Instruction For Copying

Answers are printed in non-reproducible blue. Copy pages on a light setting in order to make multiple copies for classroom use.

Credits

### LIFE SCIENCE

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### PHYSICAL SCIENCE

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Dear Parent or Guardian,

Today our science class talked about how to work safely when doing laboratory experiments. It is important that you be informed regarding the school’s effort to promote a safe environment for students participating in laboratory activities. Please review the safety rules and this entire Safety Contract with your child. This contract must be signed by both you and your child in order for your child to participate in laboratory activities.

Safety Rules:

1. Listen carefully and follow directions.
2. If you are not sure about doing something, ask your teacher.
3. Never run or throw anything except as part of an activity.
4. Never taste anything when doing a science activity.
5. Always wash your hands before and after an activity.
6. Cooperate with others when working in a group.
7. Always clean up when you have finished.

Date: __________

I have read and reviewed the science safety rules with my child. I consent to my child’s participation in science laboratory activities in a classroom environment where these rules are enforced.

Parent/Guardian signature: ____________________________

I know that it is important to work safely in science class. I understand the rules and will follow them.

Student signature: ____________________________
Estimados padres o tutor:

Hoy hemos hablado en nuestra clase de Ciencias sobre cómo mantener la seguridad al realizar experimentos científicos. Es importante que ustedes estén informados del propósito de la escuela de promover un entorno seguro para los estudiantes que participan en las prácticas de laboratorio. Por favor, examinen cuidadosamente con su niño o niña las reglas siguientes y el Acuerdo de Seguridad. El acuerdo debe ser firmado tanto por uno de ustedes como por su niño o niña para que él o ella pueda participar en las actividades de laboratorio.

**Reglas de Seguridad:**

1. Escucha con atención y sigue las indicaciones.
2. Si no estás seguro de algo pregúntale a tu maestro o maestra.
3. No corras ni arrojes ningún objeto a menos que sea parte de una actividad.
4. No te lleves nada a la boca ni lo pruebes cuando estés realizando una actividad de ciencias.
5. Lávate siempre las manos antes y después de una actividad.
6. Coopera con tus compañeros cuando estés trabajando en grupo.
7. No te olvides de limpiar cuando hayas terminado una actividad.

Fecha: __________

He leído y examinado las reglas de seguridad de ciencias con mi niño o niña. Doy mi consentimiento para su participación en las actividades del laboratorio de ciencias en un entorno donde se hagan cumplir estas reglas.

Firma de uno de los padres o tutor: __________________________

Sé la importancia que tiene trabajar con seguridad en la clase de Ciencias. Comprendo las reglas y me comprometo a seguirlas.

Firma del estudiante: __________________________
What do you notice about these animals?

What to Do

1. Look at the animals on this page.

2. How are the animals alike? How are they different?
3 Put the animals into groups. Tell a classmate about the animals in each of your groups.

Explore More

4 Think of other animals that you could add to your groups.
What can you learn from feet?

What to Do

1. Observe. Look carefully at the pictures of the animals.

2. Record Data. Write or draw to record which animals have feet that look almost the same.

What Did You Find Out?

3. Infer. Why do you think these two animals’ feet look almost the same?

4. Communicate. Share your work with a partner. Discuss how your findings were alike or different.
Where can snails live?

What to Do

1 Observe. Snails can live in ponds or gardens. Look closely at the pictures of each one.

2 Compare. How is the pond the same as the garden? How is it different?

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- - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -
3 **Record Data.** Draw and label the things you see in the pond and the garden.

4 **Draw a Conclusion.** What do you think a garden snail might eat? What might a pond snail eat? Why?
How are you like a cat?

What to Do

1. Observe the picture of the cat. What do you notice?

What Did You Find Out?

2. Compare. How are you and a cat alike?

3. Compare. How are you different from a cat?

4. Communicate. Share your data with a partner. How did this help you learn more?

You need

• picture of a cat
What are the parts of a plant?

What to Do

1. Gently pull a plant from the soil.

2. Observe. Use a hand lens to look at the plant’s stems, leaves, and roots.

You need

• plant
• hand lens
Communicate. Draw a picture of the plant and its parts.

Explore More

Infer. Why do you think the plant has different parts?

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
What plant parts are these?

In this activity, you will observe and taste edible plant parts.

What to Do

1. **Observe.** In the first row of boxes draw and write what you observed.

<table>
<thead>
<tr>
<th>Root</th>
<th>Stem</th>
<th>Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. After your teacher cuts the plants, use a hand lens to observe more closely. In the second row of boxes draw what you see.

3. **Compare.** Taste each plant. Compare how they taste.

You need

- carrot
- lettuce leaves
- celery stalk
- hand lens
Quick Lab

Name ____________________________________________

Stems

1 Look at a celery stalk. What parts of the plant do you see?

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________________________________________________________________________

________________________________________________________________________

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________________________________________________________________________

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________________________________________________________________________

You need

• celery stalks
• cup
• water
• food coloring

2 Communicate. Look at the end of the stalk.
Draw what you see.

3 Place the celery stalk in a clear container with colored water.

4 What will happen to the stalk?

________________________________________________________________________

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________________________________________________________________________

5 Observe the celery the next day. Share what you observed with a classmate.

6 Infer. Why did the leaves change color?

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________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Chapter 1 • Living Things and Their Parts
Use with Lesson 1
Activity Lab Book
All About Plant Parts
How can you classify seeds?

What to Do

1. **Observe.** Look at seeds with a hand lens.

2. **Classify.** Sort the seeds into groups.
   How did you sort the seeds?

3. **Record Data.** Use the chart on the next page to show how you sorted the seeds. Glue your seed groups onto it.

You need

- seeds
- hand lens
- glue
Explore More

**Compare.** Which group has the most seeds? Which group has the fewest seeds?
How are seeds alike and different?

What to Do

1. **Observe.** Use your senses to see and feel the fruits and seeds.

2. Complete the chart below to compare the seeds.

<table>
<thead>
<tr>
<th></th>
<th>Peach</th>
<th>Apple</th>
<th>Kiwi</th>
</tr>
</thead>
<tbody>
<tr>
<td>size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>shape</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of seeds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>feel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What Did You Find Out

3. **Communicate.** Write about how seeds are alike and different.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Look Inside a Seed

Many seeds have a hard covering that keeps the seeds inside safe. Inside is a tiny plant that will grow into a new plant and food for the tiny plant.

You need

- lima bean
- paper
- pencil

1. What do you think the inside of a lima bean looks like?

2. Cut open a lima bean. Draw and label its parts.
When you **classify**, you group things by how they are alike.

**Learn It**

- Susan and her mom bought some peppers. When she got home she sorted them into groups. Susan made a chart to show how she classified her peppers.

<table>
<thead>
<tr>
<th>yellow peppers</th>
<th>red peppers</th>
<th>green peppers</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Yellow Peppers" /></td>
<td><img src="image2.png" alt="Red Peppers" /></td>
<td><img src="image3.png" alt="Green Peppers" /></td>
</tr>
</tbody>
</table>
Try it

Look at the fruit.

1 How can you classify the fruit into different groups?

2 How many fruits do you have in each group?

3 Make a chart like Susan’s to show how you classified the fruit.
How do animals get what they need to live?

What to Do

1. Make a Model. Put fish food, water, and crickets in a terrarium.

2. Observe. Look at the crickets with a hand lens. How do the crickets move? How do they get what they need to live?

- terrarium
- water
- fish food
- crickets
- hand lens

---
3 Communicate.
Draw a picture of your terrarium on another sheet of paper.

Explore More
4 Compare. Do all animals need the same things crickets need to live? How do you know?

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

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______________________________________________________________

______________________________________________________________

______________________________________________________________
How does your animal get what it needs?

What to Do

1. **Observe.** Look carefully at your animal. What parts does it use to get what it needs?

2. **Compare.** How are the parts of your animal the same as the parts of your partner’s animal? How are their parts different?

