field trips.
- Decide how students can record their findings in various formats in their science logbooks.

## Component 1 Resources

Various classroom resources that the teacher may have, such as

*Diary of a Worm* (Cronin 2003)

*I'm Hiding* (Costain 2001)

*Shared Reading Card 3: To the Farm, It Fell in the City, and If I Could*, Literacy Kindergarten Cross-Curricular Kit:

*My Community* (Various authors n.d. e) (NSSBB #: 1000652)

*Spiders, Creepy Creatures* (Bodden 2011) (NSSBB #: 1001838)

*Spiders Spin Webs* (Winer 1998)

*Touch It!* (Rubin 2003)

*Worms, Creepy Creatures* (Bodden 2011) (NSSBB #: 1001835)



# ACTIVITY 1

## Spiders in the Classroom

### Questions

- What does a spider look like?
- How does a spider move?
- What does a spider need in order to live?
- How does a spider take care of itself outside?
- What do we need to have and to do to take care of a spider inside our terrarium?
- What will the spiders do in our terrarium?

### Materials

- Activity Sheet 1: Spiders
- Activity Sheet 2: Our Terrarium
- chart paper
- clipboard
- magnifying bug viewer jars or clean plastic containers and magnifying glasses
- models, photos, or books on spiders
- science logbook
- spiders
- spider food
- spray bottle for misting
- terrarium (clear aquarium with screened top)
- terrarium contents
  - branches
  - fake plants
  - moss
  - small log
  - soil
  - sticks

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

explore and select different ways to represent ideas, actions, and experiences and to communicate with others (100-2)

#### Science 1

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

## Procedure

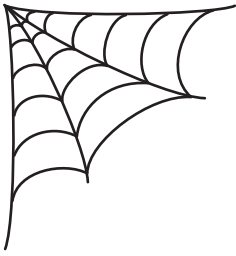
Discuss with students what they already know about spiders. The teacher may wish to make a chart to organize thoughts and develop statements and questions. Discuss with students what a spider might need to survive. Read books to learn more about what spiders need and do.

Tell students that you want to observe spiders close up by setting up a terrarium in the classroom. Brainstorm about what they might need for a spider to live safely in the terrarium. A schedule for food collection for the spiders will have to be arranged with the class. Food will be insects that the students find indoors, such as fruit flies and house flies. Students will often naturally and eagerly observe the spiders. Encourage times for one or two students to observe the terrarium and to record their observations in a “Terrarium Recording Chart.”

### Sample Terrarium Recording Chart

Name	Date	Observation

Students should draw a spider and label its body, head, and legs. Students can do this in their science logbooks or use Activity Sheet 1: Spiders. Students should also draw the terrarium and describe it in their science logbooks or use Activity Sheet 2: Our Terrarium.

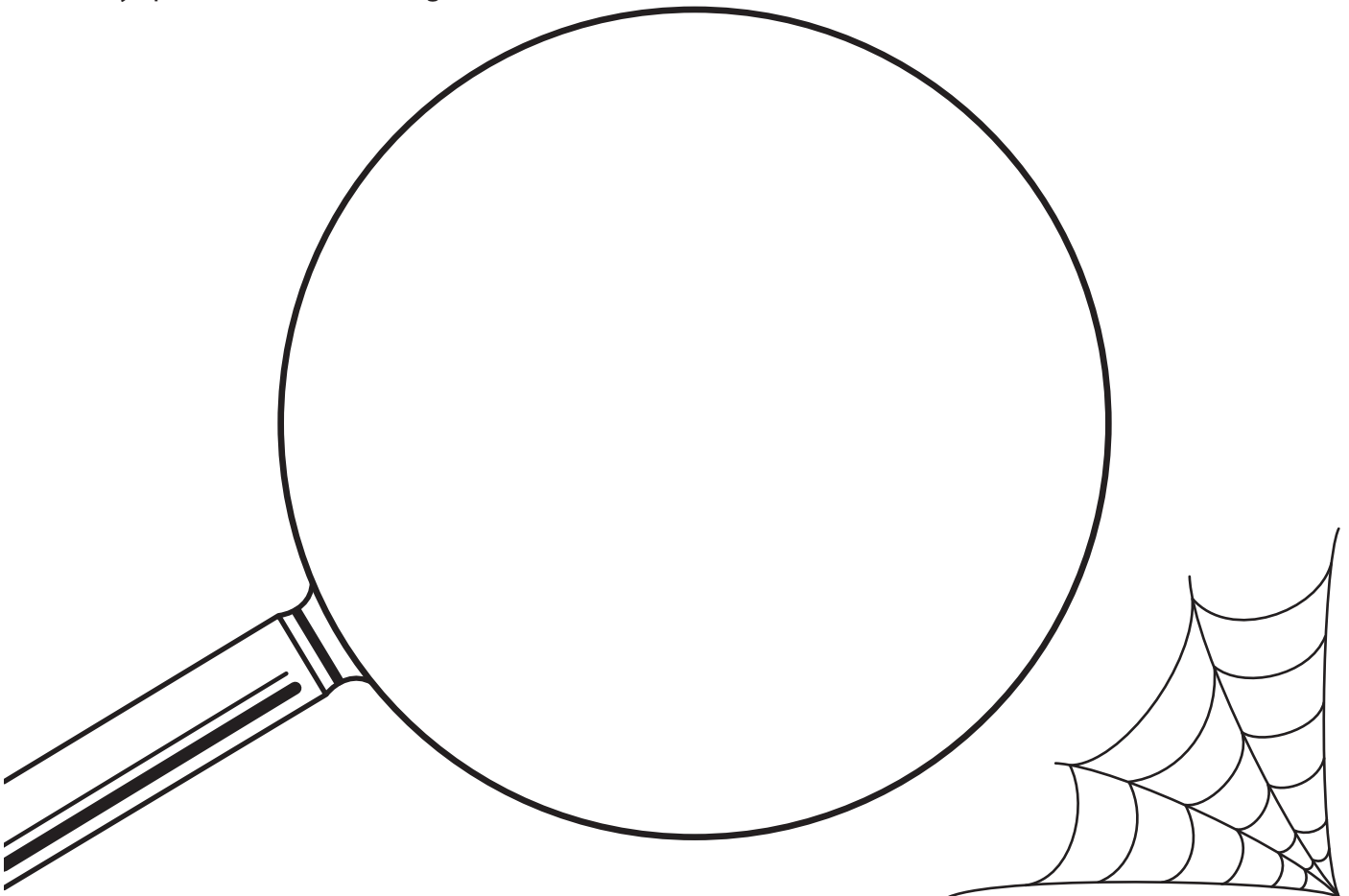


## Activity Sheet 1: Spiders

Name: \_\_\_\_\_ Date: \_\_\_\_\_

My spider as seen without a magnifier:

My spider as seen with magnifier:



## Activity Sheet 2: Our Terrarium

Name: \_\_\_\_\_ Date: \_\_\_\_\_

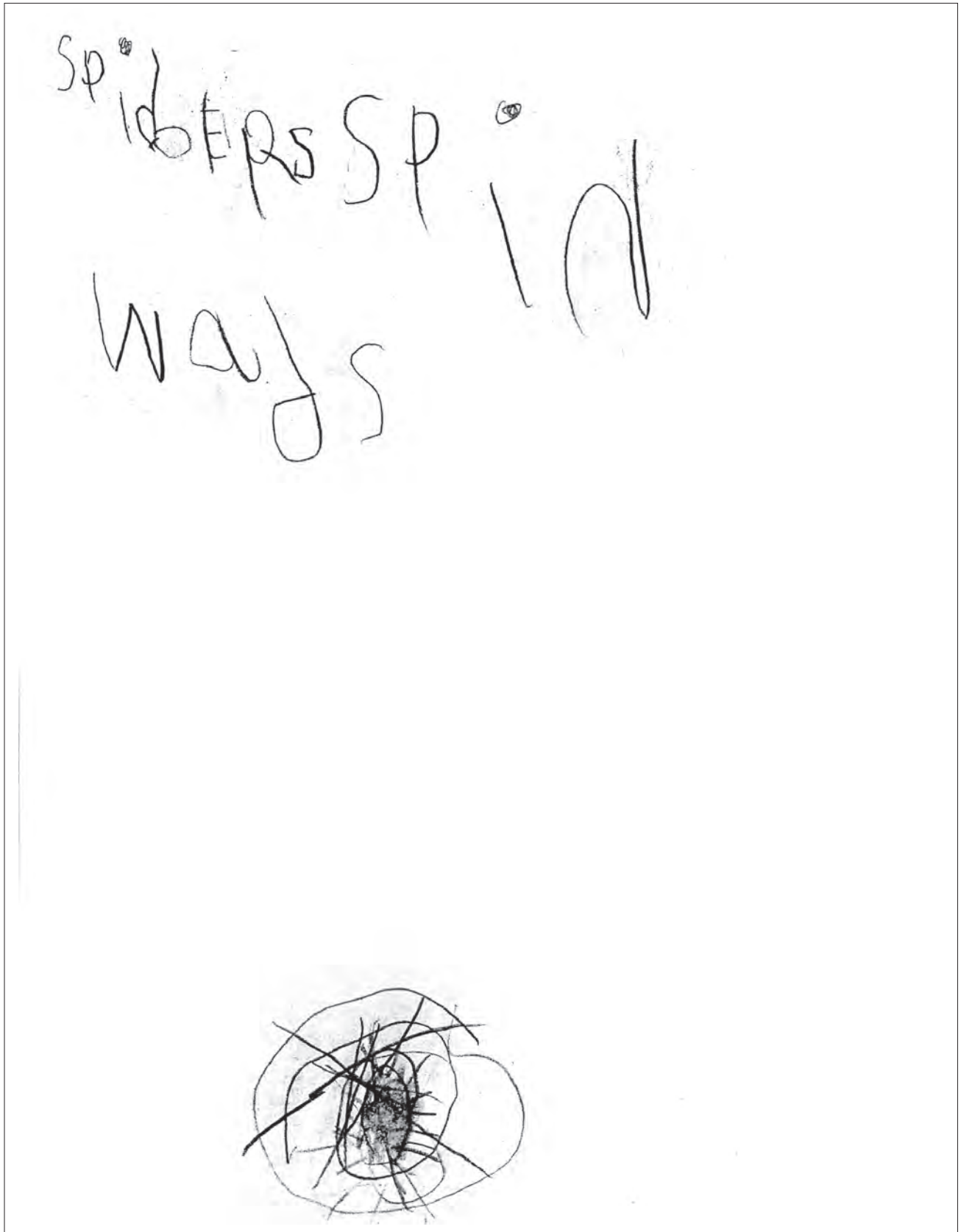
Here is our terrarium.

Draw what it looks like inside.



What is happening in the terrarium?

### Sample Science Logbook Entry




### Sample Science Logbook Entry

Spiders Spin webs

on erche side of  
there boder is 4 lag's  
and Spiders  
Come in all Coler



Sample Science Logbook Entry



The illustration shows a spider in the center, surrounded by its web. Labels include 'Spiders' on the left, 'Spin' above the spider, and 'Web's' to the right. A speech bubble from the spider says 'I'm a Spider. Do you know what I can do? I can spin a web. I can catch my food. I can spin a cocoon. I can spin a cocoon for my babies.' To the right of the spider, it says 'AND have 8 legs and spin'. Below the spider, it says 'a sac for its babies. Its web helps'. On the far right, there are two lines of text: 'Spiders are good' and 'to have in your world.'.

ACTIVITY  
**2**

## Exploring the Characteristics of Living Things

### Outcomes

Students will be expected to

### Science Primary

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

### Science 1

identify and investigate common characteristics of humans (100-8)

identify and use a variety of materials, information, and ideas to explore balance (201-7)

### Questions

- How are dogs the same?
- How are dogs different from one another?

Apply these questions to a variety of different animals.

### Materials

- animal models for sorting (These can be small plastic models, photos, or stuffed animals. Try to provide models that are as realistic as possible.)
- ground sheet or shower curtain
- markers
- masking tape
- sorting rings
- chart paper

### Procedure

To begin this activity, ask students what they think an animal needs to live.

The use of dogs is suggested as most children are familiar with them. Make a list of the students' responses (some of these may be air, companionship, food, shelter, water). Ask the students: How can we describe a dog? Are all dogs the same? What are some differences among dogs?

Next, ask students to sort the dog pictures or models as "This" and "Not This" (for example, tall or not tall, curly fur or not curly fur).

The sorting may be done using a ground sheet and/or shower curtain. Divide the sheet into rectangles using masking tape. The students may put their picture/model in the appropriate section. Students can also record their sorting in a chart. In science, sorting uses a dichotomous key: "this, not this."



As a class, discuss the students' findings. Then, ask the following questions:

- Do all dogs eat the same thing?
- Can all dogs live in cold climates?
- Can all dogs swim?
- Can all dogs balance on two feet?

Students may draw pictures of the different dogs that they have seen or talked about. Having dogs visit the classroom can be an exciting for the students and is a wonderful opportunity to teach students about safety issues regarding meeting and greeting dogs.

Ask the students if they have noticed any similarities between dogs and cats. Make a list. Do they need the same things in order to live? Are there any differences between the two?

The above discussions would probably take from one to three days. Provide small groups of students with a bag or box containing a variety of animal models. The students must sort their animals based on what the animals have in common (e.g., four legs and not for legs, tail and no tail).

Draw the student's attention back to the list of student responses on what animals need to live. What do dogs need to survive and live? What does our class spider need to survive and live? What do humans need to live? Do all living things need these? Ask students to name common characteristics that help identify a living thing.

Other activities in this component will showcase differences in how animals use their physical characteristics to meet their needs to survive. Keeping the chart visible and ready to be added to will be a helpful teaching/visual aid.

**Extension:** Do plants need the same things as humans need to live?

# ACTIVITY

## 3

## Living and Non-Living

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

### Science 1

question, explore, observe, and identify the similarities and differences in how living things are able to meet their needs (200-1, 100-4, 100-5, 100-7)

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

### Questions

- How are you able to tell what is living and non-living?
- Does a living thing need non-living things?
- What are the characteristics of non-living things?

### Materials

- copies of Living Things Cards (for Part B)
- magnifying bug viewer jars or clear plastic containers and magnifying glasses
- plastic bags
- two sorting rings for each pair of students
- wide variety of living and non-living things

### Procedure

**Part A:** Discuss, separately, the characteristics of living and non-living things with the class. Develop a senses chart by asking students what senses they may use to decide what is living or non-living and have them make observations outside. Provide students with magnifying jars for the living things. Teachers should demonstrate the collection procedure for the students. The students can return the living things after they sort them. Alternatively, the students could take pictures of the living things. The non-living things can be put in a plastic bag. This can be done in groups of two or more.

Students should look at the sorting done by others and discuss their sorting rules. Can they guess the other groups' sorting rules? Are students able to find similarities and differences within and among their collections? Can the students use language from class charts or senses charts as they share and record their observations? Have students record what they collected and how they sorted them.

**Part B:** Read the descriptions of living things to the students. Students can discuss what the living thing is. Students may also match pictures and name cards to the living things described.

## Living Things Cards: Descriptions

<p>I have six legs, and I live in a hill with many others just like me. I am tiny, and I have hatched from an egg. My name starts with "a." What am I?</p>	<p>I live in a cave, and I sleep in the daytime by hanging upside down. I like to eat insects. My name starts with "b." What am I?</p>
<p>I am very large and furry. I have four legs, and I live in the forest in a den. I like to eat berries and honey. My name starts with "b." What am I?</p>	<p>I like to eat trees. I have a flat tail that I use to help me swim. My name starts with "b." What am I?</p>
<p>I can fly. I flit from flower to flower collecting pollen to make honey. I make a buzzing sound. My name starts with "b." What am I?</p>	<p>I live on a farm. I have four legs and am covered with fur. I have a long tail that I use to swat flies and other insects. Many people drink my milk. My name starts with "c." What am I?</p>

## Living Things Cards: Descriptions

<p>I live in the woods. I have four legs, and I can run and leap very fast. I have antlers if I am a male. I have brown fur. Sometimes people hunt me to eat. My name starts with "d." What am I?</p>	<p>I have two webbed feet, and I am a good swimmer. I live in ponds and lakes. I am covered with feathers, and I am a bird. I say "Quack! Quack!" My name starts with "d." What am I?</p>
<p>I have a long trunk and four big legs. I love to splash in the water. I have a huge appetite for grass and leaves. Some people ride on my back. My name starts with "e." What am I?</p>	<p>I swim in the water. I have gills, fins, and a tail. Some people like to eat me. My name starts with "f." What am I?</p>
<p>I live in the water much of the time. I am an excellent swimmer and hopper. I have a long sticky tongue that I use to catch insects. I hatch from an egg. My name starts with "f." What am I?</p>	<p>I have a long neck and four long legs. I live in Africa, and I eat leaves. I have large feet and am covered with big spots. My name starts with "g." What am I?</p>

## Living Things Cards: Descriptions

<p>I have strong back legs that I use to hop in the grass. I am an insect who has six legs. My ears are on my legs. My name starts with "g." What am I?</p>	<p>I live on farms, ranches, or in stables. I eat grass, hay, and oats. I can run very fast. I can carry a rider on my back, or pull a wagon or a sleigh. My name starts with "h." What am I?</p>
<p>I live in Australia, and I carry my baby in my front pouch. I have strong back legs that I use for hopping. My name starts with "k." What am I?</p>	<p>I eat eucalyptus leaves, and I live in Australia. People call me a bear but I am not. I have four legs, and I am a good tree climber. I have sharp claws. My name starts with "k." What am I?</p>
<p>I have six legs and a hard red covering. There are black spots on me. I eat harmful, small insects in gardens. I can fly. My name starts with "l." What am I?</p>	<p>I have a bushy mane if I am a male. I am a hunter. I live in Africa, and I am a member of the feline (cat) family. I have four legs, and I can run fast. My name starts with "l." What am I?</p>

## Living Things Cards: Descriptions

<p>I am covered with scales, have four legs, and I can walk very fast. I live in hot deserts. My name starts with "l." What am I?</p>	<p>I can climb, swing, and jump in the trees. I like to eat bananas and other fruits. I am a smart animal and live in the jungle. My name starts with "m." What am I?</p>
<p>I have eight legs and a soft body. I am a good swimmer, and I live in the ocean. When I am afraid I squirt an inky liquid from my body. My name starts with "o." What am I?</p>	<p>I have two long legs, and I am covered with feathers. I cannot fly but I can run very fast. When I am afraid, I bury my head in the dirt. I lay very large eggs. My name starts with "o." What am I?</p>
<p>I live on a farm. Some people think I am dirty because I like to root in the mud. I say "oink." My name starts with "p." What am I?</p>	<p>I am covered with fur, and I look like I am wearing a mask. I have a bushy tail, and I live in the woods. I have four legs, and my name starts with "r." What am I?</p>

## Living Things Cards: Descriptions

<p>I live in Nova Scotia in the spring and summer. I am covered with feathers, and I can fly. I have a red breast and I like to eat worms. My name starts with "r." What am I?</p>	<p>I am covered with wool. I live on a farm, and I say, "baa-baa." I have four legs, and I can run and walk very well. My name starts with "s." What am I?</p>
<p>I live in wet gardens, aquariums, or at the seashore. I have a soft body, and I carry a shell on my back. I leave a slimy trail when I slide along. My name starts with "s." What am I?</p>	<p>I have eight legs, and I can spin a web. I catch insects in my web, and I eat their soft inside bodies. I have hairy legs. My name starts with "s." What am I?</p>
<p>I gather nuts to eat. I live in trees, and I have a furry, bushy tail. I am a good tree climber, and I run fast. My name starts with "s." What am I?</p>	<p>I have a shell to cover my back. When I am afraid, I hide in it. I am a good swimmer, but I walk slowly on land. My name starts with "t." What am I?</p>

## Living Things Cards: Descriptions

I have no legs or bones.  
I feel slippery. I live in the dirt, and I eat dirt. My name starts with "w." What am I?

I live in zoos and in the wild in Africa. I eat grasses on the flatlands. I look like a horse but I have stripes. My name starts with "z." What am I?



## Living Things Cards: Names

ant

bat

bear

beaver

bee

cow

## Living Things Cards: Names

deer

duck

elephant

fish

frog

giraffe

## Living Things Cards: Names

grasshopper	horse
kangaroo	koala
ladybug	lion

## Living Things Cards: Names

**lizard**

**monkey**

**octopus**

**ostrich**

**pig**

**raccoon**

## Living Things Cards: Names

robin

sheep

snail

spider

squirrel

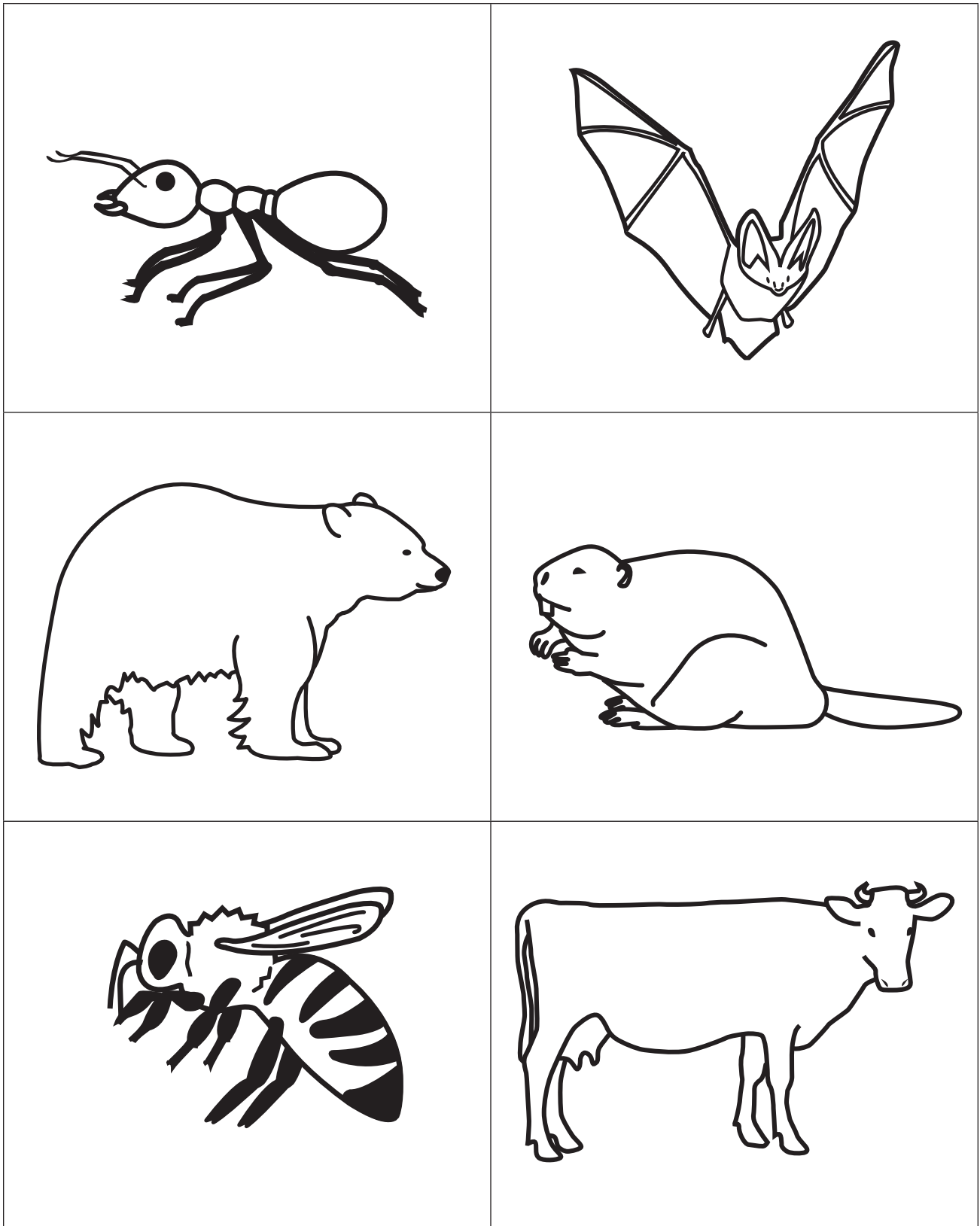
turtle

## Living Things Cards: Names

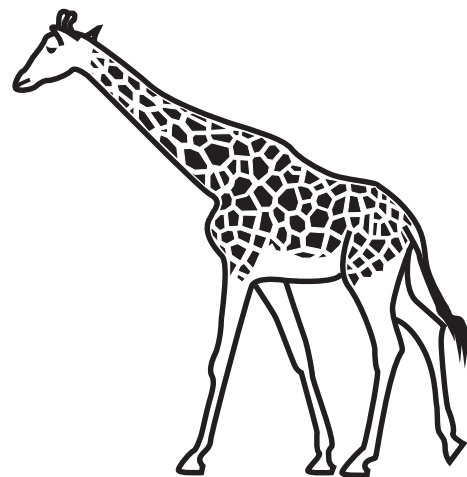
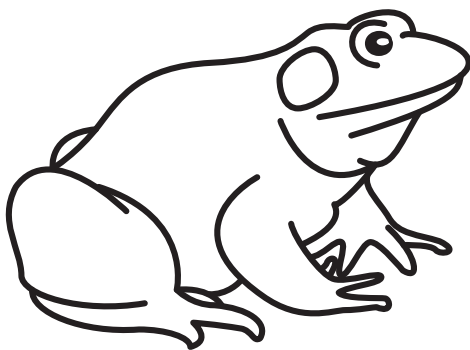
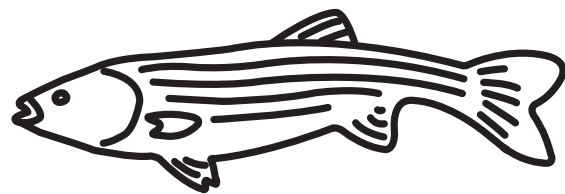
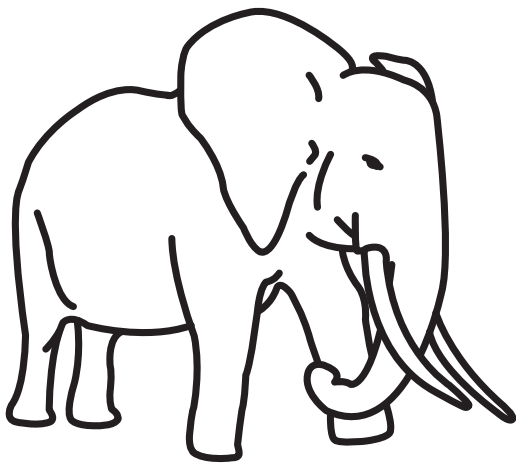
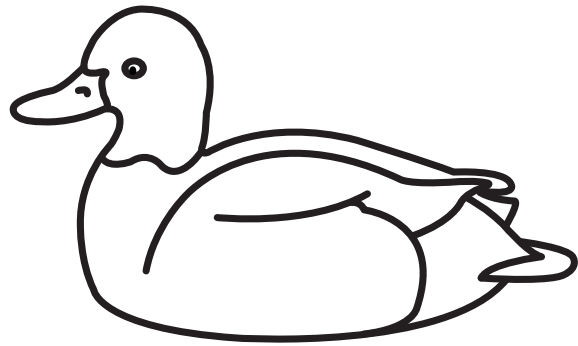
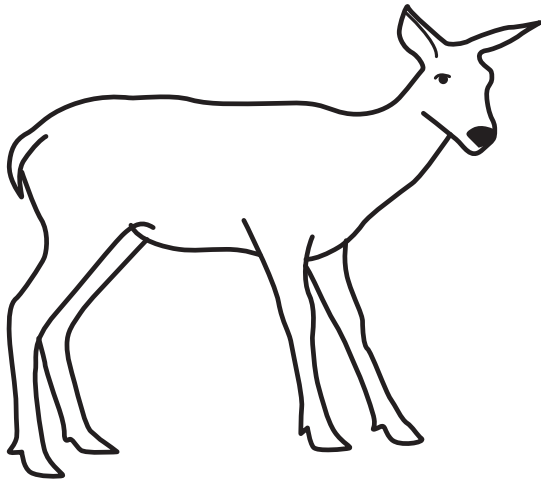
worm

