

# Activity Lab Book



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California science standards are noted at the top of activity pages. For the text of the standards, please refer to the Reference section of the California Science Student Edition.



# How are plants different?

## What to Do

### You need

**1** **Observe.** Find some plants around school. How many different plants can you find?

- paper
- crayons



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**2** **Record.** On a blank sheet of paper, draw two different plants that you find.

**3** **Compare.** How are the plants alike? How are they different?

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## Explore More

**4 Communicate.** How could you find out more about the plants you saw?

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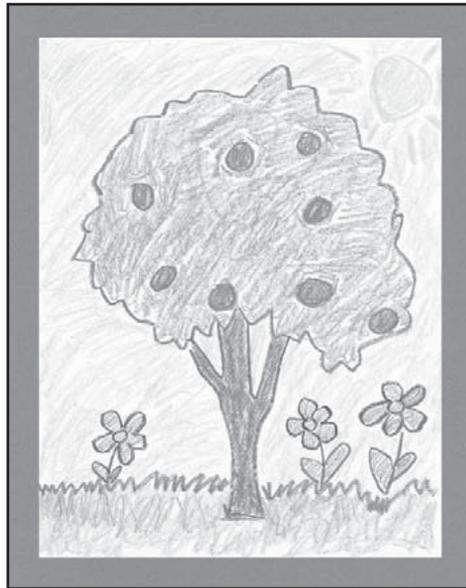
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# Compare Plants

## What to Do

- 1 Look at the plants that your teacher has around the room.
- 2 Record what you notice about 5 different plants.

### You need

- plants or photos of plants

Name of Plant	What I See

- 3 **Compare.** How are the plants different from one another? How are they the same?

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# Alive or Not?

- 1 How do you know if something is alive or not?

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## You need

- paper
- crayons
- scissors
- glue
- newspapers or magazines

- 2 Look through newspapers and magazines. Cut out pictures of things that are living and things that are nonliving.
- 3 Write **LIVING** at the top of one sheet of paper. Write **NONLIVING** at the top of another sheet of paper.
- 4 Glue pictures of things that are living to the paper that says **LIVING**. Glue pictures of things that are nonliving to the paper that says **NONLIVING**.
- 5 Label each picture in your **LIVING** and **NONLIVING** collages.

# Observe

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

## Learn It

Cindy wrote what she observed about a rose in this chart.

Rose	
See	The rose is red.
touch	The flower is smooth.
Smell	The rose smells sweet.

## Try It

Observe a plant.

1 What shape are the plant's leaves?

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2 What does the plant feel like?

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3 Make a chart like Cindy's. Fill in what you observed.

### My Plant

See	
Touch	
Smell	

# What happens if a plant does not get water?

## What to Do

- 1 Water only the plant labeled "Water."
- 2 **Predict.** What will happen to each plant?

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- 3 **Observe.** Watch your plants for a week. What happens?

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### You need

- two plants



- water



- paper



## Explore More

**4 Infer.** What would happen if the plants got salty water?

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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?

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- 2** Look at the picture of crops being watered. How do these plants look different from plants in a drought?

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- 3** Make a poster with your classmates showing how you can help conserve water.

### You need

- pictures of crop lands and plants during a drought and crops being irrigated
- poster board
- markers

# Feeling Energy from the Sun

**1** Put one piece of black paper in the Sun. Put another piece of black paper in the shade. Wait one hour.

**You need**

- 2 pieces of black construction paper

**2 Observe.** Feel the two pieces of paper. How do they feel?

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**3** Why do the two pieces feel different?

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# Do leaves need sunlight to stay green?

Find out what happens when leaves get different amounts of sunlight.

## What to Do

- 1 Cover three leaves with black paper. Put the plant in a sunny place for a week.

**You need**

- plant 
- black paper 
- paper clips 



- 2 **Predict.** What will happen to the leaves?

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**3 Observe.** Take the paper off the leaves. Do the leaves look like you predicted?

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**4 Communicate.** What happened to the leaves? Why?

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### Investigate More

**Predict.** What would happen to the leaves if you put the plant in a dark place for a week?

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# Why does grass need roots?

## What to Do

- 1** Gently pull the grass away from the soil.