You need

- Photo Sorting Cards
- drawing paper
- crayons
- pencil
Animal Body Parts

1 Cut out pictures of different animals.

2 Observe. What body parts do you see in your pictures?

3 Which animals have body parts that are the same? What parts are they?

4 Classify. Choose a sorting rule. Write your rule below. On another sheet of paper, sort your pictures.

You need
• magazines
• scissors
• paper
• paste
Investigate

When you investigate, you observe something closely. A hand lens is a tool that can help you investigate. It makes small things look larger.

▶ Learn It

To use a hand lens, move the lens away from an object. Stop when the object looks fuzzy. Then move the lens a little closer to the object. Stop when the object looks clear.

Alicia made a chart. She recorded what she saw when she looked at her skin with a hand lens.

<table>
<thead>
<tr>
<th>Skin on the back of my hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>small hairs</td>
</tr>
<tr>
<td>bumps</td>
</tr>
<tr>
<td>ridges</td>
</tr>
</tbody>
</table>
Try It

Look at your hand and fingernails with a hand lens. Now look at a partner’s hair and ears. Write about what you see.

Did the hand lens help you see things better?

Make a chart like Alicia’s. Fill in the chart with what you observed about your partner’s hair.
What is living and nonliving?

What to Do

1. **Compare.** Look at a rock and a plant. Write about how they are alike and different.

2. Put the rock in a bin. Water the rock and the plant for a week.

3. **Observe.** What happens?

---

You need
- rock
- plant
- water
- clear bin
Infer. How do you know if something is living or nonliving?

Explore More
Classify. Sort living and nonliving objects.
Is it living?

In this activity, you will sort pictures of living and nonliving things.

What to Do

1. **Classify.** Look at the pictures and sort them into two groups.

2. Draw a picture of one of the living things and a picture of one of the nonliving things.

<table>
<thead>
<tr>
<th>Living</th>
<th>Nonliving</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Picture of living thing]</td>
<td>![Picture of nonliving thing]</td>
</tr>
</tbody>
</table>

3. **Communicate.** Write about how the living and nonliving things you drew are different.

---

You need

- crayons
- pictures from magazines
Living and Nonliving Things

Find living and nonliving things in your classroom.

1. Look around the classroom for living and nonliving things.

2. Draw or find clippings of what you see.

3. Paste your pictures below or on another sheet of paper.

<table>
<thead>
<tr>
<th>Living</th>
<th>Nonliving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You need

- paper
- crayons
- magazines
- paste
Observe

You use your senses to **observe**. You can see, hear, taste, touch, or smell to find out about things.

**Learn It**

- Sam wrote what he observed about a rose in this chart.

<table>
<thead>
<tr>
<th>See</th>
<th>The rose is red.</th>
</tr>
</thead>
<tbody>
<tr>
<td>touch</td>
<td>The flower is smooth.</td>
</tr>
<tr>
<td>smell</td>
<td>The rose smells sweet.</td>
</tr>
</tbody>
</table>
Try It

Observe a plant.

1 What shape are the plant’s leaves?

________________________________________________________________________
________________________________________________________________________

2 What does the plant feel like?

________________________________________________________________________
________________________________________________________________________

3 Here is a chart like Sam’s. Fill in the chart with what you observed.

<table>
<thead>
<tr>
<th>My Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>See</td>
</tr>
<tr>
<td>Touch</td>
</tr>
<tr>
<td>Smell</td>
</tr>
</tbody>
</table>
What do seeds need to grow?


2. **Classify.** Label the bags “Dry” and “Wet.” Place both bags in a warm place.

3. **Record Data.** Look at your seeds. Draw what happens to them.

**You need**
- seeds
- paper towels
- water
- resealable bags
Explore

Record Data. Look at your seeds. Write about them.

Explore More

Investigate. What will happen if you water both seeds but only one seed has light?
Why do seeds grow in spring?

What to Do

1 Observe the pictures of plants and the weather during the spring. Talk about the pictures as a class. What happens in the spring?

2 Infer. Use what you know about spring to find out what seeds need to grow. What things do seeds need to grow?

What did you find out?

3 On another sheet of paper, draw pictures of a seed. Show how it grows into a plant.
Can you grow a plant without a seed?

Grow a new plant from a piece of sweet potato.

**You need**
- sweet potato pieces
- saucer
- water

1 **Measure.** Cover the bottom of a saucer with water.

2 Put a piece of potato on the saucer. Put the saucer in a dark place.

3 **Record data.** Look how your potato changed every day for a week. How did the potato grow?

---

---
How are wildflowers alike and different?

What to Do

1. **Classify.** Sort the seeds to find ones that look alike. Put the different types of seeds in an egg carton. Pick three different types. You will need two or three seeds of each type.

2. **Number the cups.** Fill the cups with soil. Plant one type of seed in each cup.

You need

- mixed wildflower seeds
- egg carton
- 3 cups
- soil
3 Water the seeds. Put the seeds in a sunny place.

4 Observe. Watch your seeds as they grow. Record what you see every day. What shapes are the leaves? How are the flowers alike and different?

Investigate More
Repeat this experiment using the same type of seeds. Put the seeds in a shady place. Did the plants grow fast?
How do animals grow and change?

1 Observe. Look at the pictures of different animals.

2 Classify. Sort the pictures below into two piles. Make one pile for adult animals and another pile for young animals. Match the young animal to its parent.
3 **Compare.** How does each young animal change when it becomes an adult? How is each young animal like its parent?

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4 **Infer.** What are different ways that animals can grow and change?

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__________________________________________________________________________
How are baby and adult animals the same and different?

In this activity, you will observe and compare baby and adult animals.

What to Do

1. **Observe.** Find pictures of baby and adult animals and cut them out.

2. **Communicate.** Discuss and describe the baby and adult animals with a partner.

What did you find out?

3. **Compare.** Choose one baby animal and one adult and compare them. What can the adult do that the baby can’t?

You need

- nature magazines
- scissors
- glue
- paper
Quick Lab

Your Life Cycle

1. Get four index cards from your teacher.

2. Label the cards *newborn*, *two years old*, *four years old*, and *five years old*.

3. Draw a picture of what you looked like at the age on each card.

4. Write a sentence on each card describing what you could do at each age.

5. **Communicate.** Share your drawings and sentences with a partner.

6. What did you learn?

---

You need

- index cards
- pencil
- crayons

---
Where do plants and animals live?

What to Do

1. **Observe.** Look at pictures of plants and animals and where they live.

2. **Communicate.** Tell a classmate what you notice about a plant and an animal and their homes.

You need

- magazines
- paper
- crayons
- scissors
- glue
3. Draw and cut out pictures of a plant and an animal and their homes.

Be careful. Remember scissors can be sharp.

Explore More

4. Infer. Why do you think different plants and animals live in different places?
What habitat is this?

What to Do

1. Draw a picture of a habitat. Include animals and plants.

2. Share your drawing with a partner.

What did you find out?

3. Compare. How are your habitat and your partner’s habitat the same? How are they different?

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________________________________________________________________________
Make a Model of a Forest

You will create a forest habitat by making a model.

1. Pick different colors of construction paper. Use one piece as a background.

2. Draw and cut out pictures of grass, trees, and forest animals.

3. Glue your cut-outs onto the background and glue the leaves onto the trees.

4. Write about your forest habitat. What animals live there? What plants are there?

You need

- leaves
- colored paper
- scissors
- glue
- crayons

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What happens if a plant does not get water?

What to Do

1. Put two plants in a sunny place. Water only one of the plants.

Predict. What will happen to each plant?

Observe. Watch your plants for a week.
4 Record Data. Draw what happens to the plants.

Explore More

5 Classify. What kinds of plants live in dry?

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-- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

-- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

-- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
What happens to plants during a drought?

What to Do

1. Look at the pictures of crops and plants during a drought. Why is water important to plants and people?

2. Look at the pictures of plants in the desert. Why can some plants live in dry places and other plants can not?

What did you find out?