zebra

## Living Things Cards: Pictures

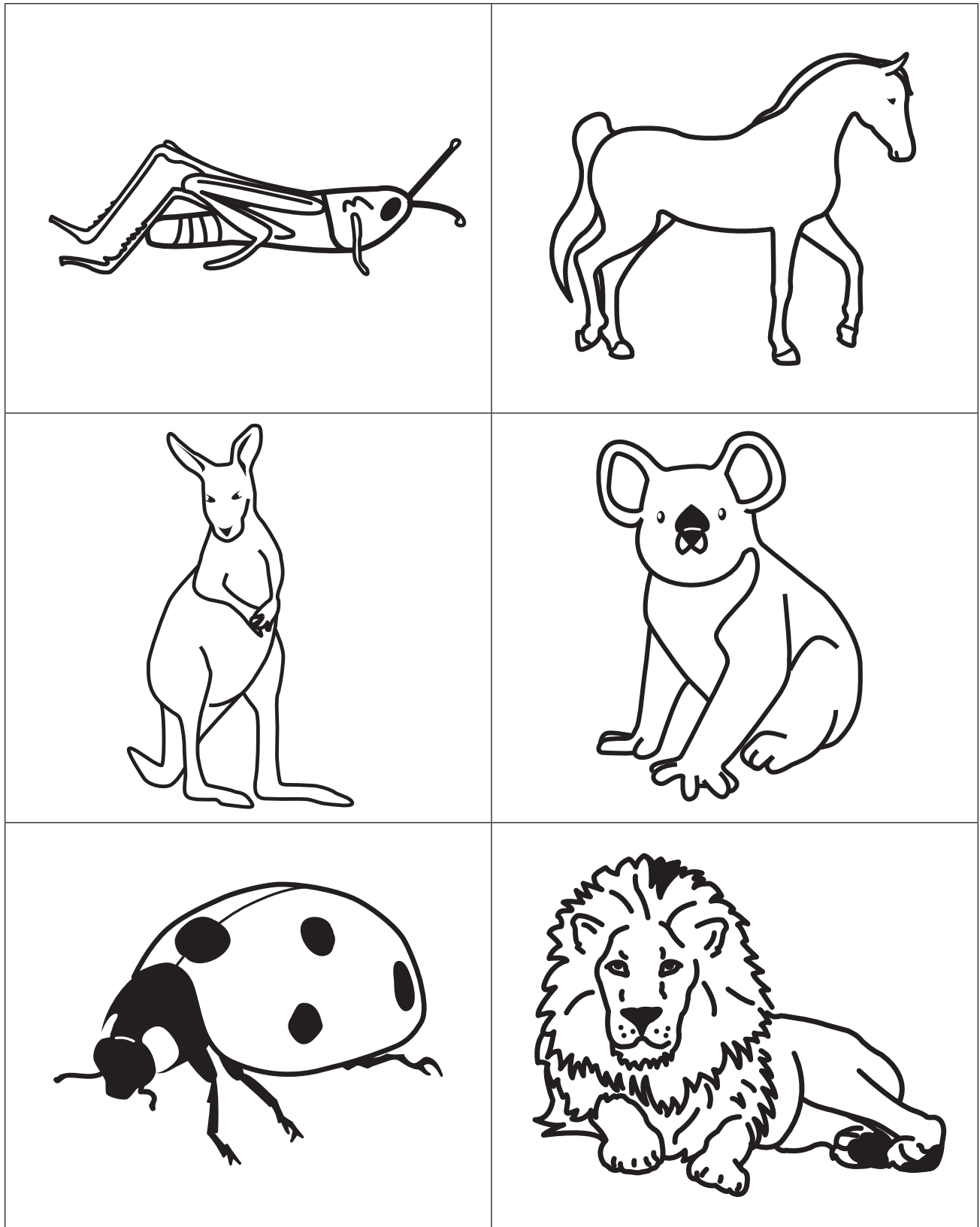


## Living Things Cards: Pictures

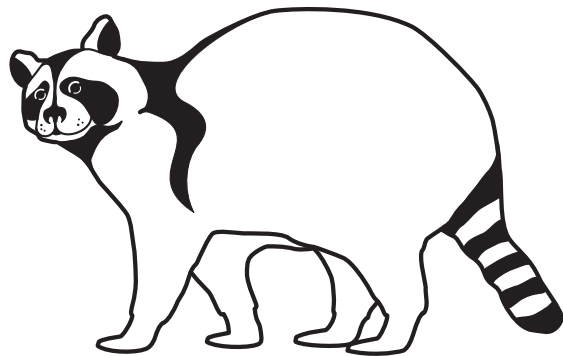
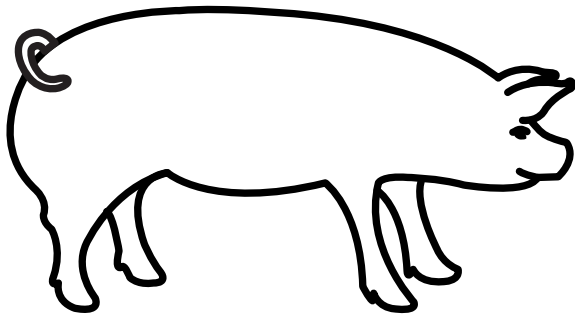
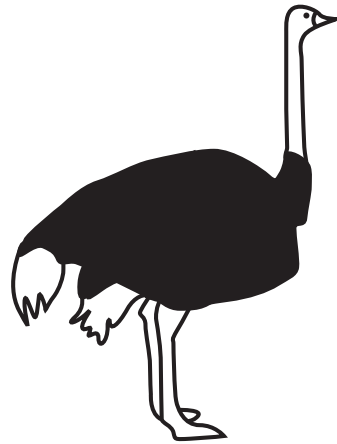
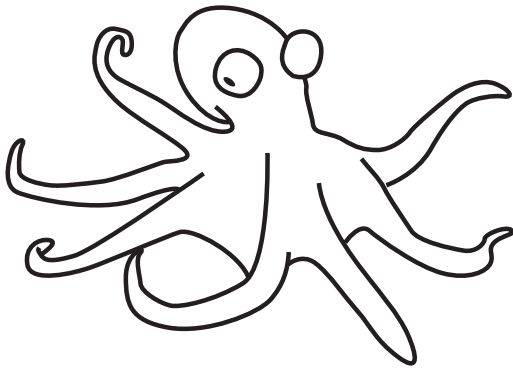
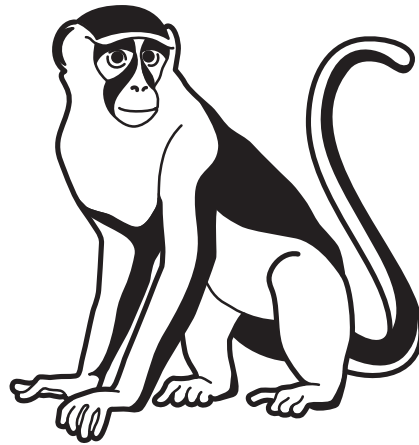
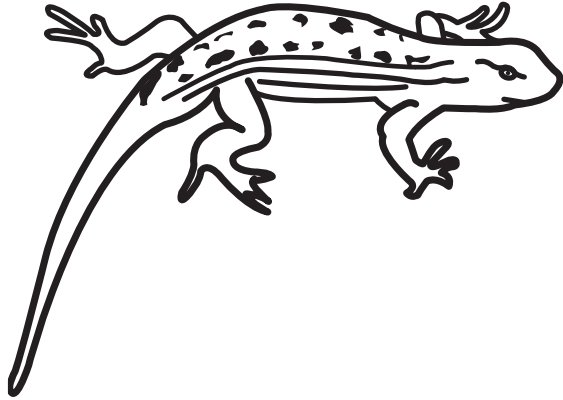




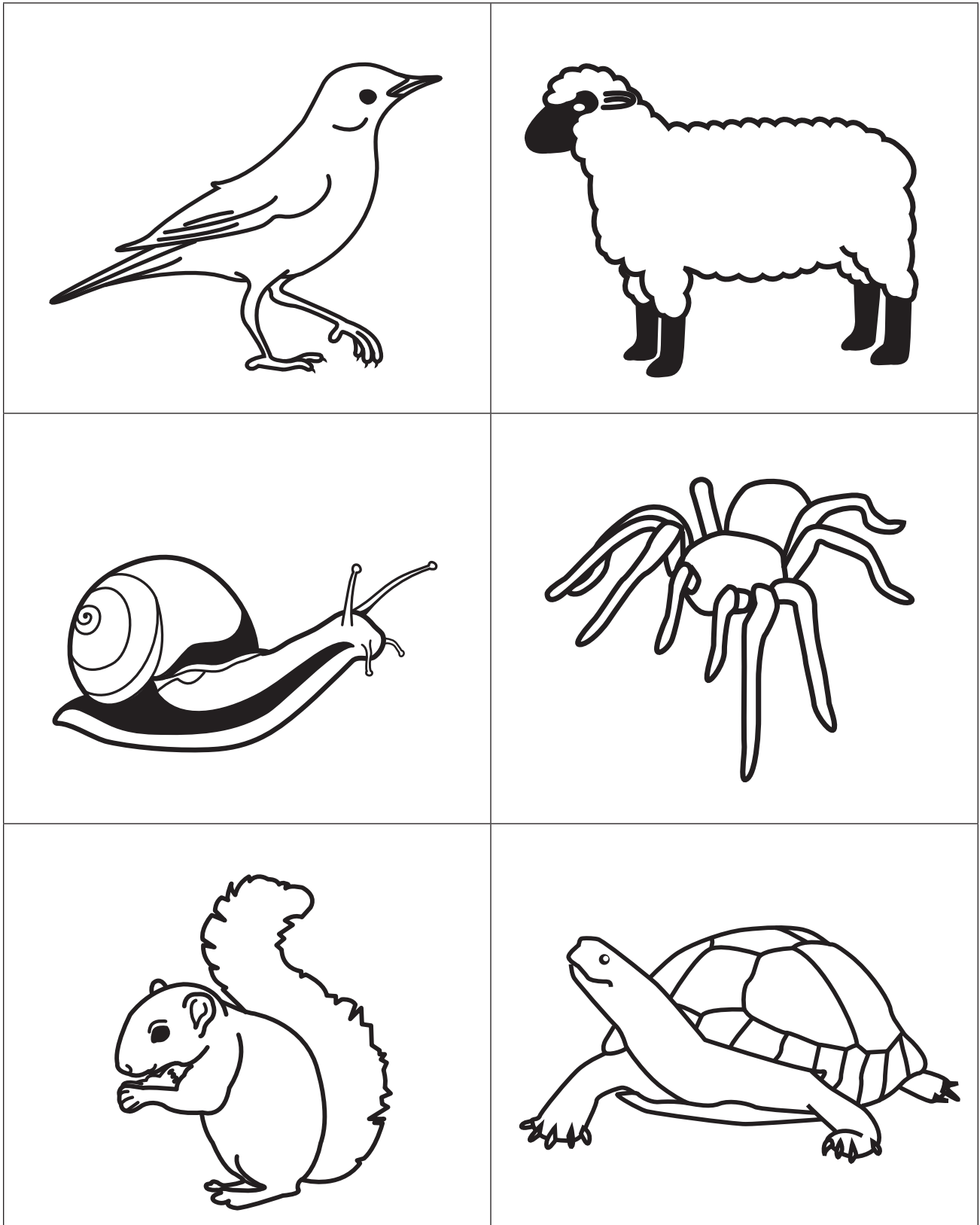
## Living Things Cards: Pictures



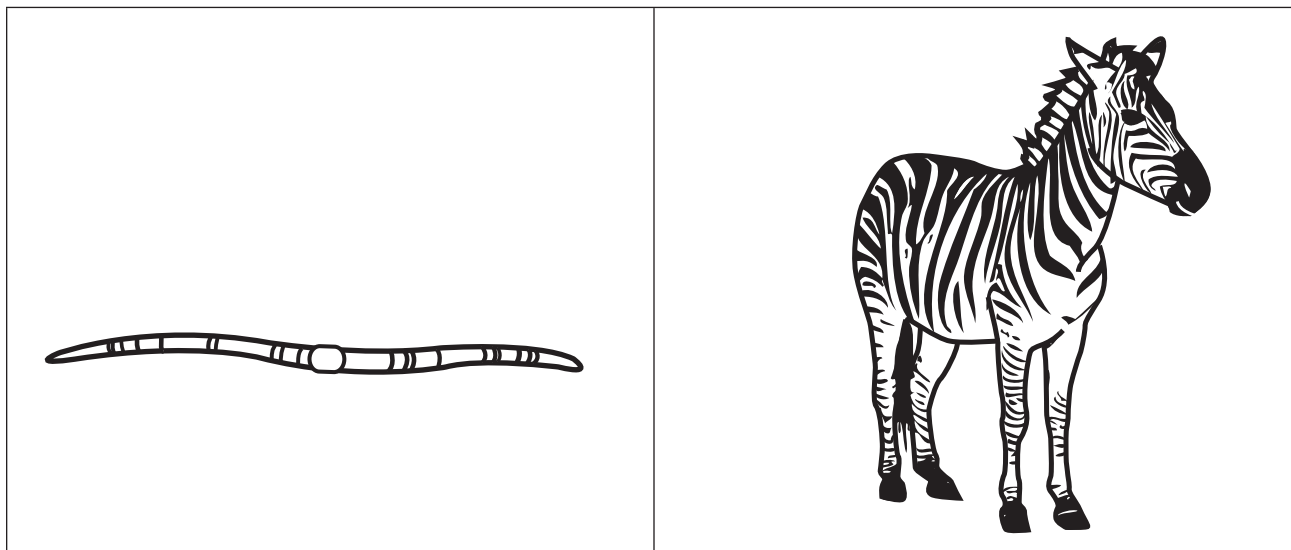
## Living Things Cards: Pictures



## Living Things Cards: Pictures



## Living Things Cards: Pictures



# ACTIVITY 4

## Insect Party

### Caution ⚠

Choose materials that are safe for tasting and smelling.

### Questions

- How does our class spider find its food?
- How does the spider know there is a fly in the web?
- How does the spider eat its food?
- How do other animals eat their food?
- What do you think it would be like to be an insect and have to find food?
- What differences did you notice between how you eat and how an insect eats?

### Materials

- Activity Sheet: Insect Party
- a variety of the following foods for each plate: cereals of different shapes and colours, small pieces of celery and lettuce, slices of carrots, raisins, chopped apples, etc.
- chopsticks (inexpensive wooden ones, for sale in Chinese food stores)
- fruit juice
- masks/costumes (Students may like to wear an insect mask, made in class or at home, or dress up as an insect or spider. )
- paper cups (for juice)
- paper plates
- paper towels
- pencils
- plastic teaspoons
- popsicle sticks
- recording chart for the class
- recording sheet for each “tool”
- straws

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

#### Science 1

question, explore, observe, and identify the similarities and differences in how living things are able to meet their needs (200-1, 100-4, 100-5, 100-7)

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

## Procedure

Ask questions such as: What do you think insects do all day? How does an insect pick up things, carry things, eat, or drink? Then introduce the Insect Party activity.

Tell the students that at the insect party they will pretend to be insects. Students have to eat and drink using the tools provided.

- Demonstrate how to use each tool. Does it matter where they hold the tool?
- Helpers or volunteers would be an asset. Make sure that new utensils are set up for each rotation. As well, ensure that the children are recording whether they found the task easy or hard.

Students buzz around the room doing the Insect Boogie Buzz (an insect dance they make up) while the tables are set up. It is suggested that each table be designated with one “tool” for the insects to try. Students record on the sheet whether they found the tool made it easy or hard for them to eat their food. After a few minutes, students rotate to the next table and try out the new tool, again recording their findings.

When the food is gone, close the activity by discussing students’ observations. Bring the students’ recording charts to your discussion area.

- Is it possible to pick things up using different tools?
- Does it matter where you hold the tool?
- Is it hard for the insects to pick up their food?
- What “tools” do insects have to help them pick up, carry, and eat their food?
- Are there any other things that would be hard for them to pick up?
- Do insects give up?
- What if there was something in their way or something covering their food? (e.g., pollution, or something that has destroyed their home or web)

Students could record or draw an insect eating its food. They could use a diagram or words to describe the process.



# ACTIVITY

## 5

## Camouflage and Colour

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

### Science 1

question, explore, observe, and identify the similarities and differences in how living things are able to meet their needs (200-1, 100-4, 100-5, 100-7)

### • Questions

- Why do animals need to “hide”?
- Do you know of any animals that have a colour that makes them blend in with their environment?
- What should you think about when deciding what colour your bird or lizard should be?
- How did you hide your bird or lizard?

### Materials

- Camouflage Templates (Bird and Lizard)
- art paper
- images of animals blending in with their environment (e.g., tiger, polar bear, snowshoe hare, deer)
- scissors
- variety of colouring tools: crayons, pencils, paints
- white glue

### Procedure

Introduce the lesson with a discussion based on student’s responses to the first two questions above. Show the students the images of various animals in a camouflaged state.

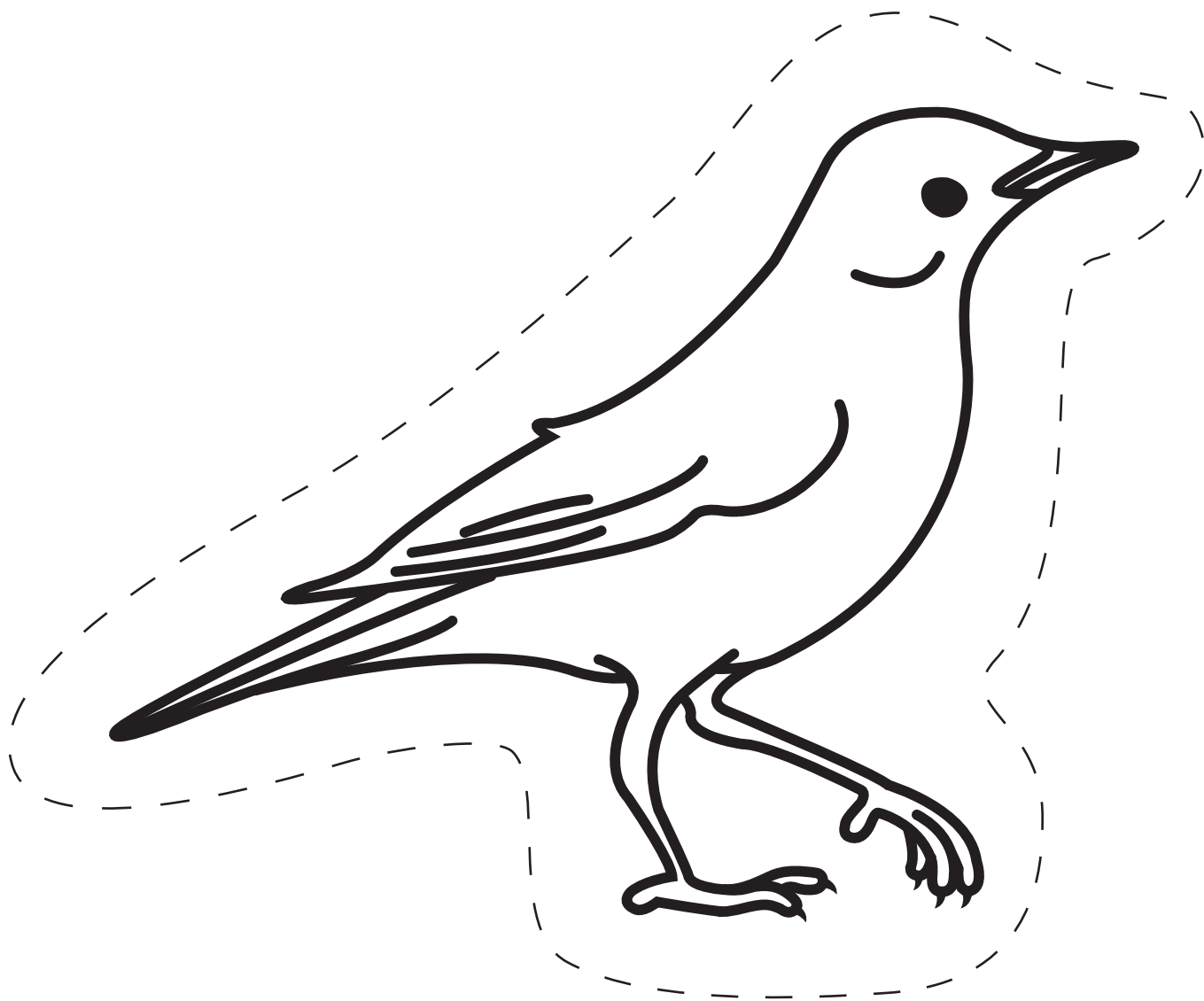
Hand out copies of the camouflage bird and lizard templates to the students. Instruct them that we are pretending these animals all live in the classroom. The animals need to be able to feel safe from their predators. They also need to be able to blend in with the environment in order to help them sneak up on their own food. Ask the students to look around the classroom and find a spot where they think their bird or lizard would like to live. Instruct the students to colour/decorate their bird or lizard so that it will be camouflaged.



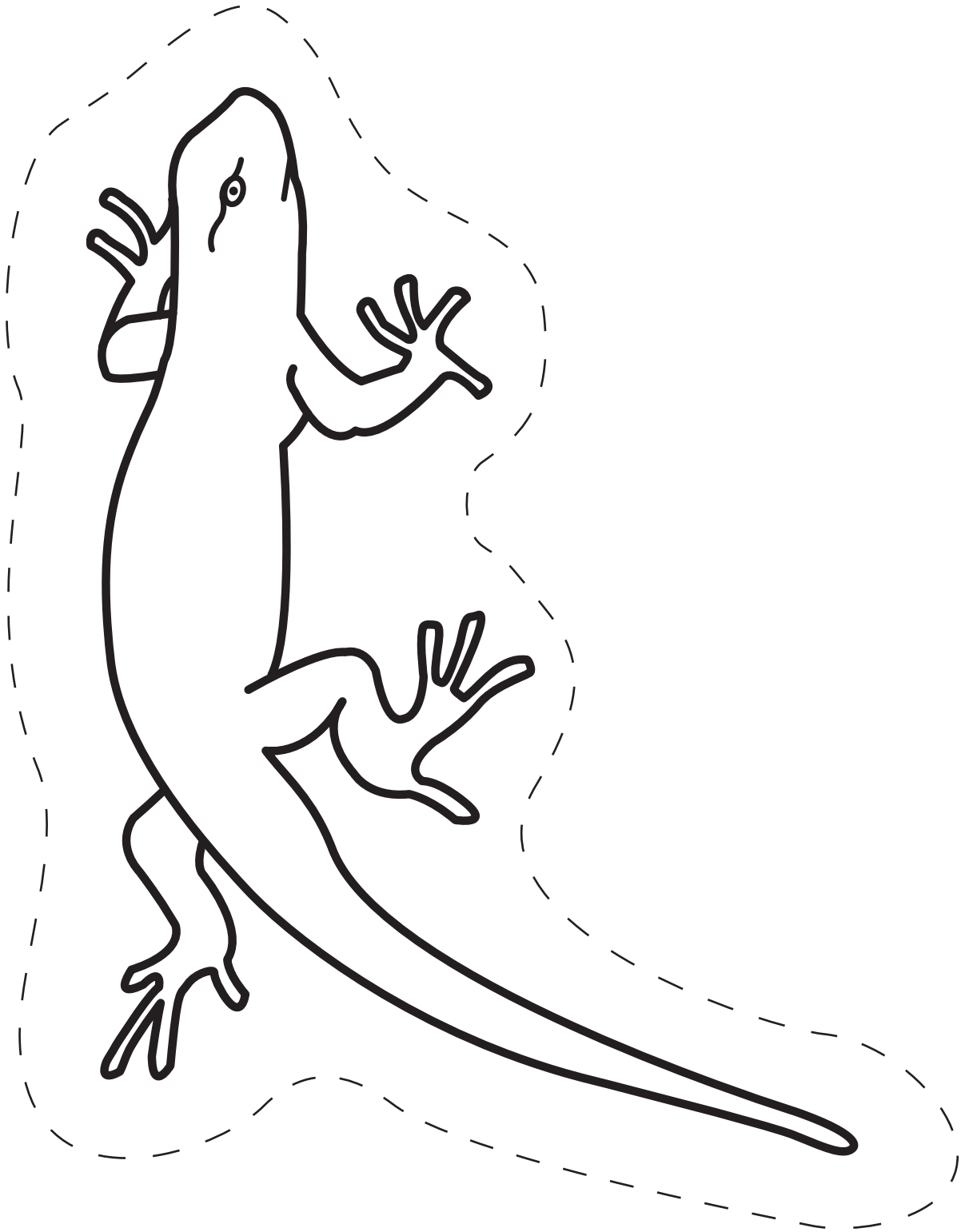
Students can then cut out their animals. Select one student to leave the room for a few minutes. Ask students to place their animals so they will be camouflaged in the classroom. Invite the student back into the room. That student, who has become the predator, has one minute to find as many of the hidden animals as possible. You can play a few rounds of this game, having the students switch their animals around the room as a new predator is invited in to catch as many animals as they can. As each game progresses, make a note of the animals that were not caught and ones that were always caught. Discuss what made those animals successful in outsmarting the predator. What role did camouflage have? Why were certain animals always caught?