3. Make a poster with your classmates showing how desert plants save water.

You need

- pictures of plants
- paper
- markers
What happens when you freeze a plant?

1. **Observe.** Draw a picture of the plant on a piece of paper. Then freeze it. Make sure to describe the color of the plant.

2. **Predict.** Draw what you think the plant will look like after one day in the freezer.

3. Put the plant in the freezer.

4. **Compare.** Draw a picture of the plant after one day. How has it changed?

**You need**
- small potted plant
- paper
Communicate

When you communicate, you write, draw, or tell your ideas.

▶ Learn It

Roger looked at a picture of the desert. He wrote what he saw in a word web.
Try It

Look at the picture below.

1. What shape are the leaves?

2. What kinds of animals do you think live here?

3. Communicate by making your own word web about the picture on a separate piece of paper.
How do plants and animals live in water?

What to Do

1. **Make a Model.** Put pebbles, a plant, water, and a fish in a clear tank.

2. **Observe.** Look closely at the fish with a hand lens. How do the parts of the fish help it live in water?

   - Clear tank
   - Pebbles
   - Plant
   - Water
   - Goldfish
   - Hand lens

Chapter 3 • Plant and Animal Habitats
Activity Lab Book

Use with Lesson 3
Water Habitats
3 Communicate. Draw a picture of the aquarium.

Explore More

4 Infer. Could the fish live outside of water? Why or why not?

______________________

______________________

______________________

______________________

______________________
Where do animals live?

In this activity, you will classify animals by where they live.

What to Do

1. **Observe.** Look at the photos of animals. Sort them into two groups. Which animals live in water?

2. How are the animals that live in water different from animals that do not live in water?

You need

- pictures of many kinds of animals
Make a Model of a Beaver Dam

1. **Observe.** Look at pictures of beaver dams.

2. Use mud, twigs, sticks, and leaves to make a model of a beaver dam.

3. **Predict.** What will the dam do to water?

4. Watch your teacher slowly add water to one side of the tray. What happens?

**You need**
- tray
- mud
- sticks
- leaves
- water
- pictures of beaver dams
How do animal fossils compare to animals today?

What to Do

Observe. Look at the fossil of the saber-toothed cat. Describe what you see.
2. Look at the picture of the cat. Describe what you see.

Explore More
3. Compare. How are the animals alike? How are they different? Make a Venn diagram to compare. Explain your diagram to the class.
What habitat is this?

What to Do

1. Draw a picture of a habitat. Include animals and plants.

2. Share your drawing with a partner.

What did you find out?

3. Compare. How are your habitat and your partner’s habitat the same? How are they different?

_________________________________________________________________________

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_________________________________________________________________________
Quick Lab

Name ________________________________

What to Do

Sort pictures of pictures of extinct and living animals.

1 Observe. Look at four or five pictures of the extinct and living animals.

2 Communicate. Describe the pictures to your classmates.

3 Sort. Make two piles for your pictures—one for extinct animals and one for living animals.

4 Share. Look at a partner’s pictures. Discuss why the animals are extinct or living.
Explore

What can you see in the sky?

What to Do

1. **Observe.** Look at the sky during the day. Then look at a picture of the sky at night.

⚠️ **Be Careful.** Do not look directly at the Sun.
2 Record Data. Make a chart of what you see in the day sky and the night sky. Do you see the same things?

<table>
<thead>
<tr>
<th>Night Sky</th>
<th>Day Sky</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Explore More

3 Infer. What do you think happens to stars during the day?
What can you see in the sky?

What to Do

1. **Classify.** List the objects your teacher shows you in the Venn diagram below. Objects that you can see both during the day and at night go in the middle.

![Venn diagram with categories: Day Sky, Day and Night Sky, Night Sky]

What Did You Find Out?

2. **Infer.** Why can you see some objects in the sky during the day and at night?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
In the Sky

1 Observe. List some objects that you see in the sky.

2 Classify. Which objects are made by people? Which objects are not made by people?

<table>
<thead>
<tr>
<th>Human-made</th>
<th>Natural</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 Which objects are always in the sky?

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You need
- chart paper
- markers
Record Data

When you **record data**, you write down information. You can keep track of the information you have found.

▶ **Learn It**

Toby made a chart. He recorded data about what it feels like outside at different times of the day.

![Chart showing time of day, where the sun is, and how it feels outside]

▶ **Try It**

Look at the pictures below.

![Pictures of children and a playground]

**You need**

- paper
- crayon
Look at the previous page. Where do you think the Sun is in the picture on the left?


Where is the Sun in the other picture?


Use the chart below. Record data about what the temperature could feel like in each picture.

<table>
<thead>
<tr>
<th>Where is the Sun?</th>
<th>What it feels like outside</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left picture</td>
<td></td>
</tr>
<tr>
<td>Right picture</td>
<td></td>
</tr>
</tbody>
</table>
How are parts of Earth’s surface alike and different?

What to Do

1. **Observe.** How are the pictures alike? How are they different? Talk about the pictures with a partner.

2. **Classify.** Sort the pictures into two groups. Describe how you sorted them.
Explore More

3 Predict. How might the land change during a year?
How is land different?

In this activity, you will observe and draw different kinds of land.

What to Do

1. **Observe.** Look through the magazines for pictures of different kinds of land.

2. **Compare.** Talk with your classmates about how the pictures of land are alike and different.

3. Draw a picture showing a type of land. Show what animals, plants, or trees might be on it and how it might be used.

What did you find out?

4. How is land different in different places?

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**You need**

- drawing paper
- crayons
- pencil
- magazines
The Water and Land Near You

Think about the water near where you live

1. What is the water like?

2. On another sheet of paper, draw a picture of the water and the land that is near the water.

3. What does the land look like?

4. Label your picture with words about the water and land.

You need
- crayons
- paper
Make a Model

When you **make a model** you make something to show how it looks or works.

**Learn It**

- Juan wanted to find out how a river flows into a lake. He used clay and water to make a model. He saw how a river flows.
Try It

Look at the picture below.

1. What kind of land is in this picture?

2. Make a model of the land.

3. Write about why people make models.
How can you classify rocks?

What to Do

1. **Observe.** Use a hand lens to look closely at some rocks.

2. **Compare.** Do the rocks look or feel the same? How are they different?

You need
- rocks
- hand lens
3 **Classify.** Sort the rocks into groups. Explain your groups to a classmate.

<table>
<thead>
<tr>
<th>My Rock Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Explore More**

4 **Make a Model.** Use clay to make a model of a rock. Include as many details as you can.
How are rocks different?

In this activity, you will compare rocks.

What to Do

1. **Observe.** Look carefully at each rock. What colors are they? How do they feel? What shapes are they?

2. **Communicate.** Draw a picture of each rock. Write words to describe each rock.

What did you find out?

3. How are your rocks different?

You need

- 2 rocks
- crayons
- pencil
How hard are different rocks?

Compare how hard different rocks are.

1. Look at the different rocks. What do they look like?

2. Take one rock and scratch another with it. Does it leave a scratch?

3. Scratch other rocks with the first rock. What happens?

4. Which rock is the hardest?
What can you observe about the air?

What to Do

1. Use a craft stick and a piece of streamer to make a weather tool.

You need

- craft stick
- streamer
- tape

2. **Predict.** What kind of weather do you think this tool will be able to tell you about?
3 **Observe.** Take your weather tool outside and hold it in the air. What happens?

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Explore More

4 **Compare.** Use your weather tool to test the air on different days. What do you notice?

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Chapter 4 • Sky, Earth, and Weather
Activity Lab Book

Use with **Lesson 4**
Measuring Weather
What can wind do?
Discuss with a partner how the wind can change trees.

What to Do
1. Would the leaves and branches of a tree move if there were wind?

2. What if the wind were strong?

3. Draw a tree in a little wind, a strong wind, or a really strong wind.

You need
- pencil
- paper
Quick Lab

Name

Compare Inside and Outside Temperatures

1 Predict. Predict if the temperature will be warmer inside or outside.

2 What information did you use to help you decide?

3 Measure. Record the inside temperature and the outside temperature.

You need

• thermometers
• pencil
• paper
What is the weather like this week?

Find out how the weather changes from day to day.

**What to Do**

1. Make a wind vane and a rain gauge.

wind vane       rain gauge

2. **Measure.** Take your wind vane, your rain gauge, and a thermometer outside. Use your weather tools.

You need

- craft stick
- streamer
- tape
- jar
- thermometer
- ruler
3 Record Data. Make a weather calendar. Observe and record the weather every day for five days. How does the weather change from day to day?

4 Predict. What will the weather be like on the sixth day?

Investigate More

5 Compare. Record the weather for two months. How did the temperature and amount of rain change over time?
What can you observe about some objects?

What to Do

1. **Observe.** Look at and feel a balloon, water, and a block. Record what each one looks and feels like.

<table>
<thead>
<tr>
<th>Balloon</th>
<th>Water</th>
<th>Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. **Communicate.** Describe to a classmate what you observed.
Explore

3 Compare. How are the objects alike?
   How are they different?

4 Measure. Find ways to measure each object. Can you measure them in the same way?
What words describe these things?

What to Do

1. Your teacher will give you two pictures. Work with a partner to make a list of words that describe each picture.

What did you find out?

2. Compare. Write the names of the objects on the lines above this diagram. Write your words in the diagram. If the word describes both, put it in the middle. If it only describes one thing, put it on that side.
**Quick Lab**

**Objects in Your Classroom**

1. Walk around the classroom and pick up five small objects.

2. Talk about ways to group the objects.

3. **Classify.** Sort the objects by their properties. List the groups and objects in the chart.

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</table>

**You need**

- collection bags
- objects
How can you compare some solids?

What to Do

1. Collect five solid objects around your classroom.

2. **Compare.** Describe the objects’ properties. How are they alike? How are they different? Sort them by their properties.

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</tbody>
</table>
3 Measure. Use a balance to put the objects in order from the most mass to the least mass.

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Explore More

4 Classify. What other properties can you use to sort the objects?

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Which has more mass?

What to Do

1. Look at the pictures.

2. Predict. Which object has the most mass?

3. What is the mug made of?

4. What is the cup made of?

5. Measure. Use the balance to weigh the cup and the mug. Was your prediction correct?

You need
- mug
- paper cup
- balance
Quick Lab

Measuring Solids

1 Look at the solids your teacher gives you.

2 How could you measure the round solid?

3 **Measure.** How much does each object measure?

<table>
<thead>
<tr>
<th>Object</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Which liquid flows the fastest?

Observe the speeds of different liquids.

What to Do

1. **Predict.** Which liquid will flow the fastest? Which will flow the slowest?

2. **Measure.** Place the same amount of each liquid on one end of a sheet of cardboard.

You need

- honey
- dish soap
- mustard
- ketchup
- cardboard
3 **Compare.** Slowly lift the edge of the cardboard. Compare the positions of the liquids as they move.

4 **Record Data.** Use the chart below to record the speed of each liquid.

<table>
<thead>
<tr>
<th>Fast</th>
<th>Slow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

5 **Infer.** Why did some liquids flow faster than others?

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**Investigate More**

6 **Investigate.** Repeat this experiment. Did you get the same results?

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What mixes with water?

What to Do

1 Measure. Add \( \frac{1}{4} \) cup salt to one cup of water. What happens?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2 Measure. Add \( \frac{1}{4} \) cup sand to another cup of water. Does the sand change?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

You need

- measuring cup
- 2 plastic cups
- 2 spoons
- salt
Explore

3 **Compare.** Stir both mixtures with a spoon. Let them sit. What happens? How are the mixtures different from each other?

Explore More

4 **Investigate.** Tell how you could take the sand and the water apart. Can the salt be taken out of the water?
What difference does temperature make?

In this activity, you will discover whether salt dissolves faster in hot or cold water.

**What to Do**

1. Will salt dissolve faster in hot or cold water?

2. Observe as your teacher shakes two jars, one with hot salt water, and one with cold salt water.

3. **Compare.** Compare the two jars. What happened? Was your prediction accurate?

What did you find out?

4. **Infer.** Why do you think the salt dissolved faster in hot water?
Quick Lab

Objects That Float and Sink

Find out what sinks and what floats in water.

1 Predict. Write the objects you think will sink in the water. Write the things that will float.

<table>
<thead>
<tr>
<th>Things That Float</th>
<th>Things That Sink</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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</tbody>
</table>

2 Investigate. Put each object in the water. Were your predictions correct?

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What will the Sun do?

What to Do

Fill two cups with soil. Feel the soil in both cups. Put one cup of soil in a sunny place. Put the other cup in a shady place. Wait one hour.

You need

- 2 cups
- soil
2 Compare. Feel the soil in both cups. Draw and write about what happened.

Explore More

3 Predict. How might the soil feel at night?
Does the Sun warm water?

What to Do

1 Fill two cups with water. Put one cup of water in a sunny place. Put the other cup of water in a shady place. Wait one hour.

2 Compare. Feel the water in both cups. How are they different? Why?

3 Predict. How might the water feel tomorrow?
Quick Lab

Water Cycle in a Bag

See how water evaporates and condenses.

1. Your teacher will place a cup of water inside the bag and seal the bag.

2. Each day for a week, draw what you see.

3. Write about what you see.

4. What is this like on Earth?

You need

- small cup
- large resealable bag
How can the Sun affect paper?

Find out if a white sheet of paper or a black sheet of paper will get hotter in sunlight.

What to Do Predict

Do you think light colors or dark colors get hotter in sunlight?

Put a black sheet of paper and a white sheet of paper in the Sun.
Measure. Wait one hour. Use a thermometer to take the temperature of each piece of paper.

Record Data. Write down the temperature for each sheet of paper.

Draw Conclusions

Which sheet of paper had a higher temperature? Why?

Critical Thinking

Repeat the experiment using a white sheet of paper and a brown sheet. Did you get similar results?
Explore

How can you make something move?

What to Do

1. Fold an index card.

2. Investigate. Try different ways to make the card move. How can it move?

You need
- index card
- tissue

Chapter 6 • Motion and Forces
Activity Lab Book

Use with Lesson 1
Pushes and Pulls

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3 Observe. What changes about the card? What stays the same?

Explore More

4 Infer. Do you think a tissue will move in the same way as the card? Why or why not? Try it.
What needs the least push?

In this activity, you will compare pushing different objects.

What to Do

1. **Predict.** Which object do you think will be easiest to push?

   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________

2. **Observe.** Gently push each object with your finger.

3. **Put in Order.** What was easiest to push? Write its name first. Write the names of the other objects in order from easiest to hardest to push.

   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________

You need

- plate
- counting cube
- books
- stapler
What makes the most friction?

In this activity, you will compare the friction different surfaces create by pushing a book across each surface.

What to Do

1. Predict. Which surface will give you the least friction?

2. Observe. Gently push the book across the surface of the desk. Then gently push the book across the surface of the carpet.

3. Conclude. Which surface was it easiest to push the book across? Write its name. Then write how it felt to push the book across each surface.

You need

- book
- uncarpeted floor
- carpeted floor
What will a magnet pull?

What to Do

1 Predict. Put objects that you think a magnet will pull in one pile. Put objects it will not pull in another pile.

2 Investigate. Put the magnet close to different objects. What happens?

You need

- magnet
- classroom objects
3 **Classify.** Which objects were pulled by the magnet? Which objects were not? Write your answers below.

<table>
<thead>
<tr>
<th>Pulled</th>
<th>Not Pulled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Explore More**

4 **Infer.** What kinds of objects do magnets pull?

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What does a magnet attract?

1. **Predict.** Will a pencil and a paper clip stick to a magnet?

   [Blank space for prediction]

2. **Investigate.** Touch the magnet to the paper clip and the pencil. Be sure to touch the pencil's point, wood, eraser, and metal band.