Have students glue their animal onto art paper and then create an environment around it that helps to camouflage it.

## Activity Sheet: Camouflage Bird



## Activity Sheet: Camouflage Lizard



# ACTIVITY

## 6

# Using Smell, Taste, and Sound to Explore Our World

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

### Caution

Choose materials that are safe for tasting and smelling.

### Questions

- What do you smell?
- What words can we use to describe what we are smelling?
- When you sniff this smell, what does it make you think about? What does it tell you about where you are?
- Do all animals have the sense of smell?
- Do all animals smell with their noses?
- Does the smell make you change the way you move or feel?
- How do animals use their sense of smell?

Ask the same questions above, substituting the senses of hearing and tasting for smelling as is required for parts A, B, and C below.

### Part A: Using Smell to Explore Our World

### Materials

- Activity Sheet: Using Smell to Explore Our World (copies or science logbook)
- chart paper
- cotton balls
- labels for canisters marked #1 and #2
- markers
- Safely Exploring Scents poster
- two small containers for each pair of students
- vanilla and vinegar (as scents)

## Procedure

Prepare the scents in the containers by putting a cotton ball at the bottom of each container and then adding drops of vanilla and vinegar to different containers. Make sure all the containers labelled #1 have the same scent added. Ask the students to take turns smelling containers 1 and 2.

You may wish to act as a secretary for the class. Record students' comments on chart paper as they describe the smell.

Refer to the questions above. Then ask: How do these smells make you feel? What do they tell you? What do they remind you of? When you are outside, what do smells tell you about your environment? What would the smell of fire tell animals to do in a forest?

Ask students to reflect on their sense of smell in their logbook or the activity sheet.

## Part B: Using Taste to Explore Our World

### Materials

- Activity Sheet: Using Taste to Explore Our World (copies or science logbook)
- markers
- chart paper
- small paper plates
- raisins, salted pretzels, two lemons, unsweetened chocolate (chopped into small bite-sized pieces)
- toothpicks

### Procedure

Students have their own sample plates with the four food samples. Have everyone sample the one of the foods. Introduce the four vocabulary words of sweet, sour, salty, and bitter. Acting as secretary, categorize the foods tasted. Ask students: What does this taste like? Continue with the other three food samples. Refer to the Questions section above, getting the students to make inferences about possibilities based on the information from the taste test.

Inferences are statements based on observations. For example, some butterflies have markings on their wings that closely resemble a poisonous butterfly that tastes really sour and rotten. They use this trick to help them avoid getting eaten by birds.

Ask students to reflect on their sense of taste in their logbook or the Activity Sheet.

## Part C: Using Sound to Explore Our World

### Materials

- Activity Sheet: Using Sound to Explore Our World or science logbooks
- audio recordings of various sounds (e.g., water running, door closing, toilet flushing, vacuum cleaner, dog barking, cat purring, baby crying, feet clomping, horn honking) (If possible, make a recording of the same sound at different intensities, such as a baby cooing, gurgling, laughing, whimpering, and then crying, or a dog barking, whining, howling, or growling.)
- chart paper
- markers
- science logbook

### Procedure

In preparing the sounds, it is a good idea to preface each sound with a narrator's voice saying "Sound number one ... , sound number two ... "

Play the recording of the sounds for the students to hear. Have students describe how the sounds make them feel in their science logbooks. Now play the sounds again. Acting as their secretary, record their comments on the chart paper. What or who could have made these sounds?

Have a radio playing while the sounds are played for a third time. Can they hear the sounds clearly? Have they ever been anywhere where the sound is really loud? Is there a difference between a sound and a noise? Discuss noise pollution.

Play the sounds at different volumes. As students listen, ask them how the sounds are making them feel. Are the sounds sending them a message? When you hear a dog growling, what message is going to your brain? When a cat is purring, what message is going to your brain? Do all animals hear? How does hearing help animals live and survive in their environments? What if you were a deer that could not hear?

Ask students to reflect on their sense of sound in their science logbook or the activity sheet.

## Safely Exploring Scents Like a Scientist

✓ Do This!



✗ Not This!



## Activity Sheet: Using Smell to Explore Our World

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Draw things that you like to smell.






Draw things that you do not like to smell.








# Activity Sheet: Using Taste to Explore Our World



Name: \_\_\_\_\_ Date: \_\_\_\_\_



Draw things that taste good to you.  


Draw things that do not taste good to you.  

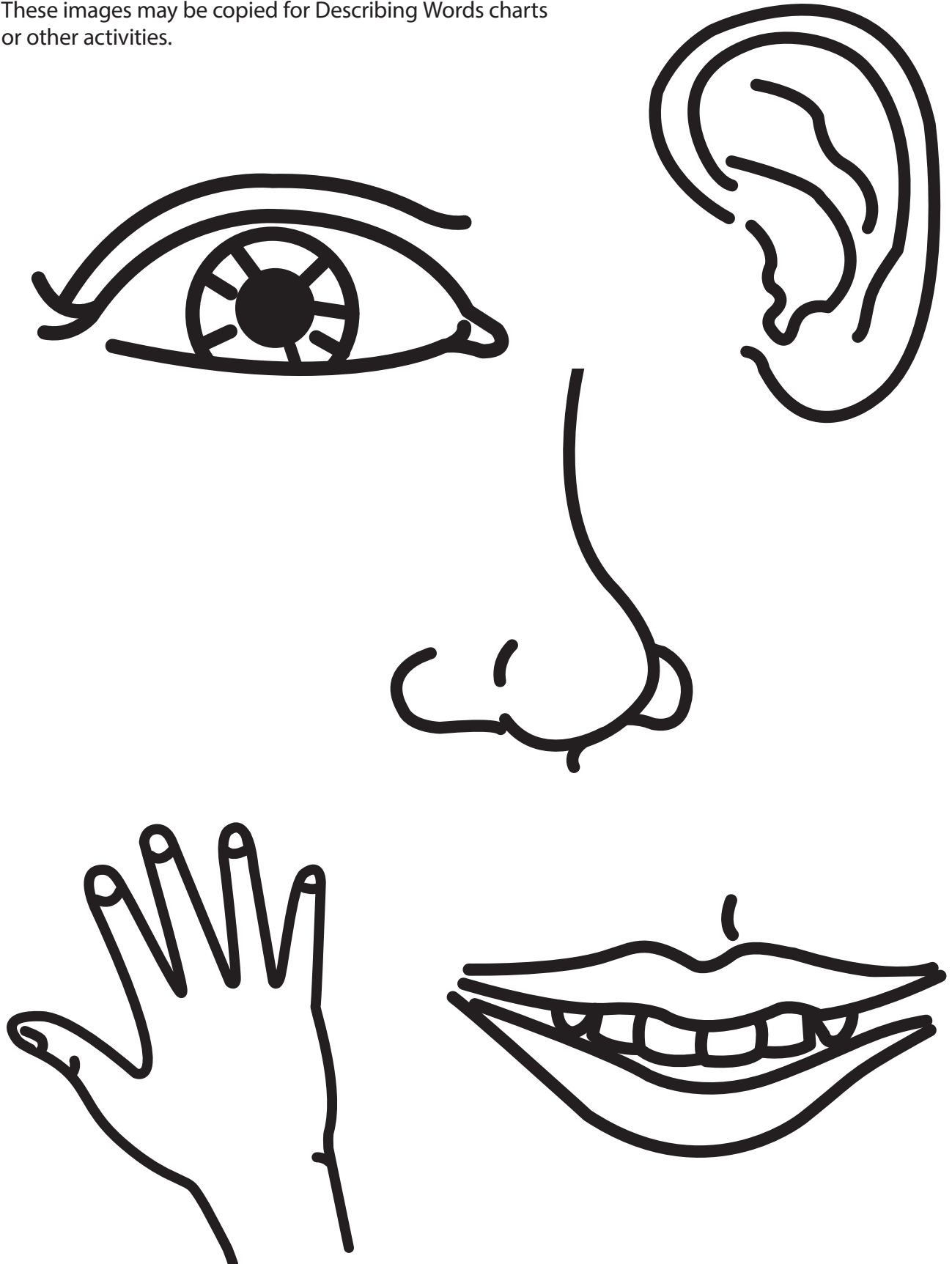

## Activity Sheet: Using Sound to Explore Our World

Name: \_\_\_\_\_ Date: \_\_\_\_\_ - \_\_\_\_\_

Draw things that you like to hear.  


Draw things that you do not like to hear.  


These images may be copied for Describing Words charts or other activities.



Use a separate sheet of chart paper to record students' describing words for each sense. Leave the chart paper up to add other words throughout the year. See sample below.

### Sample Recording Chart

Describing Words for Smell
sweet flowery stinky fruity lemony yummy musty awful

# ACTIVITY 7

## The Popcorn Test

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

### Caution

Choose materials that are safe for tasting and smelling.

### Questions

- What do you see?
- What do you smell?
- What do you feel?
- What do you hear?
- What do you taste?
- Now what do you think? What do you know?

### Materials

- Activity Sheet: The Popcorn Test or Activity Sheet: The Apple Test
- individual paper plates
- large chart paper or students can use their science logbook
- method for popping corn (air popper or microwave)
- popping corn (popped and unpopped)

### Procedure



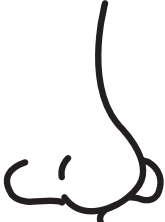


**Popcorn:** Provide students with samples of unpopped corn. Using the senses chart as a guide, have students offer their observations and thoughts for each sense as they attempt to describe their corn. Then, if possible, pop the corn in front of the students. Again, record their impressions. Guide them as they attempt to use a vocabulary for their descriptions. Review the questions with the students. Ask them what they know about the corn just by using the information from their sense of smell or touch. Can this sense tell them if the corn is safe to eat?

**Apples:** Do a similar senses test by comparing apples. Peel and core some apples. Using a slow cooker, prepare applesauce in the class. Follow the same questions and procedures.

## Activity Sheet: The Popcorn Test

Name: \_\_\_\_\_ Date: \_\_\_\_\_



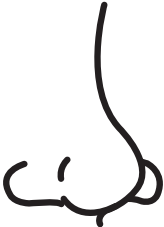


Use your senses to describe popcorn.

What do you ...	Unpopped	Popped
See? 		
Hear? 		
Smell? 		
Touch? 		
Taste? 		

# Activity Sheet: The Apple Test

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Use your senses to describe apples.

What do you ...	Apples	Applesauce
See? 		
Hear? 		
Smell? 		
Touch? 		
Taste? 		





# Component 2: Materials, Objects, and Me

## Preparation Suggestions

- Provide an interest table (e.g., models of buildings, boats, structures, assorted materials, wools, fleece, yarn, assorted building blocks, tools).
- Plan ahead by collecting the materials listed in the activities.
- Teachers may wish to refer to *Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004) and *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005) for additional activities, resources, and equipment lists.
- Collect and display assorted texts, posters, and photos depicting different ways in which people live and use materials around the world.
- Prepare for Activity 11 by finding images of ways our senses help us stay safe.

## Component 2 Resources

Various classroom resources that the teacher may have, such as

- *A Book about Color: A Clear and Simple Guide for Young Artists.* (Gonyea 2010)
- *At a Construction Site, Wheels at Work, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of?* (Kilby 2006) (NSSBB #: 1000654)
- *The House That Max Built, Literacy Kindergarten Cross-Curricular Kit: My Community* (Newhouse 2008) (NSSBB #: 1000652)
- *Shared Reading Card 1: What's That Made Of? and How Does It Look?, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of?* (various authors n.d. a) (NSSBB #: 1000654)
- *Shared Reading Card 2: Making New Colours, Making a Mask, and Make a Mud Pie, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of?* (Various authors n.d. c) (NSSBB #: 1000654)
- *The Three Little Pigs*
- Winnie the Witch series (Thomas 2008)

# ACTIVITY

## 8

# People Make Objects

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

### Science 1

demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

### Questions

- What senses can we use to help us describe this material object?
- Describe the objects using more than one of your senses.
- Can we change the way this material/object looks?
- How should we describe it now?

### Materials

- access to drinking water
- aluminum foil
- chart paper to record the class' observations
- photo of a sheep
- pieces of wool
- plastic basin
- samples of woolen sweaters, skirts, socks, mittens, etc.
- science logbook
- washed fleece from sheep (if possible)

### Procedure 1

Place a sample of wool/fleece on the students' desks. Ask the students to use their senses to describe it. Record their thoughts and words on a class chart. Now put samples from your sweaters and socks collection on their desks. Again, ask students to describe the wool using their senses. Draw their attention to the different textures and stitches. Explain to the students that the first item is a "material" (wool/fleece) and that people use materials to make "objects" (such as sweaters, socks, and mittens). Refer to the class chart to show how the materials change with our help and ideas to make the things that we need and want.

## Procedure 2

Take a fresh sheet of aluminum foil; ask the students to describe it as you record their ideas on the class chart. Ask them if there is a way to change the foil's look or purpose? Ask the students if the sheet of foil as it is now will help you to get a drink of water? Record their ideas on the board. Tell the students that their challenge is to take this sheet of foil (the material) and change it in some way, without adding anything to it, so that it will hold some water. You want them to make a drinking cup. Present each student with a sheet of foil. Set up a testing station where water may be poured into their cup, without too much mess.

After a few successful cups have been made, close down the testing station and discuss what made those designs successful and what needed to be fixed with the others. It is a good idea to restart the testing station so that all students can experience success. Have students record their discoveries in their science journals with words and diagrams.

**Extension:** For those interested, this concept can be introduced as the class makes ice cream—a photo of a cow, a carton of milk, the other ingredients, and a container to shake it. This is a little more messy but a very tasty way to illustrate how we change materials to make objects.

### Check It Out

- An online search of “making ice cream with Ziploc bags” brings up an easy recipe.

# ACTIVITY 9

## Colours in Our World

### Outcomes

Students will be expected to

### Science Primary

explore how characteristics of materials may change as a result of manipulating them (101-1)

observe, using one or a combination of the senses (201-4)

### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

### Questions

- What are the colours you see around you?
- How many colours are there?
- Where do colours come from?

### Materials

- Activity Sheet: My Colourful Tail Feathers (Part A)
- Activity Sheet: My Colour Wheel (Part B)
- art paper (large, white)
- card stock
- cellophane paper (red, blue, and yellow; three per student)
- chart paper
- hole punch
- paint (red, blue, and yellow)
- paintbrushes
- paper fastener
- scissors
- white glue

### Part A: My Colourful Tail Feathers

### Procedure 1

This may be done by individual students or in groups. Prepare as many templates as needed. Each student or group will need two birds and six tail feathers copied onto card stock. This is also a great activity to do with learning or reading buddies. While the older student makes the tails, the young partner can colour the bird. Then, they can assemble it together.

Make sure to cut out the centre of each tail feather. Cut the cellophane a little bigger than the window of each tail feather. One red, one blue, and one yellow will be needed. Sandwich each piece of cellophane between two tail feathers and glue them together. When they are dry, stack them on top of each other, punch a hole in the centre of the narrow end, and fasten together with the paper fastener. Students then colour the tail feathers and body on both sides, cut it out, and add it to the front of the tail feathers with the same paper fastener.

#### Teacher Note

The teacher, or an assistant such as a student from a higher grade level, should assist with cutting, gluing, and hole-punching.

## Procedure 2

Ask the students to try putting two tail feathers over one another and then to hold the tail up to a window or bright light. What colour did they make? Try another combination. What happened? Students can record their discoveries in their science logbooks.

Working with the tail feathers is a great lead-in to Part B, which involves paint.

### Part B: My Colour Wheel

## Procedure

Students will investigate colour changes by mixing various combinations of paint colours together on art paper (card stock or index cards could also be used). If using index cards, students can attach them to their science logbooks.

For example:

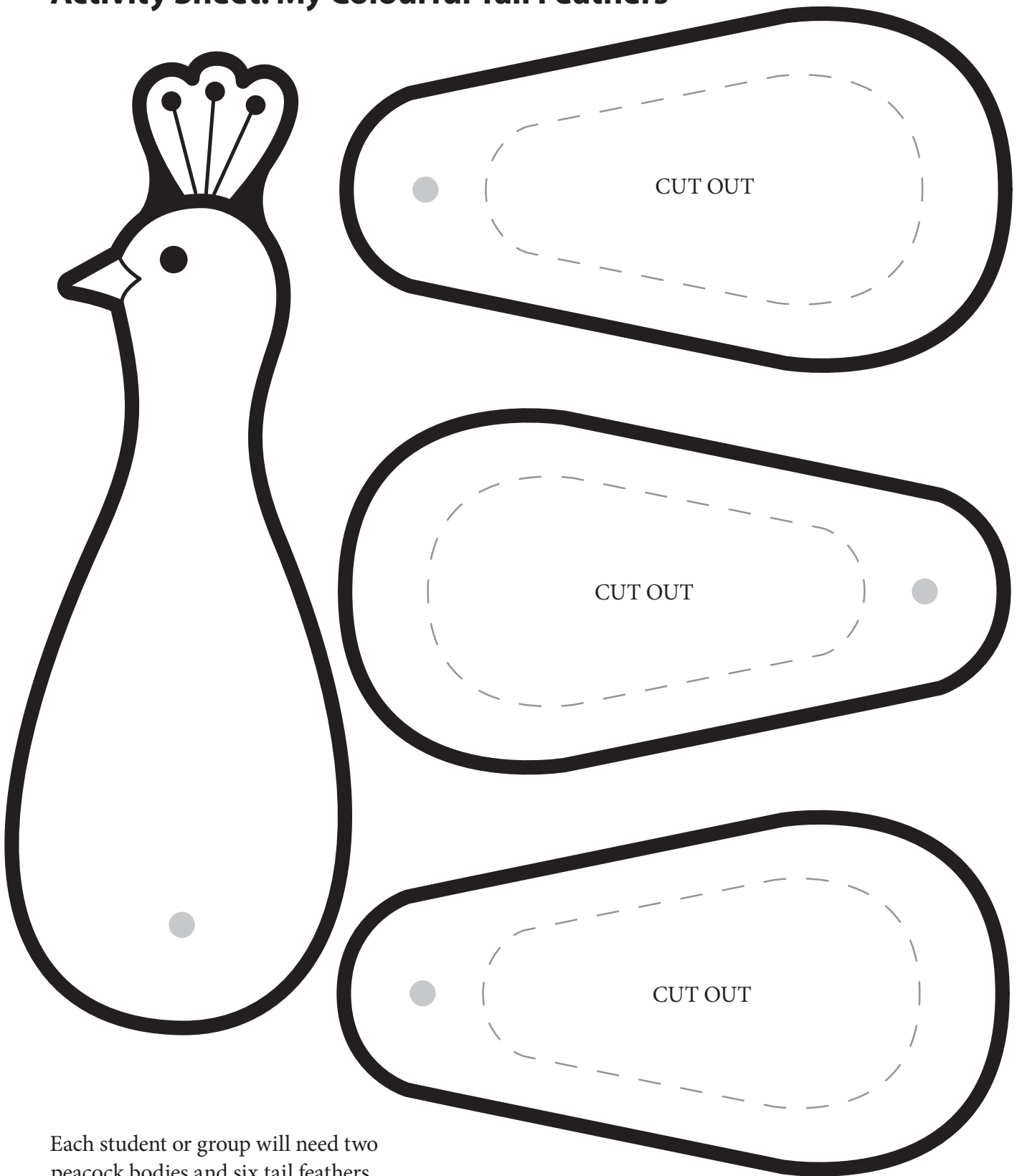


By displaying their evidence through symbols and words, students are recording their results in the same way a scientist would.

Students can use Activity Sheet: My Colour Wheel (or reproduce it) to create a colour wheel. Remind students to reflect back to the previous lesson with their tail feathers.

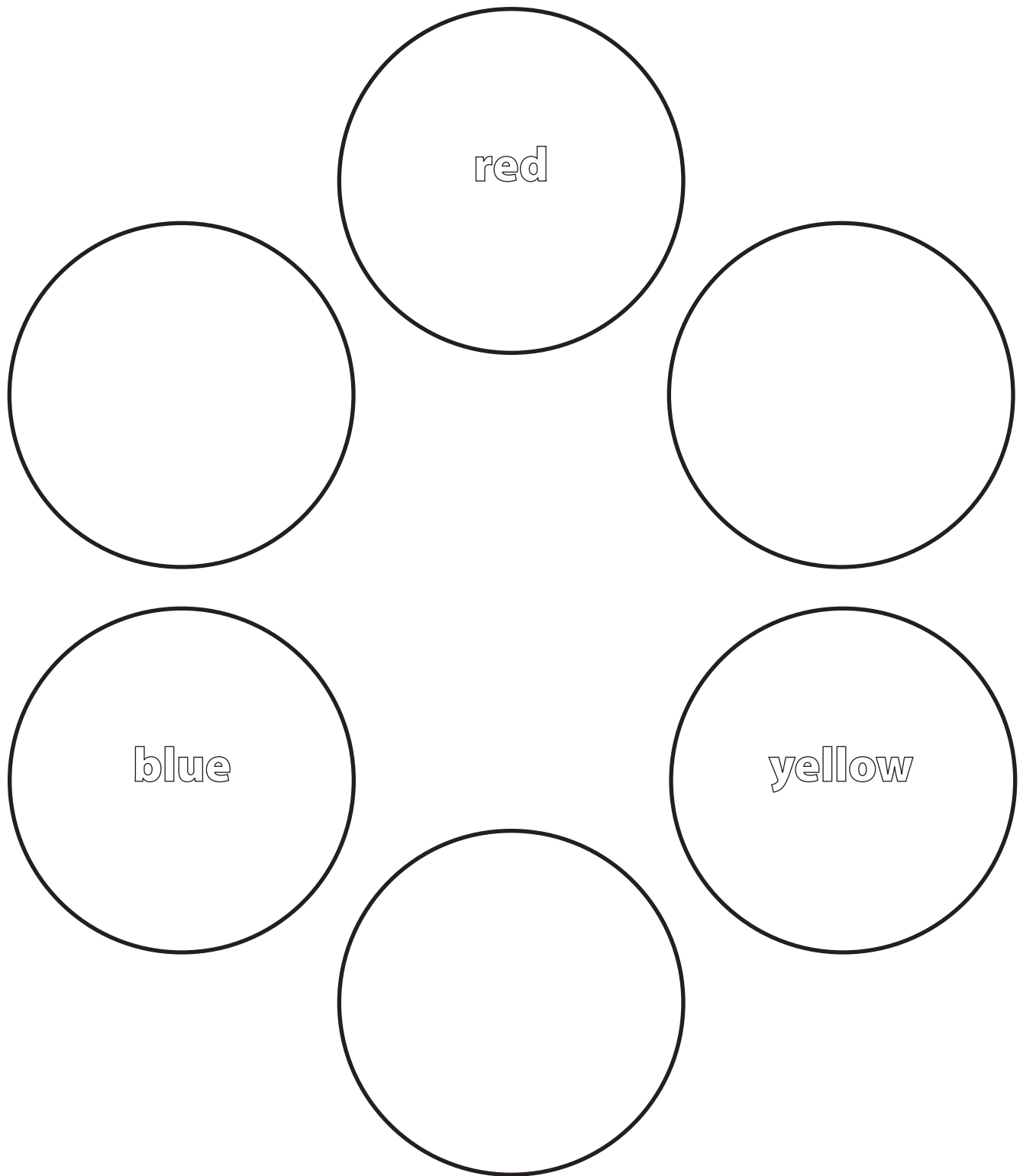
Many wonderful stories involve colours, such as some of Eric Carle's books (various titles and dates) or Valerie Thomas' Winnie the Witch series (2008). As well, numerous art projects can evolve naturally from this exploration.

## Activity Sheet: My Colourful Tail Feathers



Each student or group will need two peacock bodies and six tail feathers.

## Activity Sheet: My Colour Wheel



# ACTIVITY 10

## The Secret Box

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

### Questions

- What does the object feel like?
- What could it be?
- How does what you are touching help you make pictures in your mind?

### Materials

- Activity Sheet: Items in the Secret Box
- chart paper
- collection of objects of different textures (e.g., burlap, fur, polar fleece, plastic bag, net bag, marbles, bread tag, metal washers, feathers, gravel, soap, large nail, wooden spoon, wrench, small stuffed animal, small balloon filled with water)
- gloves (optional)
- box with a lid (cut hole large enough to fit student hands)

### Procedure

Place items in the shoebox one at a time so students can feel the item without seeing what it is. Using words to describe the property of the texture, students will build their vocabulary. Some words may be “soft,” “hard,” “furry,” or “slippery.” Record the children’s responses on a class chart. Without revealing what the items are, have students try the same activity using gloves to experience what happens when their skin does not make contact with the object.

An extension to this concept would be for students to create their own “texture book,” complete with words that describe what they are feeling.