   [Blank space for observation of results]

   [Blank space for conclusion]

3. **Communicate.** What did you learn?

   [Blank space for reflections and conclusions]
What blocks a magnet?

1. **Predict.** Will a magnet attract a paper clip through water?

2. **Observe.** Put a paper clip in a cup of water. Put a magnet into the water near it. Does the magnet attract the paper clip?

3. **Try to use the magnet through other materials.**

**You need**
- bar magnet
- paper clips
- plastic cup
- water
- construction paper
Make Your Own Tool

What to Do

1. Use a paper towel tube as the handle for a broom.


3. **Investigate.** Use your broom to sweep an area of your classroom. Collect the dirt in a paper plate.

Draw Conclusions

4. How is your tool like a real broom?

---

Materials

- paper towel tube
- safety scissors
- paper plate
- tape
- glue
Classroom Properties

What to Do

1. **Observe.** Look around your classroom. Collect five items.

2. **Record Data.** Use the chart below. Draw the items you collected. Check off which properties each item has.

<table>
<thead>
<tr>
<th>Draw items here. →</th>
<th>soft</th>
<th>hard</th>
<th>smooth</th>
<th>rough</th>
<th>fuzzy</th>
<th>round</th>
<th>square</th>
</tr>
</thead>
</table>

Draw Conclusions

3. Did any of your items have the same properties?
Design a Juice Box

What to Do

1. Wrap three ice cubes in three different materials. Wrap one ice cube in newspaper, one in aluminum foil, and one in bubble wrap. Use the same amount of material each time.

2. Observe. Wait one hour. Unwrap each ice cube. What do you notice?

3. Communicate. Describe what happened to each ice cube. Which ice cube melted the most? Which one melted the least? Why?

Materials

- newspaper
- aluminum foil
- bubble wrap
- ice cubes
- tape
How Water Travels Through a Plant

Plants have different parts. Their roots take water and nutrients from the soil. Their stems carry water from the roots to the leaves. Stems also carry food from the leaves to the roots and the rest of the plant.

Purpose

Observe how water travels through a plant.

Predict

What happens if you put a celery stalk in a cup of colored water?

Test Your Prediction

Have an adult cut a celery stalk in half.
Critical Thinking

1. Describe another animal and its habitat. How does the animal meet its needs?

2. Why is it important to take care of animal habitats?
What Squirrels Need to Live

Animals need food, water, air, and shelter. The place where an animal meets its needs is called its habitat.

Purpose
Find out what a squirrel needs to live in its habitat.

Predict
What does a squirrel need to live?

You need

- shoe box
- paper
- crayons
- scissors
- glue
Test Your Prediction

1. Make a Model. Draw a picture of a squirrel and its habitat. Cut it out and glue it inside your shoebox.

2. Communicate. What does your squirrel need to survive?

---

Draw Conclusions

3. Why do squirrels need plants in their habitat?
Critical Thinking

1. Describe another animal and its habitat. How does the animal meet its needs?

2. Why is it important to take care of animal habitats?
Building a Nest

In spring, birds build nests to lay their eggs so they can protect their young.

Purpose

Find out how a nest protects an egg.

Predict

Will a nest protect an egg from falling and breaking?

Test Your Prediction

With a partner, build a nest. Use clay to make a pinch pot. Then, stick leaves and twigs into the clay.

You need

- twigs
- clay
- 2 hardboiled eggs
2 Take a hardboiled egg and drop it on the floor. Then take another hardboiled egg and drop it into your nest.

3 **Observe.** What happens to the eggs?

4 **Record Data.** Draw and write what happened to both eggs.

**Draw Conclusions**

5 Which egg was protected? Why?

[Blank space for drawing and writing]

**Critical Thinking**

What would happen to the eggs if the nest fell?

[Blank space for drawing and writing]
How to Make a Habitat for Brine Shrimp

You will be making a habitat for brine shrimp. Brine shrimp belong to the same family as crabs and lobsters.

Purpose
Create a habitat for brine shrimp.

Predict
What do brine shrimp need to live in their habitat?

Test Your Prediction

1 Have an adult cut a plastic bottle in half and put one half inside the other.

2 Measure. Fill the top half with two cups of water. Add two tablespoons of salt.
3 Put the container under a light until the brine shrimp hatch.

4 After three days, feed the brine shrimp.

5 **Record Data.** Observe your brine shrimp habitat. Record what happens.

**Draw Conclusions**

6 What did you learn about brine shrimp?

---

**Critical Thinking**

1 Why do brine shrimp need light?

---

2 What do brine shrimp need to live?
Paper in the Sun

The Sun heats the land, air, and water.

Purpose

Find out if a white sheet of paper or a black sheet of paper will get hotter in the Sun.

Predict

Do light colors or dark colors get hotter in the Sun?

You need

• white paper
• black paper
• thermometer

Test Your Prediction

1 Put a black sheet of paper and a white sheet of paper in the Sun.
2 Measure. Wait one hour. Use a thermometer to take the temperature of each sheet of paper.

3 Record Data. Write down the temperature for each sheet of paper.

Draw Conclusions

4 Which sheet of paper had a higher temperature? Why?

Critical Thinking
Why would people rather wear white clothing in the summer?
Air or Water

When you blow up a balloon you can see the balloon change shape. This is how you know there is air inside of it. When you fill a balloon with a liquid the balloon changes shape too!

Purpose

Find out if liquids or gases have more mass.

Predict

Which will have more mass, a balloon filled with water or a balloon filled with air?

Test Your Prediction

1. Fill one balloon with water and another with air.

You need

- 2 balloons
- water
- balance scale
2 **Measure.** Place one balloon on one side of a balance scale and the other balloon on the other side.

3 **Communicate.** On a separate sheet of paper, draw what happens. Which balloon has more mass?

**Draw Conclusions**

4 Does liquid or gas have more mass? Why?

**Critical Thinking**

Suppose you had a balloon half filled with water and another balloon completely filled with air. Which balloon do you think would weigh more?
Water or Ice

When liquid freezes, it turns into a solid and takes up more space.

Purpose
Find out if a solid has more mass than a liquid.

Predict
Will a balloon filled with ice have more mass than a balloon filled with liquid water? Will the balloon change its shape when it is frozen?

Test Your Prediction
1. Fill two balloons with water. Put one balloon in a freezer. Wait until it is frozen.
2. Observe. Did the shape of the balloon change when it was frozen? Why or why not?
3 **Measure.** Put the balloons on a balance scale.

4 **Communicate.** Draw what happens on a sheet of paper. Which balloon has more mass?

---

5 **Draw Conclusions.** Do solids or liquids have more mass?

---

**Critical Thinking**

What would happen if you filled a balloon with air and put it in the freezer? Would the air freeze?
Mixing Liquids

Some materials dissolve when they are mixed with water. Other materials do not mix with water.

Purpose

What would happen if you tried to mix vegetable oil, water, and syrup?

Predict

What happens when some liquids are mixed with water?

You need

- plastic cup
- syrup
- vegetable oil
- water

Test Your Prediction

1 Fill a glass halfway with water.

2 Measure. Add one tablespoon of syrup. Then add one tablespoon of vegetable oil.
3 Record Data. Write about what happens.

Did the liquids mix together? Why or why not?

Critical Thinking
Why do some liquids sink in water and others float?
How do different animals meet their needs?

The Right Tool for the Right Job

Ask Questions

Animals use sharp teeth to tear food. How do our teeth tear food?

Make a Prediction

We use sharp teeth to tear food.

Test Your Prediction

Like teeth, scissors can cut things into small pieces.

1 Cut a celery stalk into small pieces with a scissor.

2 Record Data. Draw a picture of what the pieces look like.
Tear a celery stalk into small pieces with your hands.

**Record Data.** Draw a picture of what the pieces look like.

Write how the pieces you cut with scissors are different from the pieces you tore with your hands. Which was easier to cut your food?
Communicate Your Results

▶ Which of your teeth cut food like the scissors?