## Activity Sheet: Items in the Secret Box

Item	How it feels	What I think
1		
2		
3		
4		
5		

# ACTIVITY

## 11

## Using Your Senses to Help You Stay Safe

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

### Questions

- How is the sense of touch able to help you be safe?
- How does smell or sight help you to know if food is safe to eat?
- How does your hearing help you when you are outside playing or riding your bike?

### Materials

- art paper/card stock
- digital camera
- pictures depicting our senses
- pictures depicting situations in which children would find themselves (e.g., a playground, a child riding his or her bike on the road, in a kitchen, eating, playing a digital device while walking, a scene with fire, a snowplow clearing the road)

### Procedure

The purpose of this lesson is to discuss with the students the concept of safety and our senses. Showing the pictures and asking the above questions is sure to generate a discussion and retelling of personal experiences of when the students used their senses to help them stay safe or of times when they ignored the messages coming from their senses.

Students should be given the opportunity to illustrate and describe the many situations when their senses help them stay safe.

An extension could be to photograph the students in mock situations with a digital camera. Post the photos and have the children write the matching captions or warnings.

# ACTIVITY 12

## What Materials are Used to Make Me?

### Questions

- What types of materials are used to make the objects in your collection or list?
- How have your senses helped you to decide what an item is made up of?
- How well can you use the chart to keep your ideas organized?

### Materials

- Activity Sheet: What Materials Are Used to Make Me? (one per group)
- clipboards (one per group)
- collection of items made from a variety of materials (e.g., marble, ruler, wooden popsicle stick, toy car, doll's dress, straw, eraser)
- pencils

### Procedure

**Part A:** Provide groups of students with collections of items. Groups of students examine the items in their collection and, by using their senses, determine what material the item is made up of. The students may sort the items, putting them into groups of all like-made items. You may want to provide labels for each group that say wood, plastic, glass, cloth, etc.

Developing a classification scheme is an important skill in science. In science, sorting uses a dichotomous key: “this, not this.”

### Outcomes

Students will be expected to

#### Science Primary

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

identify common objects and events, using terminology and language that others understand (203-2)

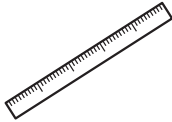

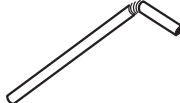




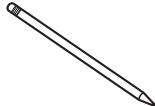
observe, using one or a combination of the senses (201-4)

#### Science 1

compare and describe various materials and report the results using a variety of formats (202-4, 100-13)

**Part B:** Once the groups have settled with their sorting, provide a clipboard and activity sheet for each group. Each group can be assigned a small number of objects in order to talk about the senses they used, what the items are made of, and their purpose. The teacher may wish to complete a class chart while discussing both clear and confusing responses. Remind them that scientists report their findings based on their observations (evidence that they have collected). Assure students that they will be doing more recording using charts and clipboards. Up to this time, most of the recording would have been done by the teacher or by the student, but in a free write/draw format.

## Activity Sheet: What Materials Are Used to Make Me?

Object	What senses did you use?	What materials are used to make it?	What is it used for?
Ruler 			
Marble 			
Straw 			
Toy car 			
Doll dress 			
Popsicle stick 			
Eraser 			
Pencil 			



## What's My Sorting Rule?

### Outcomes

Students will be expected to

### Science Primary

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

### Science 1

compare and describe various materials and report the results using a variety of formats (202-4, 100-13)

### Questions

- What rule did you use to sort the objects?
- How are the objects the same?
- How are the objects different?

### Materials

- sorting rings
- variety of objects that are different but are made of similar materials (e.g., a variety of small stuffed animals or a variety of wooden items)
- variety of objects that are similar but are made of different materials (e.g., a collection of measuring devices—rulers, tape measure, measuring cups, tablespoons, plastic containers—or a collection of things to draw with—crayons, paint, chalk, pencil, computer)

### Procedure

This activity gives students an opportunity to sort objects in a variety of ways and to explain their sorting rules or have others problem solve by guessing sorting rules. This activity could be set up as an interest table. Everyone should have a chance to figure out a sorting rule. Allow time for the presenting group to explain their rule. First, students should sort (classify) items that are alike and decide on the criteria (sorting rule) for the items. Students at this age are able to classify one attribute at a time. A group of different objects may be presented. This may include five objects with four having the same sort rule and one different. A class list could be made of all the different items that are made from the same material. Development of this classification skill needs to go in steps and may take some time. Sorting rings may be helpful to use so that students can see the groups and move objects between two groups, “this, not this” in order to engage in the learning. Provide each group with a variety of items made of different and like materials.

# ACTIVITY 14

## Properties of Materials

### Questions

- What does the word “properties” mean?
- What are the properties of my materials?
- If my materials have these properties, what does it make them useful for?

### Materials

- Activity Sheet: Properties of Materials
- bag or box containing various construction materials (e.g., arborite, flooring tiles, wood, Styrofoam, cellophane, construction paper, glass, iron, canvas, brick, stone, modelling clay, small bundles of loose straw)
- clipboards (one per student)
- *The Three Little Pigs*
- pictures of houses built from a variety of materials (e.g., wood, brick, mud)

### Procedure

As a class, review the activity sheet. Show students the column in the chart marked “Properties” and read the list under it. Generate ideas about what they could do to their materials to discover the answer. Encourage the discussion all the while using the word “**properties.**” Ask the students if they can figure out what you mean when you want to know about the properties of a material. Circulate around the room, observing and assessing, as the students go about the task.

Provide each pair of students with one of the construction materials, a clipboard, and an activity sheet. Their job is to discover all the properties of their material. In order to do this, they may need to do small tests to help determine the properties.

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

choose materials to build a variety of real and imaginary settings and play roles that correspond to those settings (103-1)

#### Science 1

predict and connect investigations on various materials, recording the results (200-3, 200-4, 201-5, 203-3)





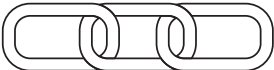

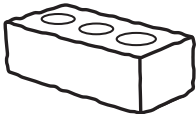


After the exploration, ask the students to present their findings. Ask the students if there are certain materials that are better suited for making certain things. Why? Generate a list of uses for the materials. Show the students the images from your Internet search. Read aloud *The Three Little Pigs*. Do the students agree with each pig's logic and selection of building materials? Teachers could supply students with pictures and/or books of different types of homes. These homes could be animal and/or human homes. Students could examine the pictures to see what the homes are like and make observations and inferences about the homes.

This activity leads into the culminating activity for this component, Activity 15.



## Activity Sheet: Properties of Materials

The material we are exploring is: \_\_\_\_\_

Properties	Yes or No
Does the material <b>bend</b> ? 	
Does the material feel <b>smooth</b> ? 	
Does the material feel <b>rough</b> ? 	
Is the material <b>waterproof</b> ? 	
Is the material <b>strong</b> ? 	
Is the material <b>light</b> ? 	
Is the material <b>heavy</b> ? 	
Can you <b>see through</b> the material? 	
Does <b>glue work</b> on this material? 	

# ACTIVITY

## 15

## Build It!

### Outcomes

Students will be expected to

#### Science Primary

manipulate materials purposefully (201-2)

identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)

communicate questions, ideas, and intentions while conducting their explorations (203-1)

#### Science 1

select, explain, and describe ways to use appropriate materials while constructing objects (101-5, 103-3)

identify, solve, and evaluate problems that arise while constructing objects (200-2, 202-7, 203-1)

### Questions

- Can you build a house that will withstand the wind blowing?
- Why are you choosing those materials?
- How did you solve that problem?

### Materials

- collection of recyclable materials (e.g., clean milk cartons, drinking straws, wooden blocks, plastic interlocking blocks, Popsicle sticks, plastic wrap, string, modelling clay, aluminum foil, empty cereal boxes, clean 2-L pop bottles)
- duct tape or colourful electrical tape
- fan
- scissors
- *Something from Nothing* by Phoebe Gilman (1992)
- white glue

### Procedure

From the cereal boxes, cut out a building platform for each student (20 cm × 20 cm). Students may want to make their own. As an inspirational starter, reading Phoebe Gilman's *Something from Nothing* is a wonderful language introduction to their upcoming task.

Have the building supplies set up at various tables around the room. Students should have their scissors, rulers, pencils, etc., on hand. Present students with their platforms. Describe the building challenge, reminding them of the properties that they have discovered about each material.

Highlight a teachable moment—a terrific example of problem solving, an example of sharing resources, or an innovative idea that may occur during the process.

**The students' challenge:** *You are to carefully choose materials that you will build a house with. The house must not fall down during a wind storm.*

Using a fan, set up a testing station. Demonstrate the various wind forces that may be tested on the houses the students create. Invite the students to test their houses.

After all the houses are made and tested, usually the next day, have the students write/draw about their buildings, problems they encountered, ideas they had, and why they chose the materials that they did. Have the students draw their houses and label the materials that were used in their construction.



# Component 3: Water and Me

## Preparation Suggestions

- Provide an interest table that includes samples of water (ocean water, pond water, tap water), microscope(s), posters, and photos of all sorts of ways that we use and interact with water).
- Set up a water table and include various sizes of containers.
- Plan ahead by collecting the materials listed in the activities.
- Teachers may wish to refer to *Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004) and *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005) for additional activities, resources, and equipment lists.
- Plan a field trip to a water source.

## Component 3 Resources

Various classroom resources that the teacher may have, such as

- *Floating and Sinking*, Learn Abouts (MacDonald 2006) (NSSBB #: 17192)
- *Water Can Change*, Windows on Literacy (Birchall 2002) (NSSBB #: 13150)
- *Water Changes*, Literacy Place for the Early Years (Ives 2010) (NSSBB #: 1001002)
- *We Use Water* (Bruce 2004)

# ACTIVITY 16

## Water, Water, Everywhere

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)

select and use materials to carry out their own explorations (200-4)

#### Science 1

demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

compare and describe various materials and report the results using a variety of formats (202-4, 100-13)

### Questions

- What do you notice about water?
- How would you describe water?

### Materials

- cloths for wiping spills
- collection of objects that float or sink (e.g., corks and marbles)
- items to make boats (e.g., aluminum foil, clean milk cartons, plastic containers, Plasticine)
- plastic containers in various shapes
- water table(s) or water bins for each small group

### Procedure

It is suggested that you allow two sessions for the initial “free” exploration of water. The object is to provide the students with experiences from which to draw vocabulary.

Before the first session, ask students to describe what they know about water. Then invite them to explore the water table.

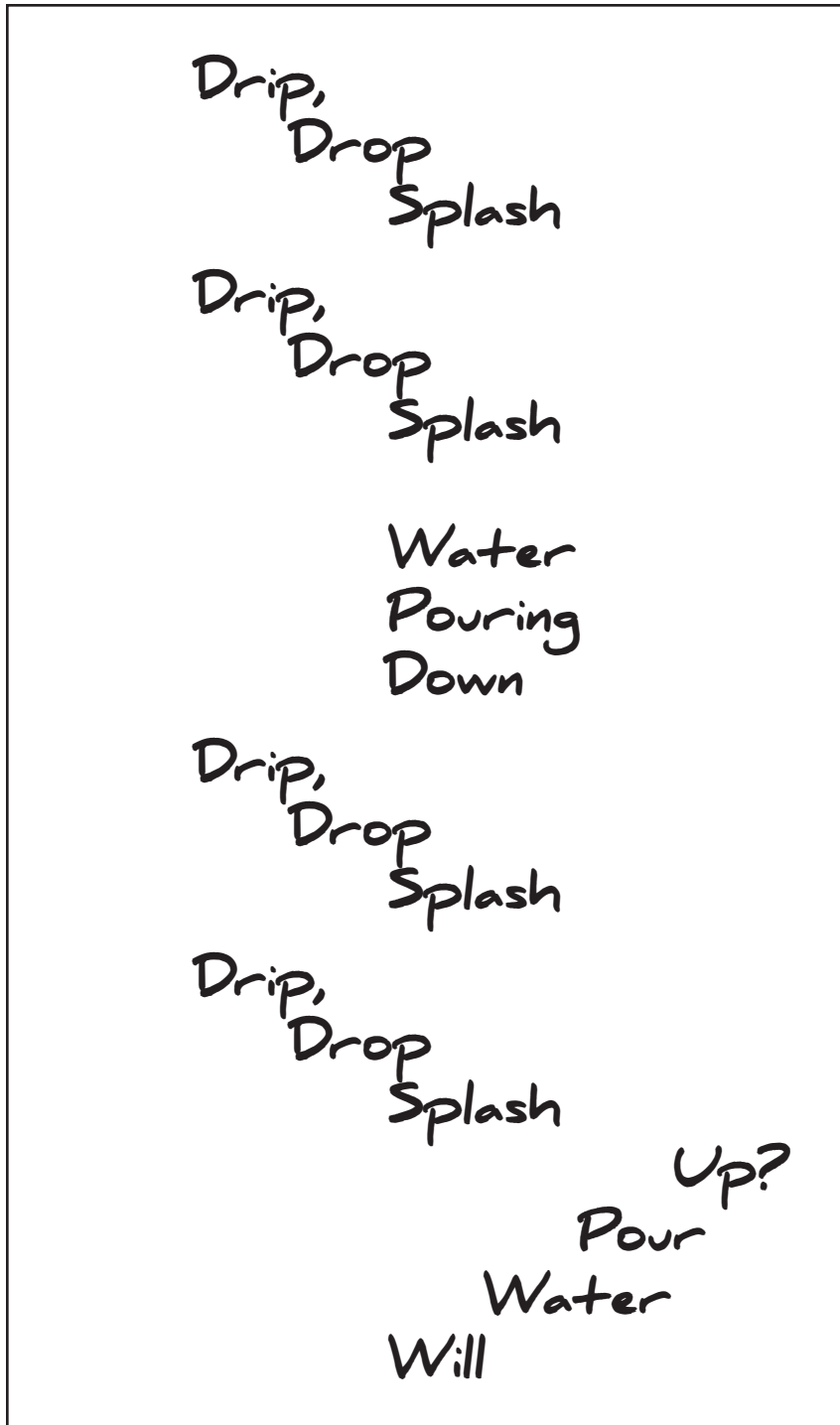
After their exploration, have a discussion and list the students’ ideas and words describing their answers to the questions above. These words can also be recorded on senses charts. (Students should not taste without permission.)

A few days after the first session refresh the water tables. This time add some liquid soap.

Some of the words could be **wet**, **drippy**, **drops**, **dribbles**, **puddle**, **bubbles**, **splash**, **pour**, or **wavy**.

Have students record their observations in their science logbook with words/diagrams or provide the students with one of the “describing” words they came up with and have them illustrate the idea behind the word.

Below is a poem that describes water. Teachers may wish to use this or other resources to further explore words about water.



ACTIVITY  
17

## Waves, Ripples, and Bubbles

### Outcomes

Students will be expected to

#### Science Primary

explore how characteristics of materials may change as a result of manipulating them (101-1)

identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)

follow a simple procedure where instructions are given one step at a time (201-1)

communicate questions, ideas, and intentions while conducting their explorations (203-1)

#### Science 1

predict and connect investigations on various materials, recording the results (200-3, 200-4, 201-5, 203-3)

### Questions

- In what ways can water be “disturbed”?
- Does water move when things are dropped into it? How?
- Does water move when things are moved through it? How?

### Materials

- Activity Sheet: Waves, Ripples, and Bubbles (optional)
- containers (e.g., dish pans; one per group)
- collection of light objects
- collection of small, heavy objects
- paper
- pencils
- science logbook
- straws
- water

### Procedure

Explain to the students that for this science exploration they will be watching how water moves. Pour water into the containers. Observe how the water moves. Let the water become still.

Instruct students to observe what happens when they put one finger, three fingers, or a flat hand *into the water* and push gently to the bottom of the container. Remind students to allow the water to become still after each try. Introduce the words, **waves**, **ripples**, and **bubbles**. Connections to nature can be made with each trial.



Students can now observe what happens to the water when a finger is moved *across the water*. Discuss connections to the real world.

Using the straws, have the students blow over the top of the water. What happens to the water? Using the straws, have the students blow into the water. What happens to the water?

What happens to the water when a light object is dropped into the water? When a heavy object is dropped into the water? Are waves made? Are ripples made? What do the ripples look like?

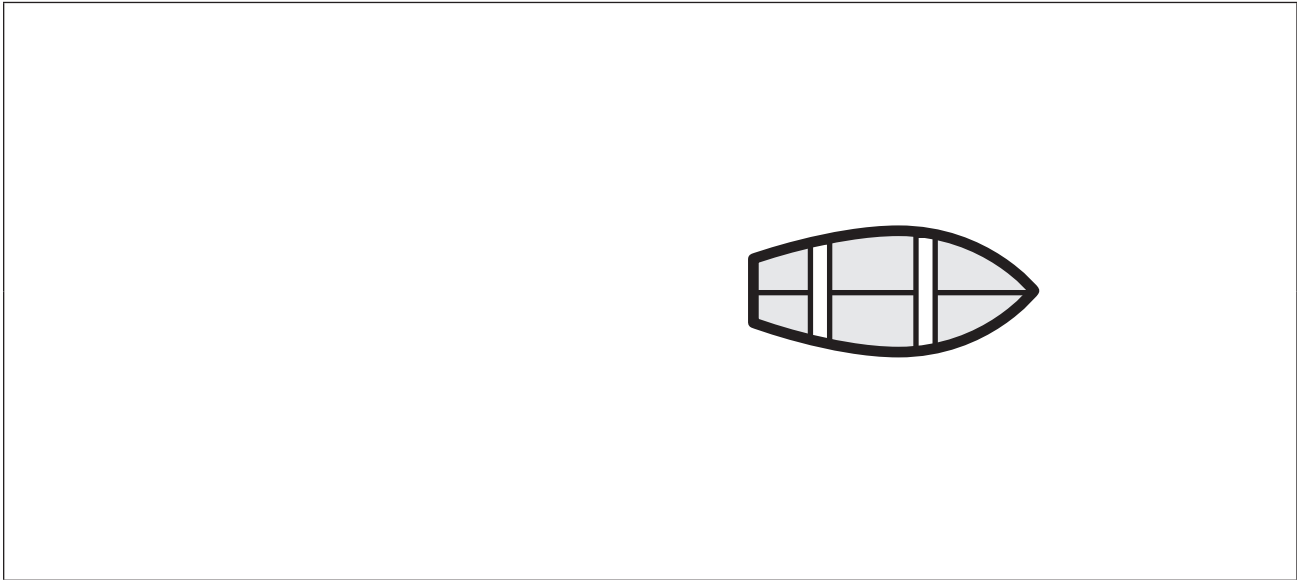
Have the students draw/write about how the water moved when they did something to it. Students may draw their own pictures, showing how the ripples moved across the water, or they may use the activity sheet.

Some real-world examples include fish jumping in a lake; wind or storm blowing across a river, lake, ocean, or puddle; throwing a rock into the water; skipping stones; or boats or ducks moving through the water.

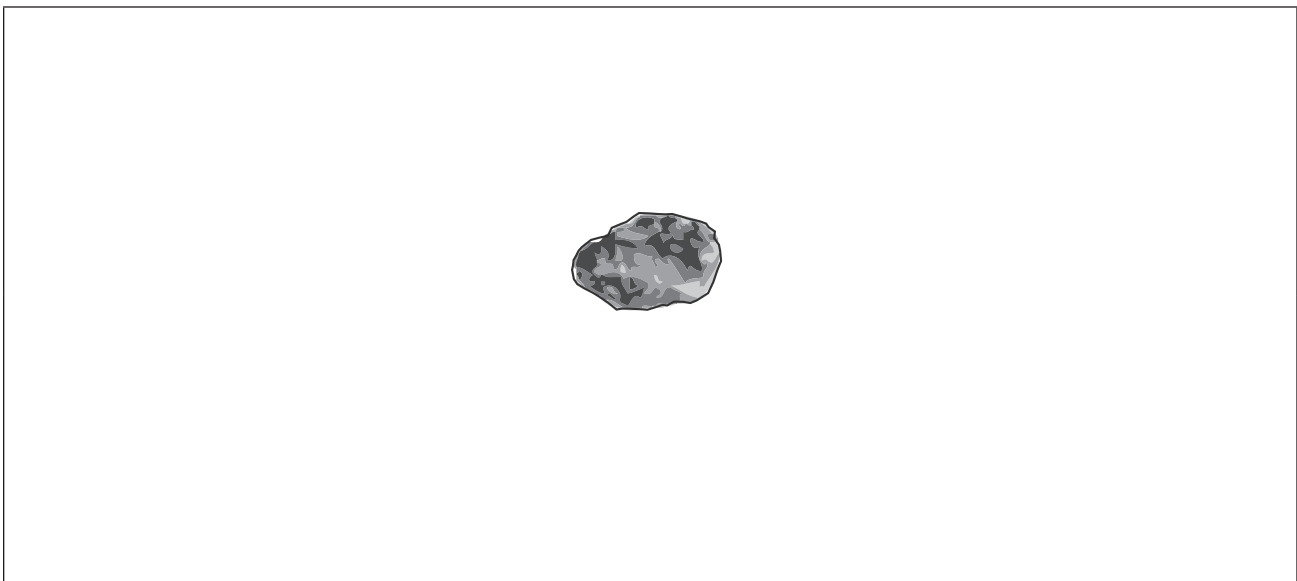
## Activity Sheet: Waves, Ripples, and Bubbles

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Draw what happens to water when the boat moves through it.



Draw what happens to the water when you drop a rock into it.



# ACTIVITY 18

## Making a Wave Maker

### Questions

- What do waves look like?
- Where do we see waves?
- What makes the waves?

### Materials

- 600-mL pop bottle, clean, with cap (one per student or pair)
- access to water
- cooking oil
- food colouring (optional)
- images/videos of waves

### Procedure

Acting as the students' secretary, ask them where they have seen waves. Record their answers. Can they give any details about the waves—the size, the speed, the colour of the water, what kind of water?

Tell the students that with the materials in front of them, they are going to make a wave maker.

Fill the pop bottle three-quarters full of water and add the food colouring, if desired. Add enough cooking oil to bring the water level up to the rounded shoulders of the bottle. Cap it tightly and hold the bottle horizontally. By rocking the bottle gently back and forth, waves are produced. Students can experience the size and shape of waves produced using various amounts of force.

Discuss and reinforce with students that it is the force of their rocking that is determining the size of the waves they are making. In the real world, what force is working to make the waves?

Have students write and draw how they made their wave maker. Have them use words/drawings to describe how their wave maker works.

Show students images or videos of waves. Surfing websites are great places to see waves, but be sure to preview sites.

### Outcomes

Students will be expected to

#### Science Primary

identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)

respond to the ideas and actions of others and acknowledge their ideas and contributions (203-4)

manipulate materials purposefully (201-2)

#### Science 1

select, explain, and describe ways to use appropriate materials while constructing objects (101-5, 103-3)

# ACTIVITY 19

## Figuring Out Capacity

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

select and use materials to carry out their own explorations (200-4)

manipulate materials purposefully (201-2)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

communicate questions, ideas, and intentions while conducting their explorations (203-1)

respond to the ideas and actions of others and acknowledge their ideas and contributions (203-4)

#### Science 1

predict and connect investigations on various materials, recording the results (200-3, 200-4, 201-5, 203-3)

### Questions

- What does “**capacity**” mean?
- How do I know when a container is full?
- How do I know when a container is half full?
- Which container holds the most water?
- Which container has the most capacity?
- Can you put the containers in an order to show which ones hold the most to the least?

### Materials

For each small group:

- assorted plastic containers of varying sizes, diameters, and depths (label the containers A, B, C, ... )
- dish pan of water or water table
- eyedroppers
- measuring cups
- science logbook

### Procedure

In a class discussion, show the students a sample of the containers they will be working with. Think aloud as you ponder which container has the capacity to hold the most water. Would it be container A or container B?

Ask the students what they think the word “**capacity**” means? Record their answers and ideas on the board.

Ask the students to explain how they know when a container is full. What does it look like or mean when a container “**overflows?**”

**The group's challenge:** *You are to figure out which containers have the capacity to hold the most water. How can you prove this? Put the containers in a sequence to show the most to the least.*

This sounds simple enough. However, you are asking the students to collaborate and come up with their own method of experimentation that will help them figure out the challenge.

**Part A:** The first lesson can be spent in free exploration, with teacher guidance going towards team collaboration. Stop the group intermittently to draw their attention to ideas that are going well and others that are not going so well.

**Part B:** The second lesson is devoted to the groups acting on their ideas and methods to complete the challenge.

Time should be given as well to discussing how the students want to present their findings to the rest of the class. Communicating their findings is just as important as the discovery. Refer back to the definitions made prior to the challenge. Would the students need to add anything to them?

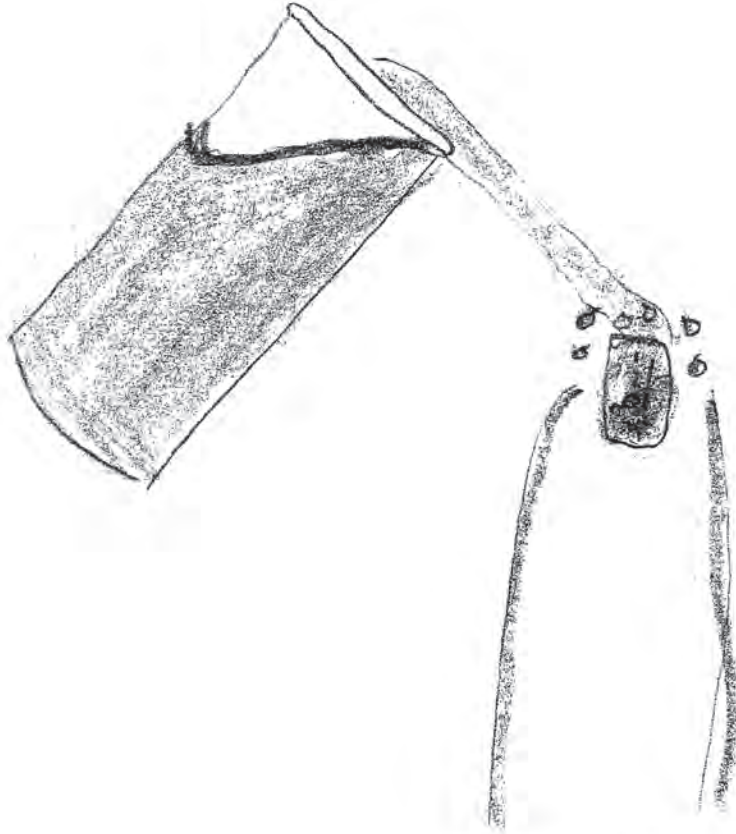
Ask the students to record in their science logbooks through pictures and words what “**capacity**” means. Alternatively, students can present to the class.