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▶ Do your sharp teeth cut like scissors or tear like your hands?

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Home Sweet Home

Ask Questions
Can we find out where animals prefer to live by watching them? Where do isopods like to live?

Make a Prediction
Isopods prefer to live in light areas.

Test Your Prediction
See if isopods like to live in light or dark areas.

1. Put isopods in a shoebox.
2. Fold a sheet of black paper in half. Hang half of the sheet inside the box. Put a desk lamp at the other end of the shoebox.
3. Put the isopods in the middle of the box.

You need
- isopods
- clear container
- black paper
- lamp
4 Record Data. Look at the isopods after thirty minutes. Write about where the isopods were in the box.

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Communicate Your Results

▲ Share your results with a partner. Did you both come up with the same conclusions?

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△ Where did the isopods prefer to live? Do they like a dark or a light environment?

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How Isopods Live

What types of food do isopods like to eat? Would they like a dark and moist area or a dry and light area?
How can you measure weather?

Measuring Temperature

Ask Questions
What is the temperature outside today? Does the outside air temperature change during the day on a sunny day?

Make a Prediction
The temperature does not change during the day on a sunny day.

Test Your Prediction
At the beginning of the school day, put a thermometer outside.

1 Predict. What is the temperature outside?

2 Measure. Use a thermometer to take the temperature outside. Check the temperature throughout the day.

You need
- thermometer
- paper
- pencil
3 **Record Data.** Record the temperatures throughout the day on a bar graph.

![Bar graph showing today's temperature]

**Communicate Your Results**

Share your information and graph with your classmates.

- **How did the temperature change during the day?**

- **What time was it the warmest? What time was it the coolest? Why?**
Measuring Wind

Ask Questions
How can we measure how hard the wind is blowing? What direction is the wind blowing?

Make a Prediction
The wind is blowing hard because the flag is moving a lot.

Test Your Prediction
Work with a partner to look for things that can tell you how hard the wind is blowing outside.

Observe. What objects did the wind move? Which direction was the wind coming from?

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You need
• paper
• pencil
2 Record Data. Write the different objects that the wind moved.

____________________________________________________________________
____________________________________________________________________

3 Communicate. How can you tell how strong the wind is blowing?

____________________________________________________________________
____________________________________________________________________

Communicate Your Results

Have a class discussion to share ideas.

► What things did your classmates use to measure the wind?

____________________________________________________________________
____________________________________________________________________

► How did you describe which way the wind was blowing?

____________________________________________________________________
____________________________________________________________________

____________________________________________________________________
____________________________________________________________________
Measuring Wind and Air

What other ways could you measure the air?

Here are some ideas you might want to explore.

▶ How would the temperature at night compare to the temperature during the day?

▶ Do clouds move the same way that the wind is blowing?
What happens when you mix things together?

Ooey, Gooey, Gluey!

Ask Questions
What will happen if we mix water, glue, and borax together?

Make a Prediction
The water, glue, and borax will all mix together.

Test Your Prediction
 Communicate. Write words to describe water, borax, and glue. What do they look and feel like?

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____________________________________________________________________________________

You need
• plastic bowl
• glue
• water
• laundry detergent
• spoons
2 Measure. Put a teaspoon of borax into a bowl with a cup of water. What happened?

3 Measure. Add two tablespoons of glue to the mixture. How did the mixture change?
4 Put Things in Order. Draw and write about what happened first, next, and last to the mixture.

__________________________________________________________________________

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__________________________________________________________________________

__________________________________________________________________________

Communicate Your Results

Share your drawings with your classmates.
What did the mixture of the water, borax, and glue look and feel like?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Carrots, Water, and Salt!

Ask Questions
How will a carrot change in water? What will happen if we add salt?

Make a Prediction
The carrot will sink in water and will not change.

Test Your Prediction

1. Fill a clear plastic cup with water.

2. Predict. What will happen if you put a carrot in a cup of water?

You need
- clear plastic cup
- water
- rock salt
- teaspoon
- carrots
3 Communicate. Tell what happened to the carrot. Were your predictions correct?

4 Measure. Put 3 teaspoons of rock salt into the water. Do not stir the water.

5 Record Data. Draw a picture to show what happened to the carrot in the salt water.

Communicate Your Results
Share what happened with your classmates.

Why did adding salt to the water change what happened to the carrot?
Will carrots float in sugar water?

More Great Mixtures

What else can you mix? How would the objects change? Here is an investigation you might want to try:

What if you mixed water and gelatin?
How Water Travels Through a Plant

Everyday Science
Flipchart p. 62

**Purpose** A basic review of plant parts is suggested. Try white carnations in colored water. Use a couple of different colors! Give each student a carnation and let them “design their experiment.” You might want to bring in a sampling of stems.

**Predict** Students should formulate a hypothesis such as the following: If the celery is put in a cup of colored water, then over time the leaves of the celery will change to that color.

**Test Your Prediction** The leaves of the celery (especially the ends) have changed color.

**Draw Your Conclusion** The stem of the celery is important in transporting water up to the leaves. Usually the water is taken in by the roots, but even when the roots are not there for a short period of time the stem of the celery (or cut flowers) will absorb the water and move the water up to the leaves where it is used to make food for the plant.

**Critical Thinking Answers**
1. Examples of edible stems are broccoli, cauliflower, potatoes, asparagus, rhubarb, celery, and leeks.
What Squirrels Need to Live

Everyday Science

Purpose Review different habitats with your students. For example, a tree provides a good habitat for animals such as birds. Trees provide food such as berries, shelter from the wind and sun, and a place for nesting. Plant some plants with flowers and explain that flowers provide good habitats for butterflies, birds and insects. If space allows, create a small pond which can be a habitat for frogs, dragonflies, and birds.

Predict Students should formulate a hypothesis such as the following: If I needed to create a habitat for a squirrel, I might plant a tree. A tree can provide shelter and food for squirrels.

Test Your Prediction Give each student materials they can cut and paste into a shoebox.

Draw Conclusions Each box should have a squirrel in its habitat showing shelter and food.

Critical Thinking Answer

1. If the habitat of an animal is destroyed (like in the rainforest) the animals will not have a place to live, eat and sleep. This is how certain kinds of animals become extinct (no longer exist).
Building a Nest

Everyday Science

Flipchart p. 64

Purpose The purpose of this activity is to show how birds build nests in order to protect their eggs. The teacher can discuss with the children that not only are nests built to hold and protect their eggs, but also to keep their eggs warm.

Predict Students should formulate a hypothesis such as if an egg is placed in a nest and it falls, it will not break. Without the nest, the egg will break.

Test Your Prediction Make sure children use a lot of cushioning materials when building their nest so that the egg that is dropped into the nest will not break. Have children drop both eggs at the same rate so that they can compare the egg that hits the floor to the one that falls into the nest. The teacher may want to remind the children to gently drop their eggs.

Draw Your Conclusion The hardboiled egg that dropped on the floor should break, and the egg that was dropped in the nest should be cushioned by its fall.

Critical Thinking Answer
1. The egg would not break because it would be protected by the nest.
How to Make a Habitat for Brine Shrimp

Everyday Science

Flipchart p. 65

**Purpose** You might want to expand a little bit more about what brine shrimp are and where they live. Brine shrimp, like many other animals, develop from eggs. Have your students keep an observation log.

**Predict** Students should formulate a hypothesis such as the following: If I needed to create a habitat for brine shrimp, then I would need to have a container with salt water, food, and light.

**Test Your Prediction** Although each student can certainly make their own brine shrimp hatchery, you might want to consider having one class demo and have the students take turns feeding the brine shrimp. Make sure that when you put the brine shrimp hatchery under a desk lamp that the lamp is as close to the water as possible. The lamp should stay on overnight (check school policy, otherwise you might need to take the hatchery home). Brine shrimp cysts usually hatch in 24 hours. If your brine shrimp cysts do not hatch after 72 hours, then try the experiment again. If after another 72 hours no brine shrimp are seem, then please let us know and we will be happy to ship you new brine shrimp cysts. A magnifying glass and flashlight will be very helpful to see them as they will be very small. Over the next week the brine shrimp will grow and go through many different changes. Brine shrimp will start reproducing when they are about 2-3 weeks old. Tiny little dots moving around in the water. Note: If the hatchery is taken good care of then the brine shrimp can live for months.

The eggs (in the cysts) stay dormant until they are added to salt water. If they were added to fresh water the eggs would never hatch. If the eggs are in the cysts they will survive the cold winters. The female has a pouch for holding the eggs (look for full pouches after the brine shrimp are about 2-3 weeks old).

**Critical Thinking Answer**
1. Brine shrimp need light to live and develop.
2. Brine shrimp need, light, food and salt water to live.
Paper in the Sun

Everyday Science

Flipchart p. 66

Purpose Show students on a globe where the equator is and how the Sun is directly above the equator, therefore; it is hotter in countries on and around the equator.

Use a CD and hold it up in the sunlight. The students will see a rainbow of colors on the blank side of the CD. They might need to tilt it a couple of different ways to get the correct reflection. Explain that whatever color we see is actually the color in the sunlight that is being reflected to our eyes and that is why we see that color. For example, we see green grass, because grass absorbs all the different colors of sunlight except for green.

Predict Students should formulate a hypothesis such as the following: If a piece of black paper and a piece of white paper are put in the Sun, then the black paper will become warmer than the white paper.

Test Your Prediction Introduce students to both degrees Fahrenheit and Celsius.

Draw Conclusions The black paper was warmer. Black paper absorbs all Sun rays and therefore becomes warmer. White paper reflects all Sun rays and therefore is cooler.

Critical Thinking Answer
1. White clothing in the summer is cooler since it reflects all the Sun rays. It is much hotter to sit on black seats then lighter colored seats when a car has been sitting out in the Sun.
Air or Water

Everyday Science

Flipchart p. 67

Purpose To show that liquids have more mass than air. Discuss various
gases and liquids with the class, including air and water.

Predict Students should formulate a hypothesis such as the following:
A balloon filled with water will weigh more than a balloon filled with air
(have more mass).

Test Your Prediction Students should weigh their balloons and draw the
balance tipped downward the side with the balloon containing liquid.

Draw Conclusions Students should conclude that air is weightless and
liquid has more mass.

Critical Thinking Answer
1. The balloon half-filled with water would still weigh more than the
balloon completely filled with air.
Water or Ice

Everyday Science

**Purpose** Explain to children that mass is how much matter is in an object. Talk with children about different objects and their masses. For example, a small metal ball has more mass than a large basketball: there is more matter in the small metal ball.

**Predict** Students should formulate a hypothesis such as the following: when an object is frozen the mass does not change, because the amount of matter in the object does not change.

**Test Your Prediction** Make sure that the children fill the balloons with equal amounts of water.

**Critical Thinking Answer**
Air cannot freeze, so the balloon would remain the same.
Mixing Liquids

Everyday Science

Flipchart p. 69

Purpose Discuss floating and sinking. Review how some materials dissolve in water (sugar in water) and others don’t dissolve.

Predict Students should formulate a hypothesis such as the following: If water, vegetable oil, and syrup are mixed, then syrup will be at the bottom, water in the middle, and oil on top.

Test Your Prediction Suggestion: Once the fluids are added, you can also add a peppercorn and a piece of plastic. The plastic is the lightest and will float on oil. The peppercorn is heavier than oil but lighter than water and therefore will float between the water and oil.

Draw Conclusions The layers are as follows: syrup on the bottom, water in the middle, and oil on top. Syrup is heavier than water and oil is lighter than water.

Critical Thinking Answer

1. Liquids such as oil do not mix with water because they are lighter than water. Other liquids such as syrup are heavier than water.
How do different animals meet their needs?

Learning Lab Activity

Flipchart p. 70

People develop 32 permanent teeth as they grow. These teeth have different shapes and do different jobs to help us eat food. These teeth can be classified by the way they help us eat food. In this activity, students will sort their teeth into groups based upon their function. Understanding how our teeth work is helpful for understanding how teeth in other animals work and how they relate to what the animal eats.

Make a Prediction Students should predict why some animals have sharp teeth and others have flat teeth.

Test Your Prediction Students can cut different materials with different tools to see what different types of teeth can do. Scissors are good models for snippers. Tearing things with your hands may not look like a tooth, but the results are a model of rippers. Crushing food with rocks models the grinders.

Communicate Your Results Scissors are good models for snippers. Tearing things with your hands may not look like a tooth, but the results are a model of rippers. Crushing food with rocks models the grinders.

Follow Up Questions

• The teeth in the front of your mouth, called incisors, look like chisels and are used for snipping or cutting food. They cut like scissors.

• The canine teeth are the premolars that with sharp ridges that also help rip, tear, and cut food. The molars in the back take the snipped and ripped food and grind it into a mush. These tear like your hands.
Home Sweet Home

Learning Lab Activity

Flipchart p. 71

**Ask Questions** Different animals have different features. These features cause animals to live in different places, eat different things, and move around in different ways. In this exploration, students will discover that isopods prefer to live in dark, moist areas.

**Make a Prediction** Students should formulate a hypothesis such as the following: Isopods prefer dark, moist areas than light dry areas. Make certain that students predict where they think the isopods will go.

**Test Your Prediction** Usually the isopods will move to a moist area even if it is in a lighted area. Explain to students that since isopods breathe with gills, they prefer areas with high humidity, such as under rocks or logs, in leaf litter or in crevices. Isopods are also omnivores or scavengers that feed on dead or decaying plants or animals that are also found in areas of high humidity.

**Communicate Your Results** Usually isopods prefer dark areas-perhaps because dark areas tend to be moister or at least do not dry out as fast as light areas. Also dark areas offer protection from being seen.

**How Isopods Live:**
- Isopods prefer dark and moist areas to light and dry areas.
How can you measure weather?

Learning Lab Activity

Flipchart p. 72

Ask Questions On a sunny day, have students take temperatures at different times of the day. This activity should be done on a day with a fairly stable air situation so that students can focus on the effect of the Sun on temperature change.

Make a Prediction Students should predict that the temperature will change on a sunny day. Even though it is a sunny day, the heat from the Sun should fluctuate throughout the day.

Test Your Prediction The temperature in direct sunlight is warmer than temperatures in the shade. The best place to measure the air temperature is in the shade, so the radiant heat from the Sun is not being measured. Many factors influence daily changes in temperature could also be explored. Clouds not only block sunlight but also hold heat in and keep temperature more constant over time. Cold or warm moving air masses can cause change just because air of a different temperature moves in.

Communicate Your Results On most sunny days, the temperature will increase throughout the day. In the winter with snow cover the increase may be less per hour because the snow reflects rather than absorbs the light and also because the light is more spread out (indirect).
Measuring Wind

Learning Lab Activity

Flipchart p. 73

Ask Questions This activity provides additional opportunities to measure something the air does—the wind blows. The focus is on recognizing relative magnitudes of motion and not the cause of the motion. While it would be possible to simply measure the wind by using an anemometer and reading the speed, this activity asks students to invent their own ways of describing the strength of the wind by watching the wind blow and describing its effects. It is important to do observations on at least three days of diverse wind conditions, such as little or no wind, a gentle wind, and a strong wind.

Make a Prediction Students should formulate a hypothesis such as the following. The wind blows at different speeds.

Test Your Prediction The heavier the object, the stronger the wind will have to be in order to move it. Students can use different objects to help them measure the strength of the wind.

Communicate Your Results Different objects will move on different days depending on the strength of the wind. Students will be able to measure the wind by observing how the objects move. This activity helps students get to know air by recording and measuring its movement and direction. They also learn that on different days the force of the wind is going to change.