### Sample Science Logbook Entry

I Think if  
There was a big  
bucket next to a  
little bucket if you  
could put the big  
bucket in the little  
bucket it would  
overflowed.



## Sample Science Logbook Entry



The big container overflowed  
the measuring cup. I was surprised.  
Because I didn't know that it  
would overflow. I had fun.

# ACTIVITY 20

## Exploring Absorption: Cleaning up the Puddles

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

explore how characteristics of materials may change as a result of manipulating them (101-1)

select and use materials to carry out their own explorations (200-4)

manipulate materials purposefully (201-2)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

communicate questions, ideas, and intentions while conducting their explorations (203-1)

respond to the ideas and actions of others and acknowledge their ideas and contributions (203-4)

#### Science 1

demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

select, explain, and describe ways to use appropriate materials while constructing objects (101-5, 103-3)

predict and connect investigations on various materials, recording the results (200-3, 200-4, 201-5, 203-3)

### Questions

- What does “**absorption**” mean?
- What do the surfaces of the materials look like after water is dropped on them?
- Where do the water drops go when dropped onto the surfaces of the materials?
- How do the water drops move on the surfaces?
- Can you put the materials in an order to show which ones absorb the most to the least?

### Materials

For each small group:

- Activity Sheet: Cleaning up the Puddles
- clipboards
- dish pan of water or water table
- eyedroppers
- measuring cups
- permanent marker (to label materials A, B, C, ... )
- plastic lids
- samples of the following materials: construction paper, paper towel, cardboard, fabrics (e.g., cotton, nylon, leather, silk, wool), sandpaper, waxed paper, wood
- science logbooks



## Procedure

In class discussion, ask students what “**absorption**” means. Hold up a paper towel and ask if this material is a good absorber. How could we see if it is a good absorber? How would we know if it was a good absorber? Have students make predictions about their collection of materials. Which ones do they think will make great puddle absorbers? Teachers can record their responses as a class.

As with the capacity activity, students are asked to design an investigation that will help them figure out which materials make good absorbers. Ask the students, What could be a fair test to decide this? The next step would be to perform a fair test to decide which materials absorb and which do not absorb water. Students are encouraged to draw/write about their responses in their science logbooks.

Various methods of absorption will be evident during the investigation as the teacher circulates around the room. Highlight methods that are working, as well as those that are not working so well.

Students should be directed to drop water onto a plastic lid to create a small puddle. Then they place the selected test materials over the puddle and observe and record what happens to the material and the puddle. Ask students, if they want the test to be fair, what they should do for each sample material?

In class discussions, refer back to their definitions and their predictions. Have the students present their findings.

**Extension:** The concepts explored here could be extended over to the natural world: How is water absorbed into the ground after it rains? Are there areas outside that are good absorbers? Where do we mostly see puddles? What about different soils we plant flowers in?

## Activity Sheet: Cleaning up the Puddles

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Material	<b>Yes!</b> It absorbs water.	<b>No!</b> It does not absorb water.
A.		
B.		
C.		
D.		
E.		

# ACTIVITY 21

## Don't Sink the Boat (Clay Boats)

### Questions

- Can you make a small piece of clay float?
- Do some shapes float better than others?
- Can you make a different shape that will float?
- Can your “boat” hold cargo?
- Will the boat always hold the same amount of cargo?
- Does it matter where the cargo is placed in the boat?
- Does it matter how the cargo is placed in the boat?
- What happens if water gets in the boat?
- What kind of shapes make the best cargo boats?

### Materials

- cargo (e.g., centicubes, coins)
- containers with water or a water table
- paper towels
- Plasticine (enough for a peach-sized ball for each student)
- science logbook

### Procedure

Before this lesson, you may want to note the activity questions on chart paper. Leave space to record ideas, drawings, or students' names.

**Step 1:** Students may work in small groups with their own balls of Plasticine and a shared basin of water. The challenge is for the student to get his or her ball of clay to float.

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

explore how characteristics of materials may change as a result of manipulating them (101-1)

identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)

ask questions that lead to exploration and investigation (200-1)

manipulate materials purposefully (201-2)

#### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

select, explain, and describe ways to use appropriate materials while constructing objects (101-5, 103-3)

As you circulate, draw and focus the students' attention to ideas or thoughts that you hear being expressed from your students. If and when a student gets their boat to float, ask him or her to explain what they did to get it to float. What did they figure out from their designs that didn't work?

**Step 2:** Once the boats float, can they hold cargo? Ask students to add cargo until their boat sinks. Students can count their cargo and record the amount.

Arrange the boats to show which hold the most cargo to the least. Can students see differences? Can they see similarities?

Provide opportunities for students to test their boats.

The teacher may wish to explore the following for class discussion:

- Students should make observations and inferences from their own experiences with their cargo and boats.
- Discussions should take place about the different types of cargo and boats.
- As a class, students should pose questions while teachers record them.
- Teachers should discuss operational questions so that students might explore further using their cargo and boats.

# Component 4: Plants and Me

## Preparation Suggestions

- Plan ahead by collecting the materials listed in the activities.
- Provide an interest table (e.g., various plants, seeds, and bulbs, a microscope, related texts).
- Teachers may wish to refer to *Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004) and *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005) for additional activities, resources, and equipment lists.
- Plan local field trips.
- Investigate potential guest speakers or presenters.
- Decide how students can record their findings in various formats in their science logbooks.

## Component 4 Resources

Various classroom resources that the teacher may have, such as

- *A Seed Is a Promise* (Merrill 2001)
- *Jack and the Beanstalk* (Lang 2000) (NSSBB #: 22866)
- *Name That Plant* (Trumbauer 2003) (NSSBB #: 16802)
- *Planting the Wild Garden* (Galbraith 2011) (NSSBB #: 1001750)
- *Shared Reading Card 1: What Is Alive and Living Things*, Literacy Kindergarten Cross-Curricular Kit: Living Things in the Environment (Various authors n.d. b) (NSSBB #: 1000656)
- *Shared Reading Card 3: A Bug Sat in a Silver Flower, The Life of a Dandelion, and A Bee Met a Flower*, Literacy Kindergarten Cross-Curricular Kit: Living Things in the Environment. (Various authors n.d. d) (NSSBB #: 1000656)

ACTIVITY  
22

# Hitchhikers

## Outcomes

Students will be expected to

### Science Primary

identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)

ask questions that lead to exploration and investigation (200-1)

manipulate materials purposefully (201-2)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

### Science 1

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

## Questions

- Are all plant parts the same? Give evidence to support your findings.
- Have other students collected the same particles of plants and other debris?
- How can they be sorted?

## Materials

For each student or group:

- butcher cord (60 cm long; to be tied through a hole at the edge of the felt square)
- felt (30 cm × 30 cm; nappier is better)
- field or overgrown field area (exploration study site)
- paper (white)
- sinker (optional)

## Procedure

The teacher should schedule a trip to an exploration study site.

Lead the students in a line through the site, dragging the felt for about five minutes. Another option is to have the students line up along the edge of an overgrown field to cast their felt pieces (with a sinker tied on the felt) into the field and then reel the felt back in.

As the students explore the site, call attention to the sounds, sights, and smells of the area.

At the end of the exploration, students should fold the felt square so the particles will remain inside.

Distribute sheets of paper. Have the students sit down and carefully turn open their piece of felt, brushing the particles onto the paper.

Have the students sort, classify, and count the particles. Are there any seeds? How many different types of particles were found by each student? By the whole class? What other plant parts can be identified?

Save some of the seeds. Plant them and see what grows.



## Leaf Watch

### Caution

Be aware of poisonous plants, such as poison ivy and poison oak.

### Questions

- What differences did you observe in the leaves you saw and collected?
- Are all the leaves the same?
- How many points are on the leaves?
- Do the leaves have anything in common?
- Do different sizes of the same kind of leaf have the same number of points on them?
- Do leaves have a front and a back?

### Materials

- art paper
- camera (optional)
- clipboards (optional)
- drawing supplies
- fresh leaves collected by the students
- pressed leaves
- science logbook
- white glue

### Outcomes

Students will be expected to

#### Science Primary

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

#### Science 1

identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)

listen and respond to another student's description of an animal or plant (203-4)

## Procedure

**Part A:** Take students for a stroll around the schoolyard. If possible, plan a nature walk into nearby woods. The purpose is to observe, record, and collect fresh leaves. Alternatively, students can bring leaves to class. Students can make leaf rubbings of the different leaves they observe. If students are outside, a clipboard may be useful as a hard surface when making leaf rubbings. Students can also take photos of leaves, or draw them.

Students are to look at their leaves and describe the shape and size, the edge (smooth or jagged), the colour, thickness, the veins inside the leaf, the stem, markings (if any), the smell, texture, and the transparency of each leaf.

Students can sort the leaves by shape, colour, or other attributes. Ask the students to label their sorting collection in their logbooks, describing what their sorting rule is. Can students identify which plant the leaves come from? Do all plants have leaves? Can they speculate why plants have leaves?

The class may decide to store and dry their leaves for future observations and activities.

The photos can be made into a slide show, with students adding voice-over or text.

**Part B:** Hand out the leaves that were collected and pressed. Have the children look at the leaves they have and ask for their ideas about what the shapes suggest. Are the leaves like dresses? Sails for ships? Bodies of snakes or reptiles? Once the students decide, have them glue the leaf onto their paper and, using drawing supplies, fill the paper around the leaf with the details needed.



# ACTIVITY 24

## Let's Look at Seeds

### Questions

- What senses did you use to describe your seeds?
- What were the ways you sorted your seeds?
- What is your sorting rule?
- What did you learn about seeds?

### Materials

- large chart to record the senses and the students' descriptions
- collection of seeds (e.g., acorns, pine cones, maple seeds, corn, sunflower seeds, vegetable and fruit seeds)
- paper plates
- science logbook

### Procedure 1

Divide the students into small groups. Give each group a plate with a variety of seeds. As a whole class, create and fill in the senses chart with vocabulary for how the seeds feel, smell, look, taste (when appropriate), and sound.

### Procedure 2

Have the students sort their seeds and tell their sorting rule. Prompt by asking, Can you show me another way to sort your seeds?

Some ideas to guide the students are:

- What are seeds used for?
- What are some ways seeds move?
- Where do seeds come from?

Students can record their ideas about these questions in their logbooks.

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

#### Science 1

identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)

ACTIVITY  
**25**

## Growing a Bean Plant

### Outcomes

Students will be expected to

### Science Primary

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

### Science 1

identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)

### Questions

- What will our plants need in order to grow?
- Will the plants all be the same?
- What will happen after a few days?
- What will happen after a few weeks?

### Materials

- bean seeds
- potting cups, plastic cups, or small containers
- potting soil
- science logbook
- stickers (e.g., blue and green)
- straws
- the story *Jack and the Beanstalk* (Lang 2000)
- water
- water soluble plant food

### Procedure

Give each student a potting cup and have them decorate or place their names on them. Fill the cups three-quarters full of the potting soil and have each student press two to three bean seeds into the soil. (*Plant at least seven extra pots, for later activities as well as to compensate for when things don't turn out as planned.*) Provide the students with a quarter cup of water to pour over their pots. Discuss with the students if they should pour more or less water. Now ask the students where they should put their pots in the class. Where would the best place be? Give reasons to support answers.

As the students are deciding, take one of the extra planted pots and tell the students that you are fearful of the pot getting pushed over or spilled, so you are going to put it safely in the cupboard and close the door. Have the children start their beanstalk diaries, recording what they did and where they placed their plants.

In a few days, observe the plants close up. Are there any changes? Do they think the plants need anything? Compare with the plant that is in the dark cupboard.

What do plants need to grow? Compare this to what humans need to grow. Introduce “plant food” to the class. Make a solution of the plant food with water according to the directions on the packet. Give some plants the mixture and the others just water.

Have the students record any changes in their logbooks. You may want to put blue stickers on the pots that got just water and green stickers on the ones that got the plant food. Have students observe the growth of their plants. Have them measure the growth over a period of time and keep a record of their growth. On the second week you could offer to give all the plants the mineral plant food mixture. Are there any differences?

Connections to mathematics can be made through measuring heights of the plants, amounts of water, calendar math, and time.

# ACTIVITY 26

## Topsy Turvy

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

### Science 1

identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)

listen and respond to another student's description of an animal or plant (203-4)

### Questions

- Are you able to grow a plant upside down?
- What happened to the plant when it was turned upside down?
- In which direction are the leaves growing?
- In which direction are the roots growing?
- What does a seed need to sprout?

### Materials

- bean seeds
- paper towels
- radish seeds
- resealable plastic bags (medium or large) or clear plastic viewing container (available from science suppliers)
- tape
- water

### Procedure

Fold a double layer of paper towel into a resealable bag. Add a third of a cup of water to the bag. You want the paper towel to be moist or damp. Place the seeds (one bag with the bean and one with the radish) between the dampened folds of the paper towel. Seal the bags closed. Place the bags in a dry, warm place; on a window ledge is a good spot. After a few days the seeds will sprout.

Observe with the class what has happened to the seeds. Take the paper towel from the bag and unfold it to reveal the seeds. Discuss with the class what happened. After the discussion, introduce the word “**germinate**” and discuss the term. What do we see when the seeds have sprouted? Where do the roots grow? Where do the leaves grow? Still making sure the paper towel is moist, fold it and place it back into the bag so the seeds are visible through one clear side of the bag. Seal the bag closed and again place on the window ledge.

Discuss any differences between the radish and the bean seeds.

What if the bag is taped upside down to the window? Will the leaves start to grow down and the roots up?

# ACTIVITY 27

## I Am Unique

### Questions

- How are we the same?
- How are we different?
- Do only boys have attached earlobes?
- Do only girls have attached earlobes?
- Do all students that have attached earlobes have the same eye colour? The same hair colour? The same skin colour? The same height?
- Can only boys roll their tongues?
- Can only girls roll their tongues?
- Do all students that can roll their tongues have the same eye colour?

### Materials

- assorted animal pictures
- digital cameras
- graph paper
- large chart paper
- pictures of birds (variety of breeds and sizes)
- pictures of dogs (variety of breeds and sizes)

### Procedure

Invite the students to brainstorm characteristics of humans. These characteristics can be divided into two categories—characteristics that are common to most people (hands, eyes) and characteristics that are unique to people, such as eye colour, hair colour, attached earlobes, tongue rolling. Collect data from students and record it on chart paper. Discuss the results.

### Outcomes

Students will be expected to

#### Science Primary

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

#### Science 1

identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)

Images of individual students can be used to make slide shows depicting various sorting patterns. The images can also be printed and used for making picture graphs.

In the class, model the recording strategies as students use tally marks to create picture graphs.

The above activities highlight the differences that can be seen in a group of people, despite how similar we all are. Can the students transfer this knowledge of characteristics to other animals? Using the assorted pictures of the animals, students will be able to tell you which ones are dogs and which ones are not. Ask them what makes a dog a dog? Then within the dog group of photos, they can further sort the pictures—small dogs, not small dogs; dogs with pointed ears, dogs without pointed ears; short-haired dogs or non-short-haired dogs.

# ACTIVITY 28

## Plant Needs

### Questions

- How are the plants the same?
- How are the plants different?
- What do plants need?
- What can we do to see if plants really need sunshine?
- What can we do to see if plants really need water?
- What can we do to see if plants really need food (soil and minerals)?
- What can we do to see if a plant is looking for sunshine?

### Materials

- extra bean plants from Activity 25
- potting cups
- potting soil
- sand
- shoebox with lid
- sprouted beans planted in the resealable bags from Activity 26
- straw
- string
- tape
- water

### Outcomes

Students will be expected to

#### Science Primary

detect consistency and pattern in  
manipulate materials purposefully  
(201-2)

use personal observations when asked  
to describe characteristics of materials  
and objects studied (202-1)

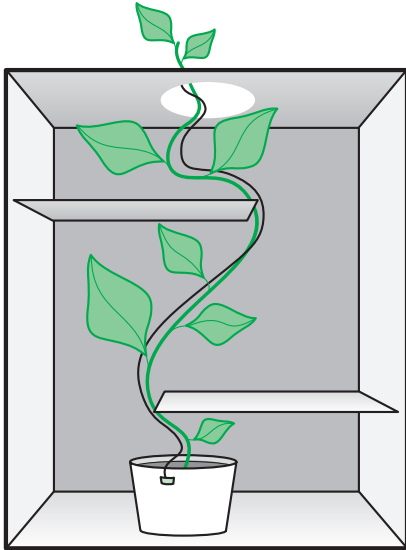
#### Science 1

question, explore, observe, and identify  
the similarities and differences in how  
living things are able to meet their  
needs (200-1, 100-4, 100-5, 100-7)

recognize that humans and other living  
things depend on their environment  
and identify personal actions that can  
contribute to a healthy environment  
(103-2)

## Procedure 1

### Do plants need the sun? Will plants search for the sun?



At one end of the shoebox, cut out a circle the same diameter as a medium orange. Inside the shoebox, tape two pieces of cardboard to create a maze when the box stands on its end with the circle end exposed to daylight (see diagram). Leave enough space at the bottom of the box when it is standing on its end for the potting cup to sit. Take one of your just-sprouted bean seeds and plant it in the soil with some plant food and water as needed. We are ruling out the other variables. Our test must be able to answer the students' question, Do plants need sun? If so, do they get it in this box?

With the plant in the box and the box lid tightly secure, monitor, observe, and record over the days what the plant does. Take peeks at the plant by opening the lid.

Also, keep checking on the progress of the plant that was secured in the dark cupboard (Activity 25). Bring it out and compare it with the student plants that are on the window ledge. Record the students' ideas and thoughts about what they observe.

To help guide the growing beanstalk, you may wish to thread a piece of string through a piece of drinking straw to use as a stake. Tape the string and straw to the outside of the cup and tape the other end of the string to the outside of the hole as shown in the diagram.



## Procedure 2

### Do plants need water?

Using one of the extra planted bean pots, inform the students that this plant will not be watered from now on. Label the pot, “no water.” Can they predict what might happen?

Record student’s observations and ideas over the next few days/weeks. Compare with the watered plants. Are there any differences?

## Procedure 3

### Do plants need food?

Take the bean sprouts from the resealable bag. Plant one in a potting cup of sand, another in a potting cup of soil with the plant food. Water both as needed and place on the window ledge. Label the pots, “sand” and “soil.” Record student observations and ideas over the next few days/weeks. Compare the growth with each other and the plants on the window ledge as well as the plants in the shoebox and in the dark cupboard.

## Extension

Have students record in their science logbook what is happening to their bean plants. Encourage the students to draw what they see, not just a generic plant. Encourage students to use non-standard and standard units of measure to record the height of their plants as they grow.

# ACTIVITY 29

## Plant Fun

### Outcomes

Students will be expected to

### Science Primary

manipulate materials purposefully (201-2)

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

### Science 1

question, explore, observe, and identify the similarities and differences in how living things are able to meet their needs (200-1, 100-4, 100-5, 100-7)

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

### Part A: Soup-Can Hairdos

### Question

- Can plants make faces?

### Materials

- clean soup can for each child (add masking tape around the top edge)
- googly eyes
- grass seed
- paper (coloured)
- potting soil
- white glue

### Procedure

Have students decorate their soup can to create a face. Fill the can with potting soil. Sprinkle the top of the soil generously with the grass seed. Lightly cover with soil. Water. After a few days or weeks, the grass seeds will sprout and grow. The soup can face will be sporting a very stylish and green hairdo. This is a fun activity for students to watch, write about, and draw/take pictures.

Students may take photos of their characters' progress and write/draw about their project in their science logbooks.

## Part B: Colourful Stalks

This investigation shows that water travels up a plant's stem.

### Question

- Does water go up a stem of celery?

### Materials

- celery with firm, long stalks
- food colouring (red, blue, and green)
- three clear glasses
- water

### Procedure

Put lots of food colouring into the three different glasses of water. You may wish to use the same lengths of celery and measure the amount of water and the amount of food colouring. This will show that you are doing a fair test, controlling the variables. Put a stalk of celery into each glass. Set aside in a safe place. Observe what happens and discuss.

Sample Science Logbook Entry

Plants need sun  
and waters  
and baby plants  
become plants  
big  
plants are  
plants are  
a living thing



# Component 5: The Seasons and Me

## Preparation Suggestions

- Plan ahead by collecting the materials listed in the activities.
- Teachers may wish to refer to *Atlantic Canada Science Curriculum: Grade Primary* (Nova Scotia Department of Education 2004) and *Atlantic Canada Science Curriculum: Grade 1* (Nova Scotia Department of Education 2005) for additional activities, resources, and equipment lists.
- Set up a wall calendar to record seasonal/weather information.
- Consult the school library to collect appropriate resources.
- Plan local field trips.
- Access resources from Learning Resources and Technology Services Media Library.
- Investigate appropriate speakers (e.g., a snow plow driver, a gardener, a Department of Natural Resources animal expert).
- Investigate appropriate speakers or presenters. You may wish to contact Atlantic Science Links Association (<http://atlanticsciencelinks.dal.ca>).

## Resources

Various classroom resources that the teacher may have, such as

- *Four Seasons Make a Year* (Rockwell 2004)
- *Little Cloud* (Carle 2001)
- *Seasonal Changes, Learn Abouts* (MacDonald 2006) (NSSBB #: 17192)
- *Shadows* (Otto 2001)



## What Day Is It?

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

### Science 1

identify and record the days of the week, the names of the seasons, and predict the type of weather for various seasons (200-3, 203-2)

### Questions

- What are the names of the days of the week?
- How many days are in one week?
- Why do we have days of the week?
- What is a **schedule**?
- What is a **routine**?

### Materials

- days of the week labels
- picture icons of activities that students do on a regular basis (These could depict school activities, e.g., physical education days, library days, music class days, events that happen on a regular basis.)
- poems, chants, songs describing the days of the week
- science logbook

### Procedure

Calendar time takes place every morning as part of the class routine. The day of the week, month of the year, and the date should be identified. An Internet search can provide ample chants, songs, and poems that will help greet the morning. At this time, establish a routine for recording the weather and temperature, discuss the months of the year, and what season it is. What kind of clothes did you have to wear today? Was it cool enough to wear your jacket? Discuss whose birthday is coming soon or any holidays or celebrations.

This section uses math for recording the weather. Another math connection occurs in the production of birthday graphs. This is also a great time to introduce the concept of where the sun is. Ask students if they noticed the sun this morning on their way to school. Where was it? Refer to the questions above.

# ACTIVITY 31

## Let's Explore the Seasons

### Questions

- What are the names of the four seasons?
- What makes the four seasons different from one another?
- What months of the year are in each season?
- When will it snow?
- When can I go sledding?
- When can I wear my summer jacket?
- What will I wear on my feet?

### Part A: What Are the Seasons?

### Materials

- camera
- clipboards
- large thermometer (Celsius)
- posters or cards showing the seasons
- science logbooks

The following activities can be done throughout the year.

### Procedure

Take the students outside and discuss with them the weather and have them describe the environment around them in relation to their senses.

Use the thermometer to take the outside temperature. Record the date and temperature. Take pictures with the camera that highlight the changes or events that mark the season—leaves turning colour, dry crumpled leaves on the ground, children not wearing jackets, a hardwood tree without leaves, geese in the sky.

### Outcomes

Students will be expected to

#### Science Primary

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

#### Science 1

identify and record the days of the week, the names of the seasons, and predict the type of weather for various seasons (200-3, 203-2)

describe ways of qualitatively measuring and recording environmental changes that occur in daily and seasonal cycles (101-6)

observe and describe daily and seasonal changes in heat and light from the sun (100-14)

investigate and describe, using a variety of formats, how the daily changes affect the characteristics, behaviours, and locations of living things (200-1, 102-4, 201-5)

investigate and describe human preparations for seasonal changes (103-4)

Develop a list of words that describe each season. Some questions to focus/guide students in these discussions/responses are:

- What do you like about spring, summer, fall, or winter?
- What things do you not like about spring, summer, fall, or winter?
- How do we get ready and prepare for each season?
- How do other animals prepare for each season?

The photos can be turned into a slide show about the current season and the changes the children observe, or they can be developed and used as a combined language and science lesson as the children use the photos to create a book.

These adventures outside, with intent to observe the weather and temperature, should be done on a regular basis throughout the year.

## Part B: What Is the Weather?

### Materials

- Activity Sheet: What Is the Weather?
- blank calendars for student use
- large blank class calendar
- large labels with weather condition words
- pictures or icons depicting various weather conditions

### Questions

- What makes knowing the weather so important to us?
- How does knowing the weather affect how we dress and what we do on a particular day?
- Will we be wearing our snowsuits to school in September?
- Will we get a snow storm in June?
- The weatherman helped us to figure out when we could go on our field trip. How?



## Procedure

Students gather at circle time in front of the large blank class calendar. Ask them what month it is; what day it is; what date it is. Ask the students to describe the weather outside that day. Showing students the corresponding weather pictures and word cards (see reproducibles on pages 116–119), ask them to select the ones that best describe the weather outside today. The teacher models how to draw and print the symbol and word into the correct calendar square. Teachers may wish to copy and make sets of the cards in order to have the students match the weather pictures and word cards.

Direct the students to fill in their own calendar square each day. Do it jointly, so consensus is reached on the weather to record. Try recording for a week or two. Keep a record of the weather every month. At the end of the recording period ask the students to describe any patterns or observations they have noticed. Note the many math connections.

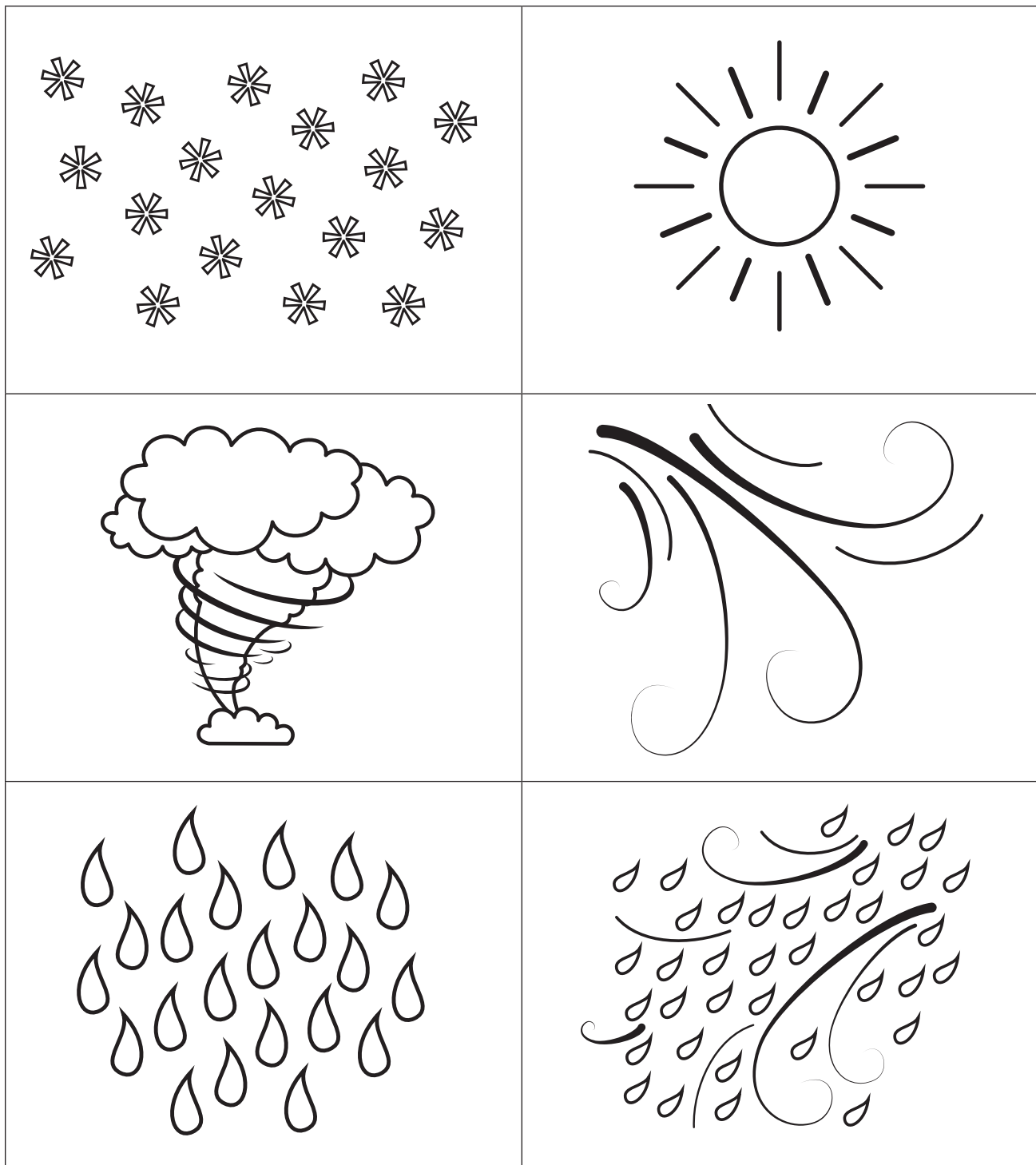
## Weather Word Cards

Snow	Sun
Tornado	Wind
Rain	Wind and Rain

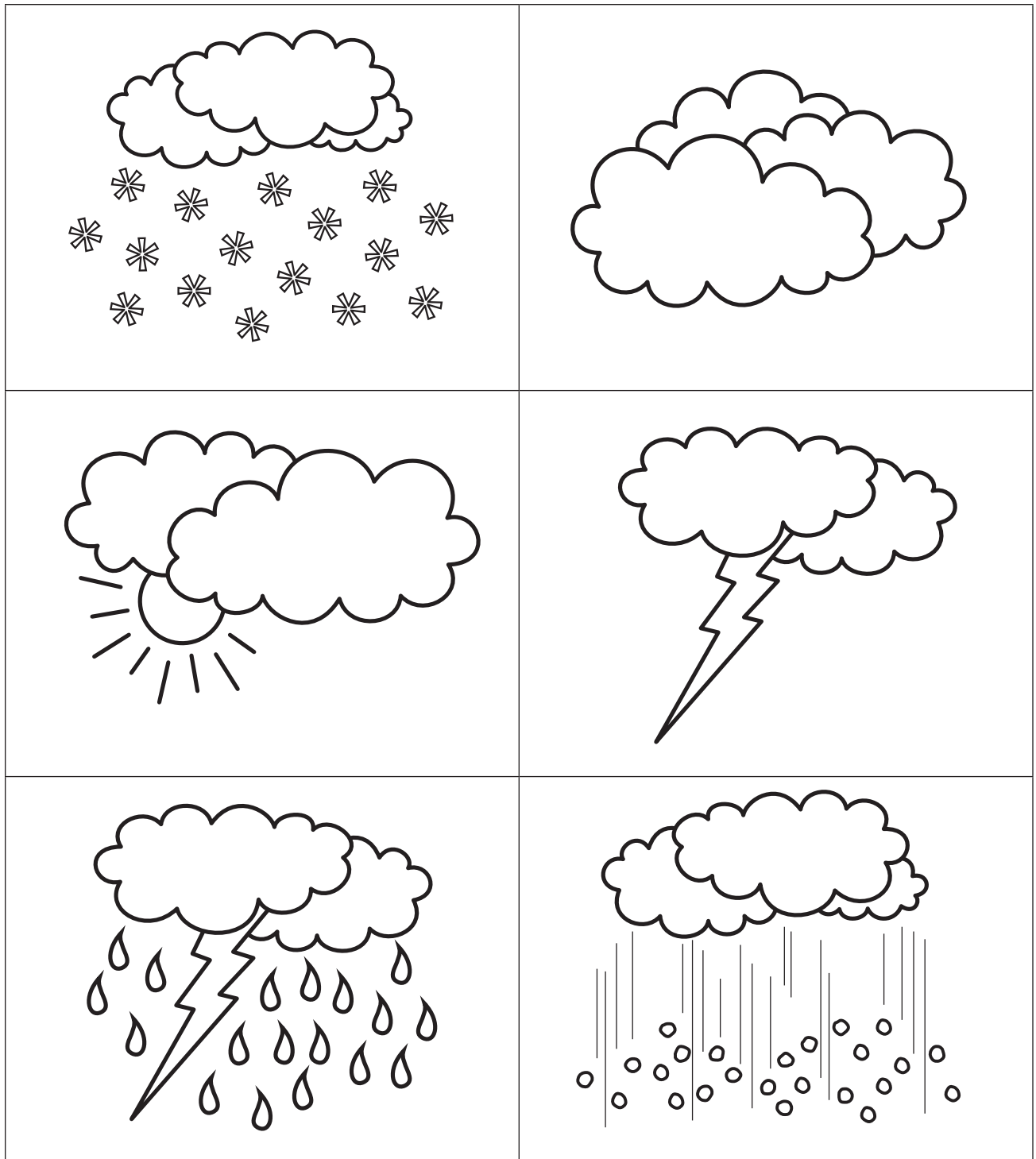
## Weather Word Cards

Cloud and Snow	Cloud
Sun and Cloud	Lightning
Rain and Lightning	Hail

## Weather Picture Cards



## Weather Picture Cards



## Part C: Weather Charades

### Materials

- blank cards (optional)
- charade cards (images of weather scenes/activities)

### Procedure

This is an activity to help students develop their observation and reasoning skills. It also gives them a chance to express themselves in a variety of ways.

This activity can be done as a class or in a small group. You will need a set of charade cards/images per group or class. Discuss the various images with the class. Each student can pick a card (or a card can be provided by the teacher) and then act out the type of weather. Have the rest of the students try to guess the weather condition the student is acting out.

**Option:** An option for this activity is to provide students with blank cards and have them make their own weather charade cards.

## Part D: Dress for the Season

### Materials

- construction paper or paper of different textures (e.g., old wallpaper books)
- drawing materials
- paper doll templates (see p. 122)
- season labels (winter, spring, summer, fall)

### Procedure

Provide students with the templates and have them dress the dolls to suit the described seasons. Have the students do one for each season and collect them into a “Season Book.” Don’t forget to add to the conversation safety and protective items (sunscreen, sunglasses, boots, etc.).

## Part E: How Do Animals Get Ready for the Seasons?

### Materials

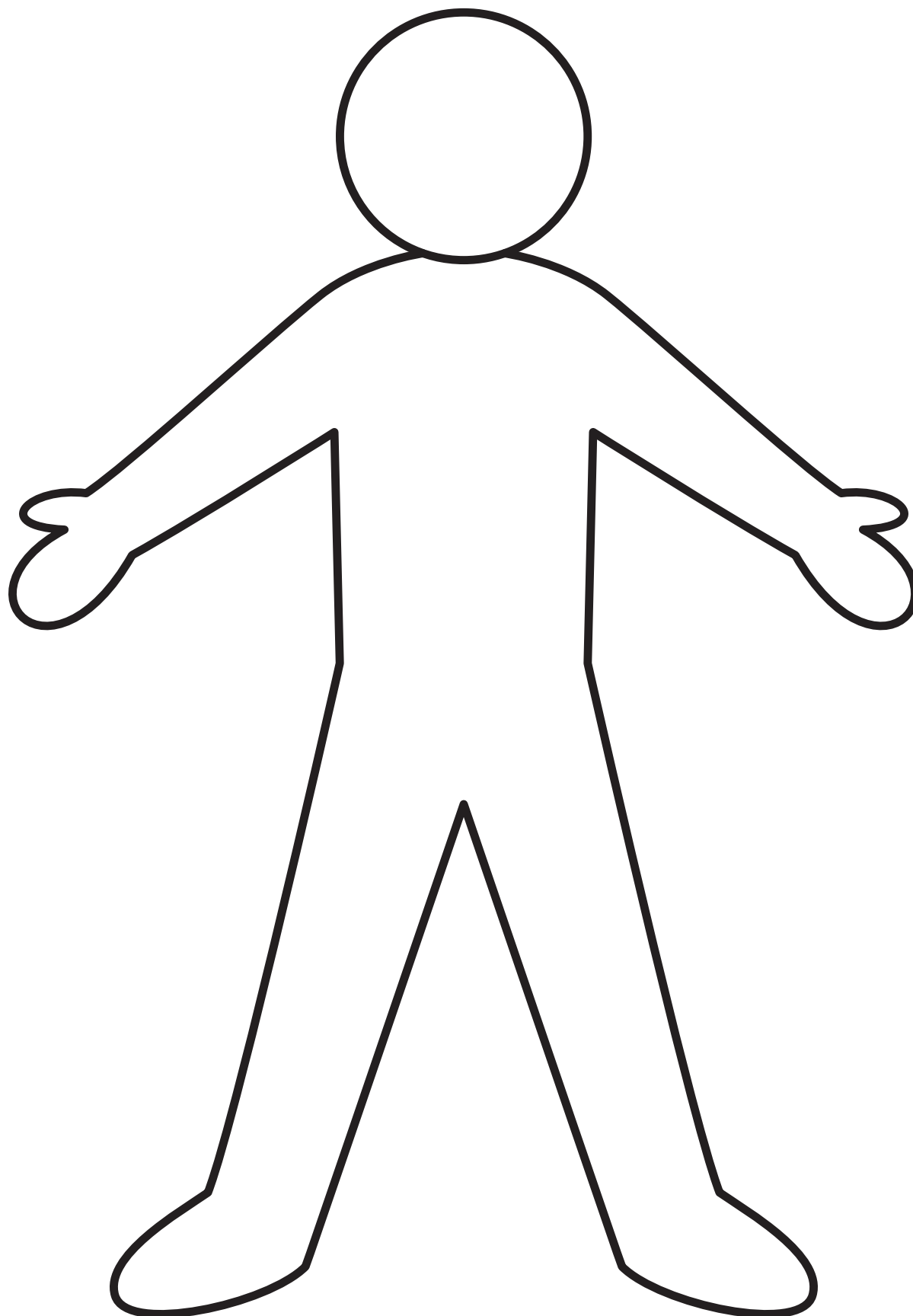
- animals template (see p. 127)
- art supplies
- mural paper

### Procedure

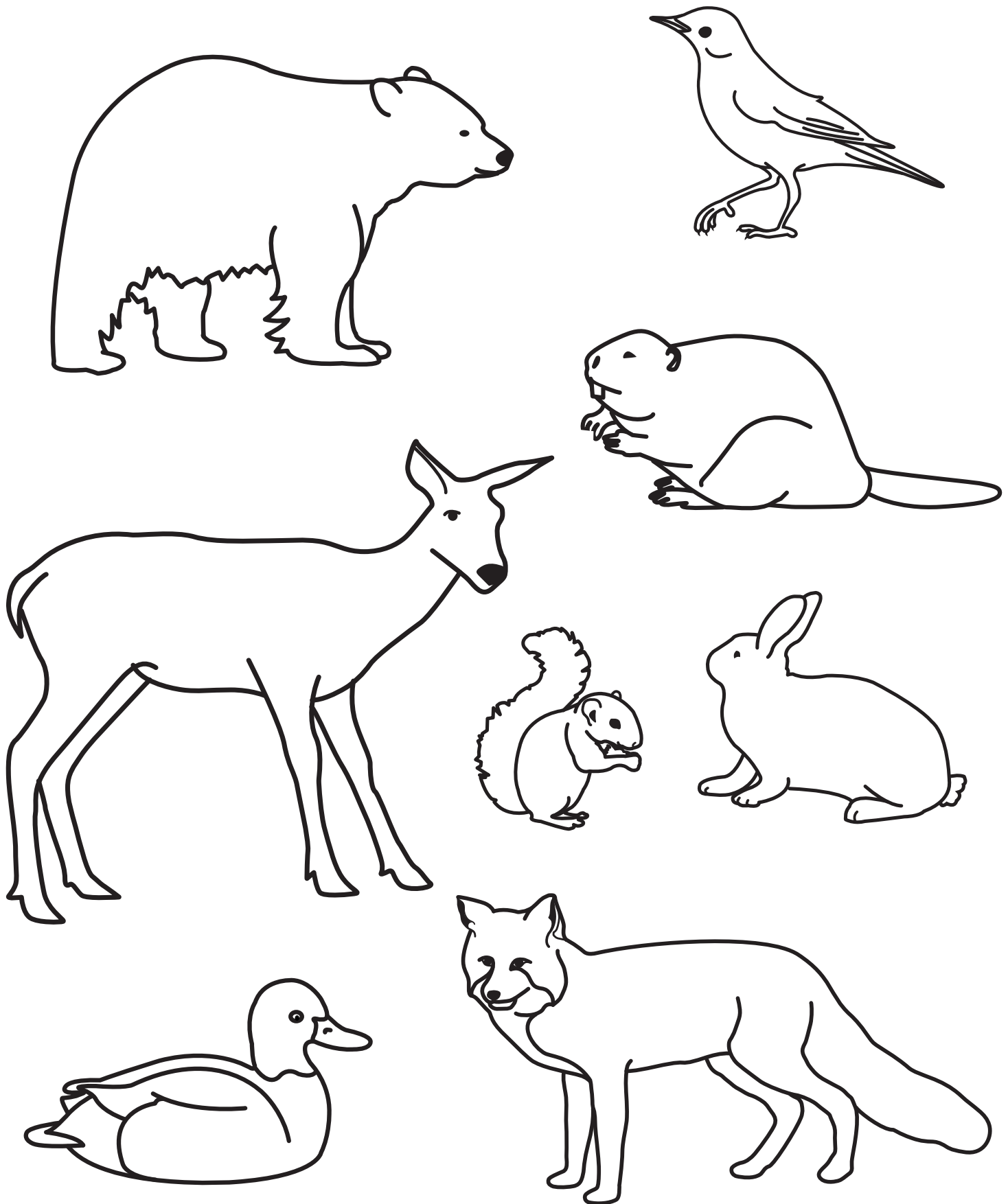
Students are now aware of how humans get ready for winter. Now ask them how they think different animals get ready for winter. Introduce the vocabulary words of **hibernation**, **migration**, and **camouflage**. Throughout discussion or readings, the concepts behind these new words should become apparent.

**Mural:** The creation of a large mural depicting the various animals as they get ready for winter is a great way for a hands-on, minds-on learning activity. The students may add animals to the mural and add images that show how the animal is getting ready for winter. or they may use an animal template, coloured in, and add that to the mural again explaining or showing how it is getting ready for winter. Some animals that stay active all winter long change the colour of their coat—rabbit, fox. Other animals that stay active all winter long may just change their location—partridge, deer, and moose—to a location that helps them to blend in better with their frosty surroundings.

Divide the class into small groups. Provide each one with a picture of an animal (ones from the template can be used). Have each group talk about the characteristics of the animal and what it needs to live. Students can then discuss, draw, or write about how they think the animal gets ready for the seasons.







ACTIVITY  
32

# My Shadow

## Outcomes

Students will be expected to

### Science Primary

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

### Science 1

describe ways of qualitatively measuring and recording environmental changes that occur in daily and seasonal cycles (101-6)

observe and describe daily and seasonal changes in heat and light from the sun (100-14)

## Questions

- Can you see your shadow when you walk to school?
- Can you see your shadow when you are at the bus stop in the morning?
- Where in the sky is the sun in the morning? At lunch time? In the afternoon? In the evening?
- Where does the sun go at night?
- Does the sun make our shadows change?

## Part A: My Shadow

## Materials

- camera
- non-standard unit for measuring
- sidewalk chalk
- various objects

## Procedure

Ask students what they know about shadows. Take them outside on a sunny day and have them look for shadows. See if they notice their own shadows. Starting in the morning, have students stand outside and trace their shadows. Working with a buddy, each helps trace the other's shadow. They need to mark where they are standing before they trace the shadow. Make sure they mark their names on their shadows.

Return a few hours later. Have students stand in their exact spots from the morning. Their buddies then trace their new shadows.

Have the students measure their shadows after they have been traced, using a non-standard unit. Discuss with students any changes they noticed. Ask students, What happened to the position of your shadow? Was your shadow any longer or shorter? Where was the sun in the sky? Take pictures of the students and their shadows for possible slide show presentations or language and writing opportunities.

Repeat the shadow tracing toward the end of the school day, again asking what changes they have noticed.

Tracing shadows should be done throughout the year, in each season. Trace them early in September, then again in early November, January, and then in May or June. Make sure the students trace their shadows from the same position each time. Are there any changes noticed when tracing shadows from season to season?

### Options

**Shadow Tag:** Play Shadow Tag by touching someone else's shadow.

**Shadow Board:** Create a shadow board. Stretch white fabric over an old wooden frame and staple it in place. Put an object (such as a spoon, funnel, or a banana) behind the shadow board. Have students guess what object is making the shadow.

#### Teacher Note

The focus in these activities is on observing the position of the sun and the length of shadows at various times, but not on explaining why this happens, which is explored in Science 6.

## Part B: Where Does My Shadow Go?

### Materials

- globe
- flashlight
- small figure (and a non-permanent material to adhere figure to globe)

### Procedure

At an interest table, set up the globe and attach the small figure to Nova Scotia. A student holding the flashlight is the sun. Have the student manipulate the flashlight above and to the sides of the figure in order to create shadows. Ask the student to describe where the flashlight will be if there is to be no shadow at all. Where does the flashlight have to be if there is to be a shadow on the left side of the figure? On the right side of the figure?

Relate the students' observations to what they noticed when they were outside tracing their shadows. Where is your shadow when the sun is right over us? Where is your shadow in the morning? Where is your shadow in the late afternoon?

# ACTIVITY

## 33

# Rain, Rain, Go Away

### Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

### Science 1

observe and describe daily and seasonal changes in heat and light from the sun (100-14)

## Questions

- Does it rain more in winter or in summer?
- How much does it rain in the fall?
- What is precipitation?
- Is snow like rain?
- What is freezing rain?
- What is hail?
- Which season gets the most rain?

## Materials

- containers to hold snow and rain
- icons/images of types of precipitation to use with the calendar
- monthly calendar for recording
- non-standard units for measuring (e.g., paper clips)

## Procedure

Discuss with students the types of precipitation.. As a class, set up a mini- weather collection station. This could be a plastic container set up off the ground in an accessible location. As part of the morning routine, have two students go out and collect the containers. Each day, record how much precipitation was collected using the terms such as “**more than**” or “**less than**,” or how many paper clips high the water is in the container. Record on the large calendar the type of precipitation, using a determined icon to represent rain, hail, freezing rain, and snow. Record the amount as well.

Doing this tally every day incorporates mathematics, language, and science, as well as reinforces days of the week, months of the year, and the seasons.

# ACTIVITY

## 34

## Solving the Puzzle of the Seasons

### Questions

- Which season are you drawing about?
- Does your puzzle piece go with all the others? Why?

### Materials

- crayons, paints
- four sheets of Bristol board (different colours)
- mural paper
- scissors
- white glue

### Procedure

Assign each piece of Bristol board a season. With a marker, divide each piece into six or eight puzzle-type pieces. Cut out the pieces. Give each student a piece of the puzzle with the directions to draw a picture illustrating a season. You could also be specific for each puzzle sheet, asking the students to draw specific things, such as how we dress, what the gardens and trees look like, or how the activities we play outside change because of the season. Once all the pieces are done, can the students find the right way to put their mural together? Do all the pieces go together? Can they explain why? Focus on the illustrations as well as the shape of the piece. Will a piece fit in any other season?

### Outcomes

Students will be expected to

#### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

manipulate materials purposefully (201-2)

explore and select different ways to represent ideas, actions, and experiences and to communicate with others (100-2)

#### Science 1

place materials and objects in a sequence or group according to various sorts (202-2)

predict and communicate questions and answers to investigations about seasonal changes and describe these changes (202-9, 102-5, 202-7, 203-1)



# Year 2: Sample Plan

---

This sample Year 2 includes focus and contextual information along with questions and activities that enable students to engage and explore in each of the components. Teachers may decide the specific questions, activities, and assessments for the students. Students may also make their own questions to explore and explain.

## Science Primary and Science 1 Combined Class Components

<b>Component 1: Exploring Plants</b>	Addresses outcomes in Science Primary: Exploring the World of Living Things with Our Senses Science 1: Needs and Characteristics of Living Things—Balance Scales
<b>Component 2: Exploring Moving Things</b>	Addresses outcomes in Science Primary: Exploring Moving Things with Our Senses Science 1: Needs and Characteristics of Living Things and Materials, Objects, and Our Senses
<b>Component 3: Exploring Sand</b>	Addresses outcomes in Science Primary: Exploring Sand and Water with Our Senses Science 1: Materials, Objects, and Our Senses
<b>Component 4: Exploring Animals</b>	Addresses outcomes in Science Primary: Exploring the World of Living Things with Our Senses Science 1: Needs and Characteristics of Living Things
<b>Component 5: Exploring The Seasons Every Day</b>	Addresses outcomes in Science Primary: Exploring the World with Our Senses Science 1: Daily and Seasonal Changes





# Component 1: Exploring Plants

## Focus and Context

This component focuses on scientific inquiry using plants. Students should collect artifacts—leaves and flowers to dry and press and seeds. Students should plant their own seeds (sunflower seeds are recommended). Students should be encouraged to make predictions, measure, and conduct simple investigations to explore the needs and characteristics of their plants.

## Questions/Activities

- Where can we find seeds?
- Make a collection of different leaves, plants, and seeds.
- What will be your rules for sorting through your collection?
- Make a graph or chart that records the things in your collection.
- What plants are in your yard?
- What plants are in our schoolyard?
- How are seeds alike? How are they different?  
(Use all of your senses.)
- What are seeds used for?
- How do seeds get planted when a human doesn't plant them?
- What are some ways seeds move around?
- Where do seeds come from?
- What does a plant look like?
- Why do you think people need plants?
- How should we look after plants?
- What do you think the word “**balance**” means?
- How does balance play an important role in our lives?
- How do you think plants keep their balance?
- How does the wind affect plants?
- How can I tell if plants or animals are “in balance”?

## Outcomes

Students will be expected to

### Science Primary

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

communicate questions, ideas, and intentions while conducting their explorations (203-1)

### Science 1

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

question, explore, observe, and identify the similarities and differences in how living things are able to meet their needs (200-1, 100-4, 100-5, 100-7)

identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)

identify and use a variety of materials, information, and ideas to explore balance (201-7)

listen and respond to another student's description of an animal or plant (203-4)

investigate and describe, using a variety of formats, how the daily changes affect the characteristics, behaviours, and locations of living things (200-1, 102-4, 201-5)

- Predict how a bird with an injured wing, or a dog with three legs, might balance.
- Using a balance, measure and record various objects.
- Using a balance, try to find how many non-standard units of measurement (e.g., paper clips) equals the mass of a plant. Centicubes can also be used.
- What did you have to do to get different things to balance on the balance scales?
- The seeds from the sunflower plant weigh the same as ... ?

# Component 2: Exploring Moving Things

## Focus and Context

This component focuses on problem solving by observing, describing, and discussing a variety of moving things using ramps. Students will explore how objects move and will be able to manipulate the speed and direction of objects as they move. Students will experience the sense of balance within themselves and explore ways to balance objects in their environments.