Measuring Wind

Daytime temperatures are usually rising and nighttime temperatures are usually falling. Clouds blow in the direction of the wind, but sometimes the wind above us is moving in a different direction than the air on the ground.
What happens when you mix things together?

Learning Lab Activity

Flipchart p. 74

**Ask Questions** Students can usually identify different materials by looking at them. When asked how they know water is water or that metal is metal, most students have difficulty describing the properties of that substance. Being able to identify common properties is important for understanding how materials are formed, identifying uses of materials, and being able to identify changes that occur in materials by temperature change or by mixing and combining materials.

**Make a Prediction** Students expand their ability to describe the physical properties of different liquids and solids and observe changes caused by mixing materials together.

**Test Your Prediction** Have students manipulate the substance to explore its properties. Have students describe the properties of the ingredients prior to mixing and the changes in properties as they occur. This process will help students to understand better the above properties of “Ooey, Gooey Gluey!”

**Communicate Your Results** “Ooey, Gooey Gluey” is a polymer made by a chemical reaction. When the glue and borax are combined, long chains are formed and linked together which produces a thick, sticky polymer. This particular type of polymer has the properties of both a liquid and a solid. It flows slowly so that it can be stretched. However, if pulled quickly, the molecular chains break because the matter cannot flow quickly enough.
Carrots, Water, and Salt!

Learning Lab Activity

Ask Questions In this investigation students observe how salt changes when it is added to water. They also observe that the carrot indicates that the water has also changed in at least one way. The best salt to use for this investigation is rock salt since it dissolves slowly and it does not make the water cloudy. However, any table salt can be used.

Make a Prediction Students should guess what they think will happen to the carrot when it is placed in the salt water.

Test Your Prediction When the carrot is added to the water, the carrot sinks to the bottom and the water and carrot are unchanged. When salt is added, it also sinks to the bottom, but unlike the carrot the salt begins to disappear. Then, after a while, the carrot that is not changing, begins to rise up or float up in the cup.

Communicate Your Results Depending on how fast the salt dissolves the carrot can take up to 12 or more hours to reach the surface of the water. Stirring the water speeds up the dissolving. The floating of the carrot is a good indicator that the water, now a solution, has also changed. The carrot floats in the water because of a change in density of the water, but the density should not be introduced at this grade level. For now, observing and describing change is what is important.

More Great Mixtures

When powdered gelatin is mixed with water, bonding occurs within the individual gelatin particles forming pockets that trap large amounts of liquid. Gelatin can absorb a tremendous amount of water-up to 10 times its weight. Heating can increase the amount of gelatin that is needed to cause the water to gel. Another change to explore could be watching saltwater change when it is placed in a pan and allowed to evaporate. The water disappears and the salt returns. Watching food coloring dissipate in a jar of water is another opportunity to see change in action as the color slowly moves through the liquid and changes the color of the water. Also, another demonstration of color change is to put blue food coloring in orange juice. Predict what color the orange juice will be. Have students become mixologists and track and describe change.
## Pupil Edition Materials List
### Consumable Materials

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY NEEDED/GP</th>
<th>QUANTITY KIT</th>
<th>CHPT/LESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bags, plastic, zip lip, 6&quot; x 8&quot;</td>
<td>3</td>
<td>24</td>
<td>2/1, 5/4</td>
</tr>
<tr>
<td>Balloons, round, 9&quot;, pkg 35</td>
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<td>1</td>
<td>5/1</td>
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<tr>
<td>Birdseed</td>
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<td>1/2, 2/1, 5/3</td>
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<td>6/1</td>
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<tr>
<td>Celery bunch</td>
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<td></td>
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<tr>
<td>Clay, modeling, brown, 1 lb.</td>
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<td>6</td>
<td>4/2, 4/3</td>
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<tr>
<td>Corks</td>
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<td>5/3</td>
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<td>Craft stick, pkg 30</td>
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<tr>
<td>Cricket food</td>
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<td>1/3</td>
</tr>
<tr>
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<td>1 bottle</td>
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<td></td>
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<td>Paper clips, box 100</td>
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<td>6/2</td>
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<th>QUANTITY KIT</th>
<th>CHPT/LESS</th>
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<td>Soil (mud), 8 lbs</td>
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<td>Sticks, Twigs</td>
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<td>String</td>
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### Non-Consumable Materials

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<th>CHAP/LESS</th>
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<td>Balance, rocker scale</td>
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<td>6</td>
<td>5/2</td>
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<td>Blocks, wood, asst. colors, 1”</td>
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<td>6</td>
<td>5/1, 6/1</td>
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<td>6/2</td>
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<tr>
<td>Magnet, bar Alnico w/marked poles</td>
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<td>6</td>
<td>6/2</td>
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<td>Pan for soaking seeds</td>
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<td></td>
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<tr>
<td>Plastic tub container with lid</td>
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<td>Rock kit, specimen/72</td>
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<td>Ruler</td>
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<td>Strainer</td>
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<td>1</td>
<td>3</td>
<td>4/4, 5/4</td>
</tr>
<tr>
<td>Trays, plastic</td>
<td>1</td>
<td>1</td>
<td>3/3</td>
</tr>
</tbody>
</table>

### TECH ACTIVITIES MATERIALS LIST

#### Lesson 1:

<table>
<thead>
<tr>
<th>Materials</th>
<th>Quantity per group</th>
<th>Kit Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plates, paper, white, 8-3/4, pkg 25</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Tape, invisible, roll</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tube, cardboard, 13 x 2.5 cm1</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

#### Lesson 3:

<table>
<thead>
<tr>
<th>Materials</th>
<th>Quantity per group</th>
<th>Kit Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum foil</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bubble wrap, 6” x 12”</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Newspaper</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tape, invisible, roll</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
### Everyday Science Materials List

#### Consumable Materials

<table>
<thead>
<tr>
<th>Materials</th>
<th>Quantity per group</th>
<th>Kit Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Liter Bottle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ballons, 9” round</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>Ballons, 9” round</td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td>Celery stalk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>String</td>
<td>1</td>
<td>1 roll</td>
</tr>
<tr>
<td>Crayons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg, hardboiled</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Food coloring, blue</td>
<td>1</td>
<td>1 roll</td>
</tr>
<tr>
<td>Glue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mud</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoe box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syrub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twigs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetable oil</td>
<td>1</td>
<td>1 roll</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yeast, packet</td>
<td>1</td>
<td>1 roll</td>
</tr>
<tr>
<td>Hatch mix</td>
<td>1</td>
<td>1 roll</td>
</tr>
</tbody>
</table>

### Learning Lab Materials List

#### Consumable Materials

<table>
<thead>
<tr>
<th>Materials</th>
<th>Quantity per group</th>
<th>Kit Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borax</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Celery</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Construction paper, black</td>
<td>1</td>
<td>50 sheets</td>
</tr>
<tr>
<td>Glue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isopods</td>
<td>4–6</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pencil</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Plastic cup</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Plastic spoon</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Rock salt</td>
<td>3 tbs</td>
<td>1 bag</td>
</tr>
<tr>
<td>Water</td>
<td>1 bottle</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>1 bottle</td>
<td></td>
</tr>
</tbody>
</table>

### Non-Consumable Materials

<table>
<thead>
<tr>
<th>Materials</th>
<th>Quantity per group</th>
<th>Kit Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Jar, tall</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Plastic squirrel toy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic tub</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Thermometer</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Balance</td>
<td>1</td>
<td>1</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Materials</th>
<th>Quantity per group</th>
<th>Kit Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Celery</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Construction paper, black</td>
<td>1</td>
<td>50 sheets</td>
</tr>
<tr>
<td>Glue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isopods</td>
<td>4–6</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pencil</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Plastic cup</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Plastic spoon</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Rock salt</td>
<td>3 tbs</td>
<td>1 bag</td>
</tr>
<tr>
<td>Water</td>
<td>1 bottle</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>1 bottle</td>
<td></td>
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</tbody>
</table>