## Questions/Activities

- What does the word “**balance**” mean?
- Can you demonstrate balancing?
- Have you ever tried to keep a book on your head while walking?
- Are you able to keep a pencil on your finger?
- What would happen if you tripped when you were walking?
- How are you able to keep yourself up when riding a bicycle?
- Can you stand on one foot and touch your head with your hand?
- Can you try balancing on different feet with your eyes closed? Does it make any difference?
- How does nature balance objects?
- What is an inukshuk? How does it balance?
- How are the swings in the playground balanced?
- How are the climbing bars balanced?
- Can you build a tower from interlocking blocks or straws and connectors that will be balanced?
- What would happen to your tower if it were not balanced?
- What things in the class are balanced?
- What balancing task did you find hardest to do?
- What did your body feel like when you were balancing it in different ways?

## Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

explore how characteristics of materials may change as a result of manipulating them (101-1)

identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)

select and use materials to carry out their own explorations (200-4)

manipulate materials purposefully (201-2)

respond to the ideas and actions of others and acknowledge their ideas and contributions (203-4)

### Science 1

identify, solve, and evaluate problems that arise while constructing objects (200-2, 202-7, 203-1)

predict and connect investigations on various materials, recording the results (200-3, 200-4, 201-5, 203-3)

compare and describe various materials and report the results using a variety of formats (202-4, 100-13)

- What materials help make things balance?
- How are ramps used in the world around us?
- Where have you seen ramps in your neighbourhood?
- Describe, in pictures, various ramps.
- What does a “fair test” mean? What is a “working” definition of a fair test?
- How would you design a fair test?
- How do you follow directions?
- Make a ramp that will make a toy car travel all the way to the door.
- Design a ramp with a partner and test it.
- Describe to another group how you build your ramp.
- How will we decide which ramp will make cars go the farthest?
- Can you build a ramp?
- Can you build a ramp by following the designs from a drawing?
- What do you have to do to make sure your ramp test is fair?
- How do some objects go down the ramp?
- Draw your ramp and record the distance that various cars travelled.
- Does the angle of the ramp mean the car will go faster or farther?
- How do heavier cars that go down the ramp compare with lighter cars?
- Does a smooth surface for the rollers and sliders make a difference? Test your prediction. Record your results.
- What happens if we put a towel on the ramp and send the objects down?
- What happens if the ramp is made of plastic?
- What makes an object roll?
- What makes an object slide? Can you sort objects into “sliders” and “rollers”?
- Where are objects that slide or roll used in the world?
- What is the difference between an object that slides and one that rolls down the ramp?
- Do all ramps need to be the same, with the same roller and slider, in order to compare results? What evidence do you have to support your answer?

# Component 3: Exploring Sand

## Focus and Context

Sand investigations begin with careful observation using the senses. Tasting is not appropriate. Students will explore how sand feels, flows, piles, and slides. They will compare their sand sample with other granular substances, such as other types of sand and salt and sugar. Sand is a solid, but it has liquid properties. In this component, students will explore the ways that sand can pour, especially when water is added to it, the strength of a dry sand pile compared to a wet sand pile, and what happens to a wet sand pile when it is allowed to dry.

The teacher might look at the following for observations and for interviews for assessment.

- Is the student increasing the range of vocabulary used to describe sand?
- Does the student
  - conduct ongoing explorations with sand
  - ask questions about sand that lead to exploration and investigations
  - manipulate the sand samples, keeping each sample separate
  - place tools in a sequence or group for fast sifters or slow sifters
  - identify and explore ways to hold and use a magnifier purposefully to distinguish between the various types of sand samples
  - make predictions about the ways materials will perform, for example a wet pile of sand will hold its shape, compared with a dry pile of sand

## Outcomes

Students will be expected to

### Science Primary

explore how characteristics of materials may change as a result of manipulating them (101-1)

choose materials to build a variety of real and imaginary settings and play roles that correspond to those settings (103-1)

observe, using one or a combination of the senses (201-4)

follow a simple procedure where instructions are given one step at a time (201-1)

manipulate materials purposefully (201-2)

### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

select, explain, and describe ways to use appropriate materials while constructing objects (101-5, 103-3)

Open-ended investigations allow and encourage the development of language and vocabulary for the young learner.

## Questions/Activities

- Identify and explore using appropriate tools to pour and sift the sand, deciding if the tools will pour or sift quickly or slowly.
- In what ways can you mould sand?
- How easily does sand pour? What happens to dry sand when it is released from your hand?
- What kind of patterns can you make with sand or in the sand?
- Create a sand sculpture in wet sand. Create a sand sculpture in dry sand. Compare.
- What happens to your sand sculpture when the sand is dry?
- What tools help the sand pour in a different way?
- What characteristics does sand have that help it to pour? Design a test to see if wet sand and dry sand pour the same. Do the test. Record results.
- Are there different kinds of sand? How are they the same? How are they different?
- Show how sand can make a pattern when it is poured onto a flat surface.
- What words would you use to describe sand? Crumbly? Gritty? Rough? Hard? Lumpy? Soft?
- What words would you use to describe how sand moves? Flattens out? Plops? Sinks in? Smooths out?
- What are the differences and patterns in the sand?
- What changes happen in the sand when water is added?
- Describe the changes in the characteristics of sand when water is added.
- How much water does sand need in order for your sculpture to hold its shape?
- What happens when too much water is added to sand?
- How does it feel when you pour wet sand through your fist?
- Is wet sand heavier than dry sand? Design a test and do it using a balance. Record results.
- What are things you can do with wet sand that you can't do with dry sand?
- Is sand easier to spread when it is dry or wet? How do you know?
- Design a tool that will help you to pour the sand in different ways.

# Component 4: Exploring Animals

## Focus and Context

This component focuses on scientific inquiry about animals; worms are often readily available and are recommended. Students should have many opportunities to make first-hand observations of animals. These observations will lead to grouping organisms based on similar characteristics. The investigation of worms and other animals will lead to awareness of the dynamic nature of life and interdependence of living things. A class worm farm is a wonderful way to bring the outside in for up-close observations.

The teacher might look at the following for observations and for interviews for assessment.

- Compare and contrast other animals to worms, highlighting specific characteristics of worms and other animals.
- Describe the characteristics that you used to sort and group the worms and other animals.
- Listen and respond to another student's description of an animal.
- Describe how worms move; compare how they move with how other animals move in order to get food or to escape from enemies.
- Question, explore, observe, and identify how worms are able to meet their needs. Compare their needs with the needs of other animals.

## Questions/Activities

- Where do we find worms?
- What do worms look like?
- How are worms the same? How are worms different?
- What do worms need to live?
- What do we need to do for the worms in our worm farm?
- How do worms hear? Do they have ears?

## Outcomes

Students will be expected to

### Science Primary

explore and select different ways to represent ideas, actions, and experiences and to communicate with others (100-2)

ask questions that lead to exploration and investigation (200-1)

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

### Science 1

recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

question, explore, observe, and identify the similarities and differences in how living things are able to meet their needs (200-1, 100-4, 100-5, 100-7)

place materials and objects in a sequence or group according to various sorts (202-2)

identify and investigate common characteristics of humans (100-8)

investigate and describe, using a variety of formats, how the daily changes affect the characteristics, behaviours, and locations of living things (200-1, 102-4, 201-5)

### Teacher Note

The teacher may wish to do a study similar to "Spiders in the Classroom" (Year 1, Activity 1) and read to students *Diary of a Worm* by Doreen Cronin (2003).

- How do worms eat? Do they have mouths?
- Do worms like to live in hot places or cold places? Do they like to live in wet, damp, or dry places?
- Where do worms go for the winter?
- How does a worm move when it needs to get around?
- What words would you use to describe worms?
- What does “slimy” mean to you?
- What do worms do all day and night? Do they need to sleep?
- What do I need to do for worms when I see them outside?



# Component 5: Exploring The Seasons Every Day

## Focus and Content

The inquiry focus for this component will emphasize making observations of daily and seasonal events, recording these observations over time, and noting when patterns or cycles exist.

Teachers are encouraged to address daily and seasonal weather changes throughout the year.

Students should use describing words about daily and seasonal events as they explore their world throughout the seasons. This component links closely with language and mathematics outcomes, so many of the outcomes can be incorporated into the usual start of the day, making note of the weather, the date, and the season.

Research chants and poems about the seasons and weather to help illustrate outcomes.

The teacher might look at the following for observations and for interviews for assessment.

- Design a circular class mural to show each season.
- Compare the amount of water (rain, snow, etc.) that an outside plant receives during the seasons.
- Collect data on the weather that happens during the seasons.
- Explore the amount that variables such as water and light have on the growth of various plants, indoors and/or outdoors, during the seasons.
- Question and explore how the seasons change and how this affects everyday life for animals and plants.
- Identify and explore patterns over time.

## Outcomes

Students will be expected to

### Science Primary

develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)

detect consistency and pattern in objects and events and use language to describe these patterns (100-3)

ask questions that lead to exploration and investigation (200-1)

observe, using one or a combination of the senses (201-4)

use personal observations when asked to describe characteristics of materials and objects studied (202-1)

place materials and objects in a sequence or in groups according to one or more attributes (202-2)

communicate questions, ideas, and intentions while conducting their explorations (203-1)

identify common objects and events, using terminology and language that others understand (203-2)

### Science 1

identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)

compare and describe various materials and report the results using a variety of formats (202-4, 100-13)

predict and connect investigations on various materials, recording the results (200-3, 200-4, 201-5, 203-3)

*(continued on next page)*

*(continued)*

identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)

listen and respond to another student's description of an animal or plant (203-4)

identify and record the days of the week, the names of the seasons, and predict the type of weather for various seasons (200-3, 203-2)

describe ways of qualitatively measuring and recording environmental changes that occur in daily and seasonal cycles (101-6)

observe and describe daily and seasonal changes in heat and light from the sun (100-14)

investigate and describe, using a variety of formats, how the daily changes affect the characteristics, behaviours, and locations of living things (200-1, 102-4, 201-5)

predict and communicate questions and answers to investigations about seasonal changes and describe these changes (202-9, 102-5, 202-7, 203-1)

place materials and objects in a sequence or group according to various sorts (202-2)

investigate and describe human preparations for seasonal changes (103-4)

## Questions/Activities

- When does it rain/snow? Keep a chart.
- Where do the worms go when it is sunny, rainy, snowy, and/or cold?
- What are the seasons? When do they happen?
- Make a human bar graph of birthdays that occur during the four seasons.
- What do trees/plants do (change) during the seasons? Keep evidence (pictures, temperatures, weather) to help explain the change.
- Is it safe to be outside in all types of weather? What may be needed for each season to play outside?
- Do your observations in September look the same as in November? February? April? Why or why not?
- Describe typical weather for fall, winter, spring, and summer. Give evidence to support your answer.
- “Our weather changes some during the day.” “Our weather changes some from day to day.” What patterns support these statements?
- Keep daily records of wind, temperature, and precipitation. Make concrete or representative graphs of these.
- How does your clothing change for the seasons? (Teachers may wish to illustrate this discussion by using a collection of clothes from various seasons.)
- How are winter clothes alike? What do summer clothes have in common?
- What do we do to prepare for hot weather? For cold weather?
- What do plants do to prepare for hot weather? For cold weather?
- Are there some activities that can only be done in a given season? Explain.
- What are some things that make you think of fall, winter, spring, and/or summer?
- How often do the seasons happen? What is the pattern?
- When do the days start to grow longer?
- What should I pack to go to Yellowknife in December?
- What season follows what season? How does the weather change? What different activities can take place?

- What do the animals do to prepare for the next season? What do the plants do to prepare for the next season?
- What are some things you like doing in each season?
- Explain which season you like best.
- Do the types of food that are available change during the seasons?
- In what season is it darkest? Lightest?
- In which season do you see flowers?
- Create each season (four groups) in the classroom using a celebration that includes clothing, songs, and foods about each of the seasons.
- Can we have seasons on the International Space Station?



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# Appendices

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# Outcomes for Science Primary and Science 1

## Science Primary

Science Primary components:

- **Exploring the World with Our Senses**
- **Exploring Sand and Water with Our Senses**
- **Exploring Moving Things with Our Senses**
- **Exploring the World of Living Things with Our Senses**

Students will be expected to

- develop vocabulary and use language to bring meaning to what is seen, felt, smelled, heard, tasted, and thought (100-1)
- explore and select different ways to represent ideas, actions, and experiences and to communicate with others (100-2)
- detect consistency and pattern in objects and events and use language to describe these patterns (100-3)
- explore how characteristics of materials may change as a result of manipulating them (101-1)
- identify and explore ways to use tools to help carry out a variety of useful tasks (101-2)
- choose materials to build a variety of real and imaginary settings and play roles that correspond to those settings (103-1)
- ask questions that lead to exploration and investigation (200-1)
- select and use materials to carry out their own explorations (200-4)
- follow a simple procedure where instructions are given one step at a time (201-1)
- manipulate materials purposefully (201-2)
- observe, using one or a combination of the senses (201-4)
- use personal observations when asked to describe characteristics of materials and objects being studied (202-1)
- place materials and objects in a sequence or in groups according to one or more attributes (202-2)

- communicate questions, ideas, and intentions while conducting their explorations (203-1)
- identify common objects and events, using terminology and language that others understand (203-2)
- respond to the ideas and actions of others and acknowledge their ideas and contributions (203-4)

## Science 1

### Physical Science: Materials, Objects, and Our Senses

Students will be expected to

#### The Senses

- identify each of the senses and demonstrate how each of the senses helps us to recognize, describe, and safely use a variety of materials (100-9)
- demonstrate and describe change in materials using the five senses (100-11, 101-3, 101-4)

#### Objects Are Made from Materials

- compare and describe various materials and report the results using a variety of formats (202-4, 100-13)

#### Properties of Materials

- predict and connect investigations on various materials, recording the results (200-3, 200-4, 201-5, 203-3)

#### Constructing Objects

- select, explain, and describe ways to use appropriate materials while constructing objects (101-5, 103-3)
- identify, solve, and evaluate problems that arise while constructing objects (200-2, 202-7, 203-1)



## Life Science: Needs and Characteristics of Living Things

Students will be expected to

### Characteristics of Living Things

- identify, conduct, measure, and record observations about animals and plants using appropriate terminology (201-5, 100-8, 203-2)
- listen and respond to another student's description of an animal or plant (203-4)

### Needs of Living Things

- question, explore, observe, and identify the similarities and differences in how living things are able to meet their needs (200-1, 100-4, 100-5, 100-7)
- recognize that humans and other living things depend on their environment and identify personal actions that can contribute to a healthy environment (103-2)

### Investigating Balance

- identify and investigate common characteristics of humans (100-8)
- identify and use a variety of materials, information, and ideas to explore balance (201-7)

## Earth and Space Science: Daily and Seasonal Changes

Students will be expected to

### Introduction to Cycles: Daily/Seasonal Changes in Heat and Light

- identify and record the days of the week, the names of the seasons, and predict the type of weather for various seasons (200-3, 203-2)
- describe ways of qualitatively measuring and recording environmental changes that occur in daily and seasonal cycles (101-6)
- observe and describe daily and seasonal changes in heat and light from the sun (100-14)

### **Daily Changes in Living Things**

- investigate and describe, using a variety of formats, how the daily changes affect the characteristics, behaviours, and locations of living things (200-1, 102-4, 201-5)

### **Seasonal Changes in Living Things**

- predict and communicate questions and answers to investigations about seasonal changes and describe these changes (202-9, 102-5, 202-7, 203-1)
- place materials and objects in a sequence or group according to various sorts (202-2)
- investigate and describe human preparations for seasonal changes (103-4)

# Three Processes of Science Literacy

## Individual Student Chart

Name: \_\_\_\_\_ Date of observations: \_\_\_\_\_

<b>Inquiry</b>	<b>Comments</b>
Questioning	
Observing	
Inferring	
Predicting	
Measuring	
Classifying	
Designing experiments	
Collecting data	
Interpreting data	
<b>Problem Solving</b>	<b>Comments</b>
Proposing prototypes, products, techniques	
Creating prototypes, products, techniques	
Testing prototypes, products, techniques	
<b>Decision Making</b>	<b>Comments</b>
Determining or responding to a particular context, supported by evidence	

## Class Chart

Date of observations:	Names									
<b>Inquiry</b>	<b>✓ = achieved (evidence on Individual Student Chart)</b>									
Questioning										
Observing										
Inferring										
Predicting										
Measuring										
Classifying										
Designing experiments										
Collecting data										
Interpreting data										
<b>Problem Solving</b>										
Proposing prototypes, products, techniques										
Creating prototypes, products, techniques										
Testing prototypes, products, techniques										
<b>Decision Making</b>										
Determining or responding to a particular context, supported by evidence										

# Appendix C: Graphic Organizers

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## Portfolio Reflection

Name: \_\_\_\_\_ Date: \_\_\_\_\_

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is included in my portfolio because

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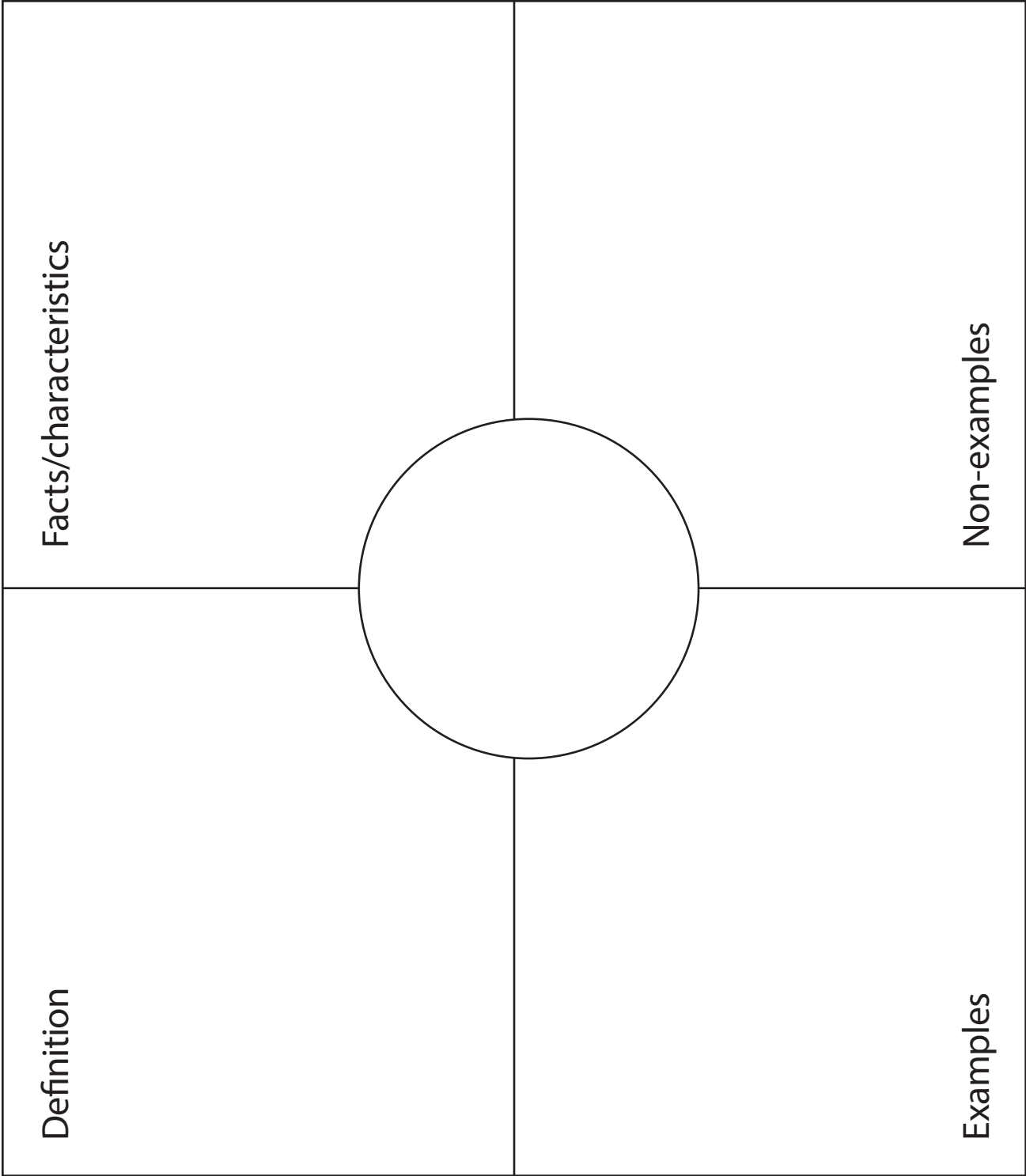
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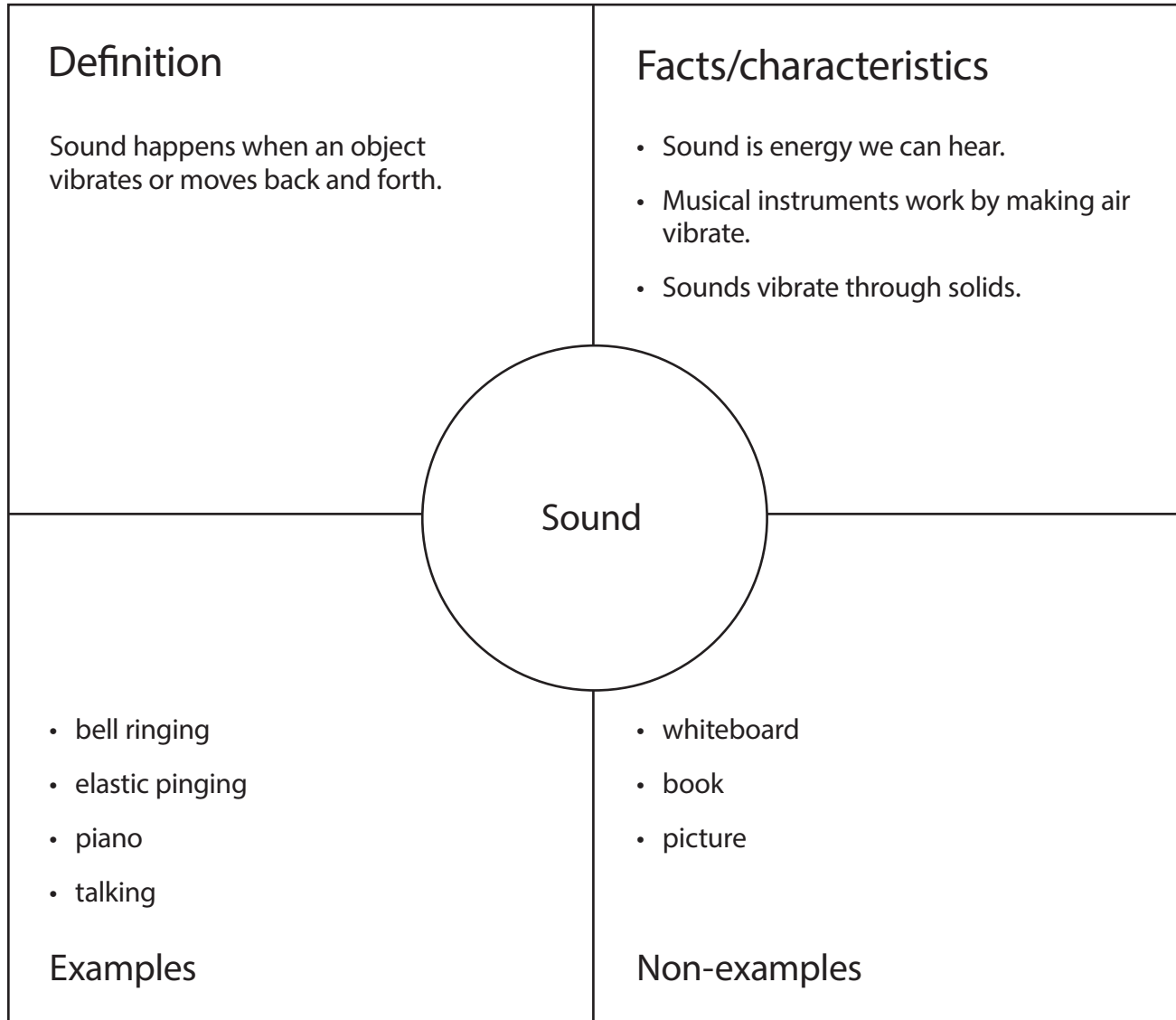
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# Frayer Model



## Frayer Model (Example)





## Picture Exit Card

Question:

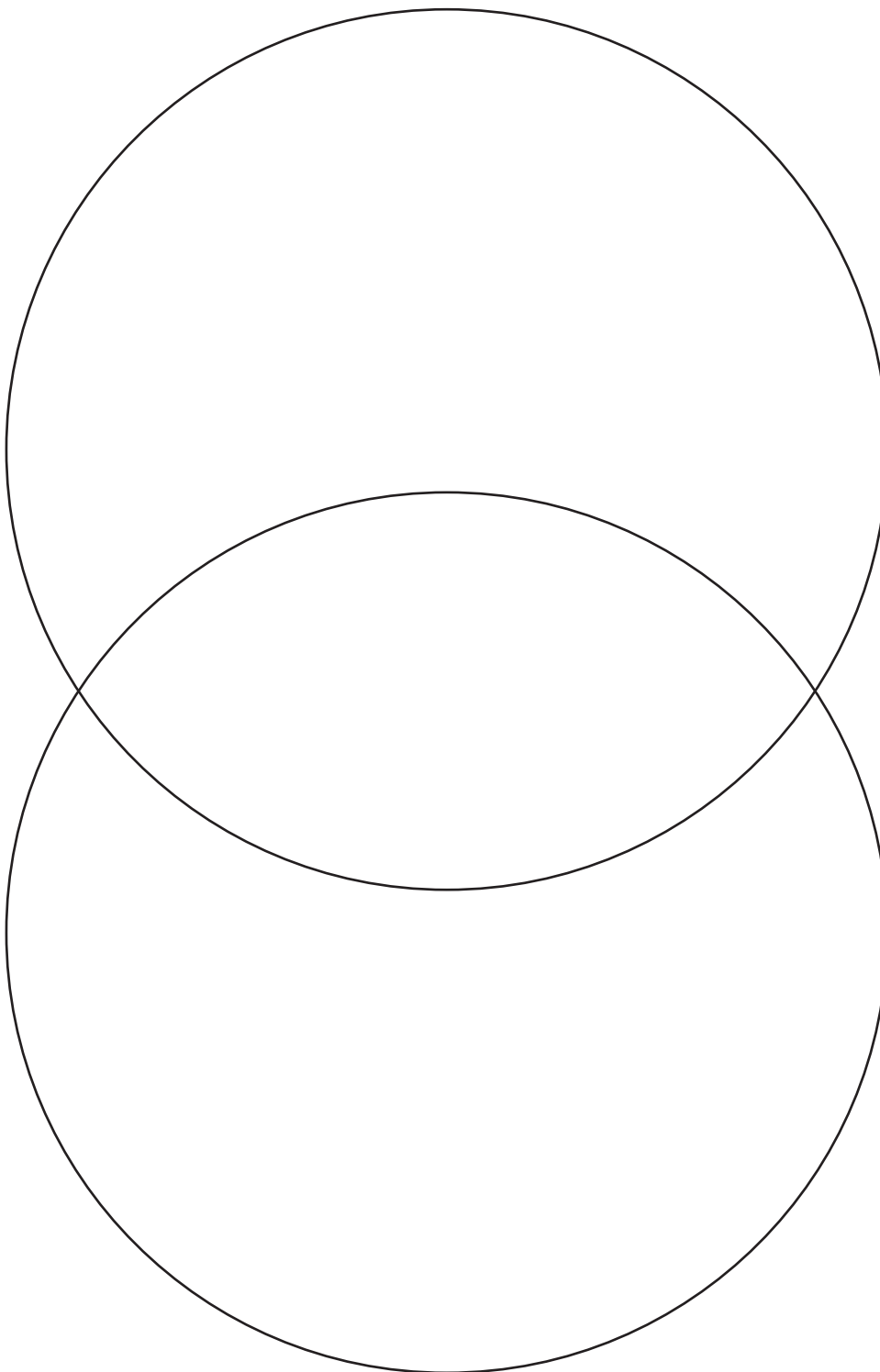
My answer picture:

## Picture Exit Card

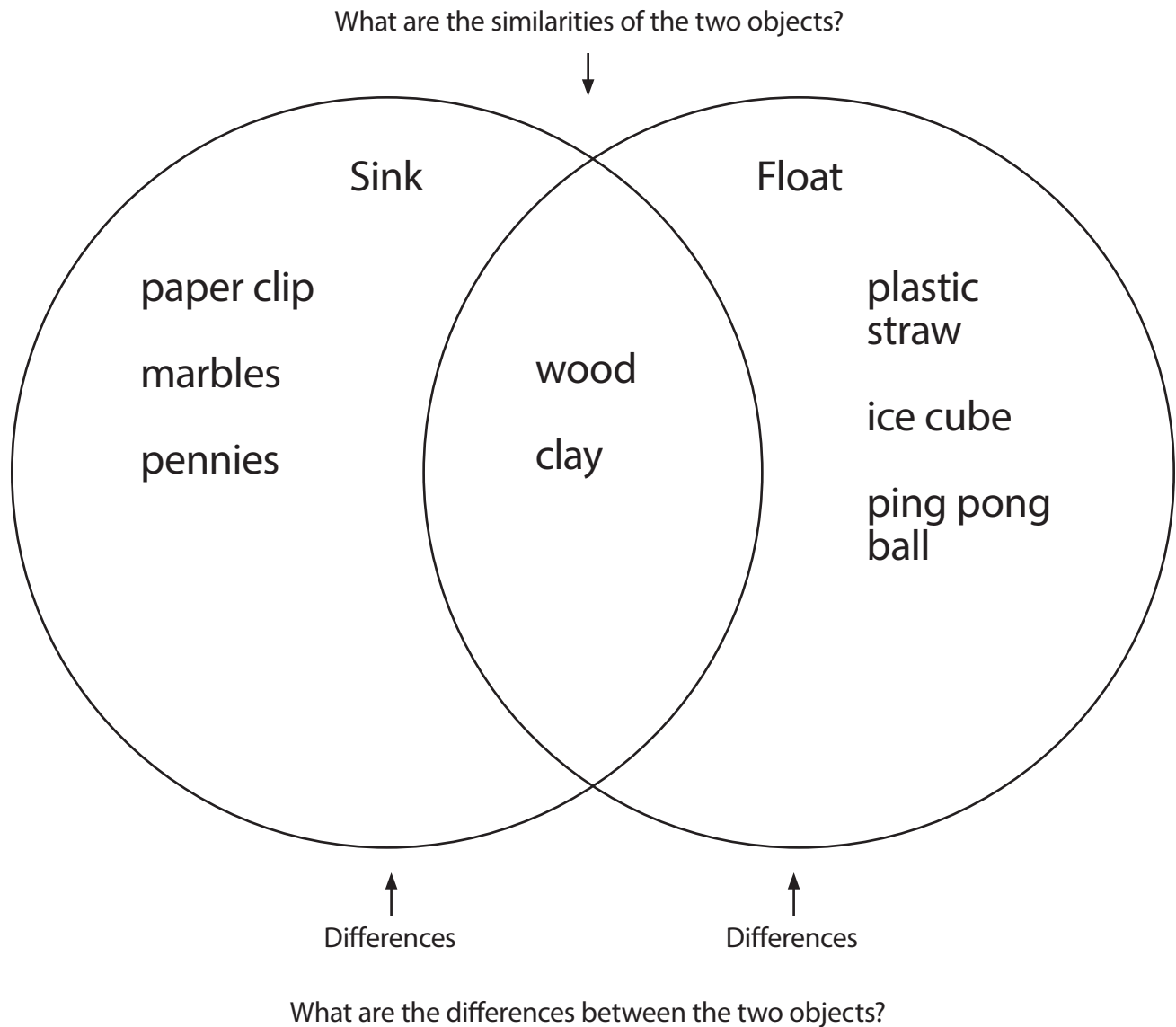
Question:

My answer picture:

## Venn Diagram



## Venn Diagram (Example)



### Check It Out

Sorting rings may be used at this level to explore a hands-on version of a Venn diagram.

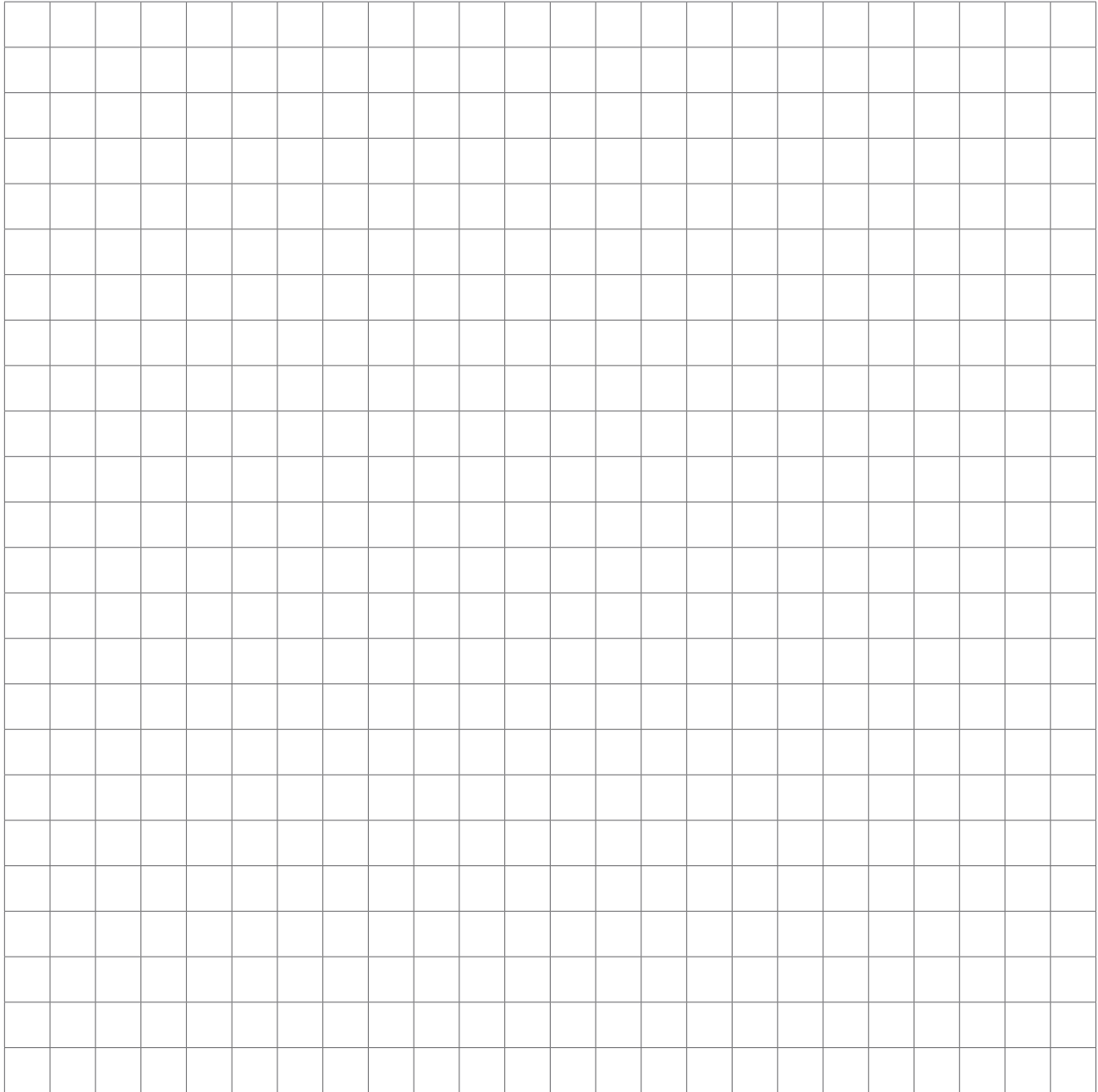
## Property Chart

Property	Describing Words

## Property Chart (Example)

Property	Describing Words
Colour	red, blue, orange
Size	small, medium, large
Shape	circle, rectangle, triangle
Texture	soft, rough, smooth

## Graph Paper



# Organizers for Teachers

## “Who Can Bring ...” List

We’re trying to find out information about \_\_\_\_\_.

Who can bring ... ?

artifacts

---



---



---

books

---



---



---

collections

---



---



---

home videos

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---



---

the ingredients for

---



---



---

magazines

---



---



---

pictures

---



---



---

supplies

---



---



---

tools, instruments

---



---



---

visitors

---



---



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## Sample Teacher Activity Plan

Outcomes
Focus and Context
Assessment
Question(s)
Materials



Procedure
Curriculum Links
Resources
Enhancements/extensions



# Attitude Outcomes and Observation Tables

## Attitude Outcomes

It is expected that the Atlantic Canada science program will foster certain attitudes in students throughout their school years.

Attitudes refer to generalized aspects of behaviour that teachers model for students by example and by selective approval. Attitudes are not acquired in the same way as skills and knowledge. The development of positive attitudes plays an important role in students' growth by interacting with their intellectual development and by creating readiness for responsible application of what students learn.

Since attitudes are not acquired in the same way as STSE (science, technology, society, and the environment) skills and knowledge, outcome statements for attitudes are written as key-stage curriculum outcomes for the end of grades 3, 6, 9, and 12. These outcome statements are meant to guide teachers in creating a learning environment that fosters positive attitudes. Attitude outcomes cannot be measured like STSE, skills, and knowledge outcomes.

The following two pages present the attitude outcomes from the pan-Canadian *Common Framework of Science Learning Outcomes K to 12* (Council of Ministers of Education Canada 1997) for the end of grade 3.

## Key-Stage Curriculum Outcomes: Attitudes

By the end of grade 3, students will be expected to

Appreciation of Science	Interest in Science	Scientific Inquiry
<p><b>400</b> recognize the role and contribution of science in their understanding of the world</p> <p>Evident when students, for example,</p> <ul style="list-style-type: none"> <li>• give examples of science in their own lives</li> <li>• give examples of how objects studied and investigations done in class relate to the outside world</li> <li>• recognize that scientific ideas help us to explain how or why events occur</li> </ul>	<p><b>401</b> show interest in and curiosity about objects and events within the immediate environment</p> <p><b>402</b> willingly observe, question, and explore</p> <p>Evident when students, for example,</p> <ul style="list-style-type: none"> <li>• ask “why” and “how” questions about observable events</li> <li>• ask many questions related to what is being studied</li> <li>• participate in show-and-tell activities, bringing objects from home or sharing a story or an observation</li> <li>• ask questions about what scientists do</li> <li>• express enjoyment from being read to from science books</li> <li>• seek out additional information from library books and digital discs</li> <li>• express enjoyment in sharing science-related information gathered from a variety of sources, including discussions with family members and friends</li> <li>• ask to use additional science equipment to observe objects in more detail</li> <li>• express the desire to find answers by exploring and conducting simple experiments</li> </ul>	<p><b>403</b> consider their observations and their own ideas when drawing a conclusion</p> <p><b>404</b> appreciate the importance of accuracy</p> <p><b>405</b> be open-minded in their explorations</p> <p>Evident when students, for example,</p> <ul style="list-style-type: none"> <li>• raise questions about the world around them</li> <li>• willingly record observations in a given format</li> <li>• compare results of an experiment with other classmates</li> <li>• use observations to draw a conclusion or verify a prediction</li> <li>• take the time to measure with care</li> <li>• willingly explore a change and its effects</li> <li>• choose to follow directions when they complete a simple investigation</li> <li>• express the desire to find answers by conducting simple experiments</li> </ul>

## Key-Stage Curriculum Outcomes: Attitudes (continued)

By the end of grade 3, students will be expected to

Collaboration	Stewardship	Safety
<p><b>406</b> work with others in exploring and investigating</p> <p>Evident when students, for example,</p> <ul style="list-style-type: none"> <li>• willingly share ideas and materials</li> <li>• respond positively to others' questions and ideas</li> <li>• take on and fulfil a variety of roles within the group</li> <li>• participate in science-related activities with others, regardless of their age or their physical or cultural characteristics</li> <li>• respond positively to other people's views of the world</li> </ul>	<p><b>407</b> be sensitive to the needs of other people, other living things, and the local environment</p> <p>Evident when students, for example,</p> <ul style="list-style-type: none"> <li>• ensure that living things are returned to an adequate environment after a study is completed</li> <li>• demonstrate awareness of the need for recycling and willingness to take action in this regard</li> <li>• show concern for other students' feelings or needs</li> <li>• care for living things that are kept in their classroom</li> <li>• clean reusable materials and store them in a safe place</li> <li>• willingly suggest how we can protect the environment</li> </ul>	<p><b>408</b> show concern for their safety and that of others in carrying out activities and using materials</p> <p>Evident when students, for example,</p> <ul style="list-style-type: none"> <li>• are attentive to the safe use of materials</li> <li>• insist that classmates use materials safely</li> <li>• act with caution in touching or smelling unfamiliar materials, refrain from tasting them, and encourage others to be cautious</li> <li>• point out to others simple and familiar safety symbols</li> <li>• put materials back where they belong</li> <li>• follow given directions for set-up, use, and clean-up of materials</li> <li>• wash hands before and after using materials, as directed by the teacher</li> <li>• seek assistance immediately for any first-aid concerns like cuts, burns, and unusual reactions</li> <li>• keep the workstation uncluttered, with only appropriate materials present</li> </ul>

## Class Observation Tables

Appreciation of Science	Names													
<p><b>Appreciation of Science</b></p> <p><b>400</b> recognize the role and contribution of science in their understanding of the world</p> <p>Evident when students, for example,</p>														
<ul style="list-style-type: none"> <li>• give examples of science in their own lives</li> </ul>														
<ul style="list-style-type: none"> <li>• give examples of how objects studied and investigations done in class relate to the outside world</li> </ul>														
<ul style="list-style-type: none"> <li>• recognize that scientific ideas help us to explain how or why events occur</li> </ul>														

Interest in Science	Names													
<p><b>Appreciation of Science</b></p> <p><b>401</b> recognize the role and contribution of science in their understanding of the world</p> <p><b>402</b> willingly observe, question, and explore</p> <p>Evident when students, for example,</p>														
<ul style="list-style-type: none"> <li>ask “why” and “how” questions about observable events</li> </ul>														
<ul style="list-style-type: none"> <li>ask many questions related to what is being studied</li> </ul>														
<ul style="list-style-type: none"> <li>participate in show-and-tell activities, bringing objects from home or sharing a story or an observation</li> </ul>														
<ul style="list-style-type: none"> <li>ask questions about what scientists do</li> </ul>														
<ul style="list-style-type: none"> <li>express enjoyment from being read to from science books</li> </ul>														
<ul style="list-style-type: none"> <li>seek out additional information from library books and digital discs</li> </ul>														
<ul style="list-style-type: none"> <li>express enjoyment in sharing science-related information gathered from a variety of sources, including discussions with family members and friends</li> </ul>														
<ul style="list-style-type: none"> <li>ask to use additional science equipment to observe objects in more detail</li> </ul>														
<ul style="list-style-type: none"> <li>express the desire to find answers by exploring and conducting simple experiments</li> </ul>														

Scientific Inquiry	Names													
<p><b>Appreciation of Science</b></p> <p><b>403</b> consider their observations and their own ideas when drawing a conclusion</p> <p><b>404</b> appreciate the importance of accuracy</p> <p><b>405</b> be open-minded in their explorations</p> <p>Evident when students, for example,</p>														
<ul style="list-style-type: none"> <li>• raise questions about the world around them</li> </ul>														
<ul style="list-style-type: none"> <li>• willingly record observations in a given format</li> </ul>														
<ul style="list-style-type: none"> <li>• compare results of an experiment with other classmates</li> </ul>														
<ul style="list-style-type: none"> <li>• use observations to draw a conclusion or verify a prediction</li> </ul>														
<ul style="list-style-type: none"> <li>• take the time to measure with care</li> </ul>														
<ul style="list-style-type: none"> <li>• willingly explore a change and its effects</li> </ul>														
<ul style="list-style-type: none"> <li>• choose to follow directions when they complete a simple investigation</li> </ul>														
<ul style="list-style-type: none"> <li>• express the desire to find answers by conducting simple experiments</li> </ul>														



Collaboration	Names													
<p><b>Appreciation of Science</b></p> <p><b>406</b> work with others in exploring and investigating</p> <p>Evident when students, for example,</p>														
<ul style="list-style-type: none"> <li>willingly share ideas and materials</li> </ul>														
<ul style="list-style-type: none"> <li>respond positively to others' questions and ideas</li> </ul>														
<ul style="list-style-type: none"> <li>take on and fulfil a variety of roles within the group</li> </ul>														
<ul style="list-style-type: none"> <li>participate in science-related activities with others, regardless of their age or their physical or cultural characteristics</li> </ul>														
<ul style="list-style-type: none"> <li>respond positively to other people's views of the world</li> </ul>														

Stewardship	Names													
<p><b>Appreciation of Science</b></p> <p><b>407</b> be sensitive to the needs of other people, other living things, and the local environment</p> <p>Evident when students, for example,</p>														
<ul style="list-style-type: none"> <li>ensure that living things are returned to an adequate environment after a study is completed</li> </ul>														
<ul style="list-style-type: none"> <li>demonstrate awareness of the need for recycling and willingness to take action in this regard</li> </ul>														
<ul style="list-style-type: none"> <li>show concern for other students' feelings or needs</li> </ul>														
<ul style="list-style-type: none"> <li>care for living things that are kept in their classroom</li> </ul>														
<ul style="list-style-type: none"> <li>clean reusable materials and store them in a safe place</li> </ul>														
<ul style="list-style-type: none"> <li>willingly suggest how we can protect the environment</li> </ul>														

Safety	Names													
<p><b>Appreciation of Science</b></p> <p><b>408</b> show concern for their safety and that of others in carrying out activities and using materials</p> <p>Evident when students, for example,</p>														
<ul style="list-style-type: none"> <li>are attentive to the safe use of materials</li> </ul>														
<ul style="list-style-type: none"> <li>insist that classmates use materials safely</li> </ul>														
<ul style="list-style-type: none"> <li>act with caution in touching or smelling unfamiliar materials, refrain from tasting them, and encourage others to be cautious</li> </ul>														
<ul style="list-style-type: none"> <li>point out to others simple and familiar safety symbols</li> </ul>														
<ul style="list-style-type: none"> <li>put materials back where they belong</li> </ul>														
<ul style="list-style-type: none"> <li>follow given directions for set-up, use, and clean-up of materials</li> </ul>														
<ul style="list-style-type: none"> <li>wash hands before and after using materials, as directed by the teacher</li> </ul>														
<ul style="list-style-type: none"> <li>seek assistance immediately for any first-aid concerns like cuts, burns, and unusual reactions</li> </ul>														
<ul style="list-style-type: none"> <li>keep the workstation uncluttered, with only appropriate materials present</li> </ul>														



# Resources

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## Print Resources

*A Book about Color: A Clear and Simple Guide for Young Artists* (Gonyea 2010)

*At a Construction Site, Wheels at Work, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of?* (Kilby 2006)  
(NSSBB #: 1000654)

*A House Is a House for Me* (Hoberman 1986)

*A Seed Is a Promise* (Merrill 2001)

*Diary of a Worm* (Cronin 2003)

*Floating and Sinking, Learn Abouts* (MacDonald 2006)  
(NSSBB #: 17192)

*Four Seasons Make a Year* (Rockwell 2004)

*I'm Hiding* (Costain 2001)

*Jack and the Beanstalk* (Lang 2000) (NSSBB#: 22866)

*Little Cloud* (Carle 2001)

*Name That Plant* (Trumbauer 2003) (NSSBB#: 16802)

*Planting the Wild Garden* (Galbraith 2011) (NSSBB #: 1001750)

*Seasonal Changes, Learn Abouts* (MacDonald 2006)  
(NSSBB #: 17192)

*Shadows* (Otto 2001)

*Shared Reading Card 1: What Is Alive and Living Things, Literacy Kindergarten Cross-Curricular Kit: Living Things in the Environment* (Various authors n.d. b) (NSSBB #: 1000656)

*Shared Reading Card 1: What's That Made Of? and How Does It Look?, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of?* (Various authors n.d. a) (NSSBB #: 1000654)

*Shared Reading Card 2: Making New Colours, Making a Mask, and Make a Mud Pie*, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of? (Various authors n.d. c) (NSSBB #: 1000654)

*Shared Reading Card 3: A Bug Sat in a Silver Flower, The Life of a Dandelion, and A Bee Met a Flower*, Literacy Kindergarten Cross-Curricular Kit: Living Things in the Environment. (Various authors n.d. d) (NSSBB #: 1000656)

*Shared Reading Card 3: To the Farm, It Fell in the City, and If I Could*, Literacy Kindergarten Cross-Curricular Kit: My Community (Various authors n.d. e) (NSSBB #: 1000652)

*Something from Nothing* (Gilman 1992)

*Spiders, Creepy Creatures* (Bodden 2011) (NSSBB #: 1001838)

*The House That Max Built*, Literacy Kindergarten Cross-Curricular Kit: My Community (Newhouse 2008) (NSSBB #: 1000652)

*The Three Little Pigs*

*Touch It!* (Rubin 2003)

*Water Can Change*, Windows on Literacy (Birchall 2003) (NSSBB#: 13150)

*Water Changes*, Literacy Place for the Early Years (Ives 2010) (NSSBB #: 1001002)

*We Use Water* (Bruce 2004)

*Winnie the Witch Series* (Thomas 2008)

*Worms, Creepy Creatures* (Bodden 2011) (NSSBB #: 1001835)

## Video Resources

A catalogue of videos is available through the Nova Scotia Department of Education and Early Childhood Development website

[lrt.EDnet.ns.ca/media\\_library/catalogues/science.shtml](http://lrt.EDnet.ns.ca/media_library/catalogues/science.shtml).

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- \_\_\_\_\_. 2011. *Worms, Creepy Creatures*. Collingwood, ON: Saunders Book Company. (NSSBB #: 1001835)
- Bruce, Nick. 2004. *We Use Water*. Toronto, ON: National Geographic Society.
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- Galbraith, Kathryn O. 2011. *Planting the Wild Garden*. Atlanta, GA: Peachtree Publishers. (NSSBB #: 1001750)
- Gonyea, Mark. 2010. *A Book about Color: A Clear and Simple Guide for Young Artists*. New York, NY: Henry Holt and Company, Inc.
- Ives, Alex. 2010. *Water Changes*, Literacy Place for the Early Years. Toronto, ON: Scholastic Canada Ltd. (NSSBB #: 1001002)
- Kilby, Don. 2006. *At a Construction Site, Wheels at Work*, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of? Toronto, ON: Kids Can Press, Ltd. (NSSBB #: 1000654)
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- Thomas, Valerie. 2008. *Winnie the Witch* [six book and two CD collection]. Don Mills, ON: Oxford University Press.
- Trumbauer, Lisa. 2003. *Name That Plant*. Austin, TX: Steck-Vaughn Company.
- Various authors. n.d. a. *Shared Reading Card 1: What's That Made Of? and How Does It Look?*, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of?. Scarborough, ON: Nelson Thomson. (NSSBB #: 1000654)
- Various authors. n.d. b. *Shared Reading Card 1: What Is Alive and Living Things*, Literacy Kindergarten Cross-Curricular Kit: Living Things in the Environment. Scarborough, ON: Nelson Thomson. (NSSBB #: 1000656)
- Various authors. n.d. c. *Shared Reading Card 2: Making New Colours, Making a Mask, and Make a Mud Pie*, Literacy Kindergarten Cross-Curricular Kit: What Is It Made Of?. Scarborough, ON: Nelson Thomson. (NSSBB #: 1000654)
- Various authors. n.d. d. *Shared Reading Card 3: A Bug Sat in a Silver Flower, The Life of a Dandelion, and A Bee Met a Flower*, Literacy Kindergarten Cross-Curricular Kit: Living Things in the Environment. Scarborough, ON: Nelson Thomson. (NSSBB #: 1000656)
- Various authors. n.d. e. *Shared Reading Card 3: To the Farm, It Fell in the City, and If I Could*, Literacy Kindergarten Cross-Curricular Kit: My Community. Scarborough, ON: Nelson Thomson. (NSSBB #: 1000652)