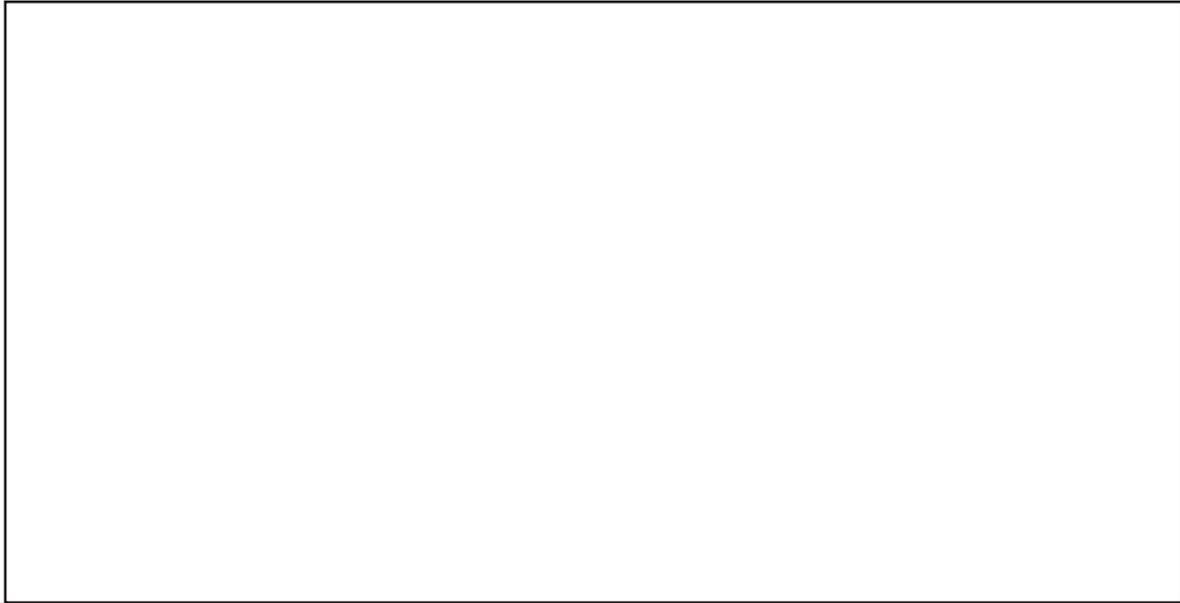
- 2** **Observe.** Use a hand lens to look at the roots.

### You need

- grass in soil
- hand lens



**3 Communicate.** Draw a picture of the grass and its roots. Describe the roots.



My roots are:

\_\_\_\_\_

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\_\_\_\_\_

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**Explore More**

**4 Infer.** Do you think roots grow? Why?

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# Taste a Root

## What to Do

**1** Look at some of the roots that we eat. Describe what you see.

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### You need

- carrots
- radishes
- beets

**2** After your teacher cuts the roots, look at the insides of the roots. Describe what you see.

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**3** Taste the different roots. Describe what they taste like.

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# What kinds of roots do plants have?

### You need

- fibrous root plant
- tap root plant
- crayons
- paper

**1** Observe the leaves of both plants. How are they different?

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**2** What do the plant's leaves tell you about its roots?

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**3** On a separate piece of paper, draw a picture of each plant. Include details about its roots and leaves.

# What are some different kinds of animals?

## What to Do

**1** Find and cut out pictures of different kinds of animals.

**You need**

- magazines 
- scissors 



**2** **Classify.** Sort the pictures into groups. How did you decide which animal belonged in each group?

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**3 Communicate.** What other animals could you put in each group? Why?



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**Explore More**

**4 Compare.** Share your animal groups with a partner. How were your groups the same? How were they different?

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# What animal am I?

## What to Do

**1** Your teacher will give you a picture of an animal. Do not show your classmates what picture you have.

**2** Describe your animal. Be sure to include how your animal moves and where it lives. You can also describe its type of skin covering.

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**3** Have your classmates try to guess which animal you had a picture of. What animal did you describe?

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**You need**

- photos of animals

# What kind of animal are you?

Observe the animal and list the clues on your worksheet.

**You need**

- photos of different kinds of animals

**1 Communicate.** List 3 clues that will help your classmate guess the animal.

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**2 Classify.** List what type of animal it is.

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**3 Compare.** How is your animal different from your classmate's?

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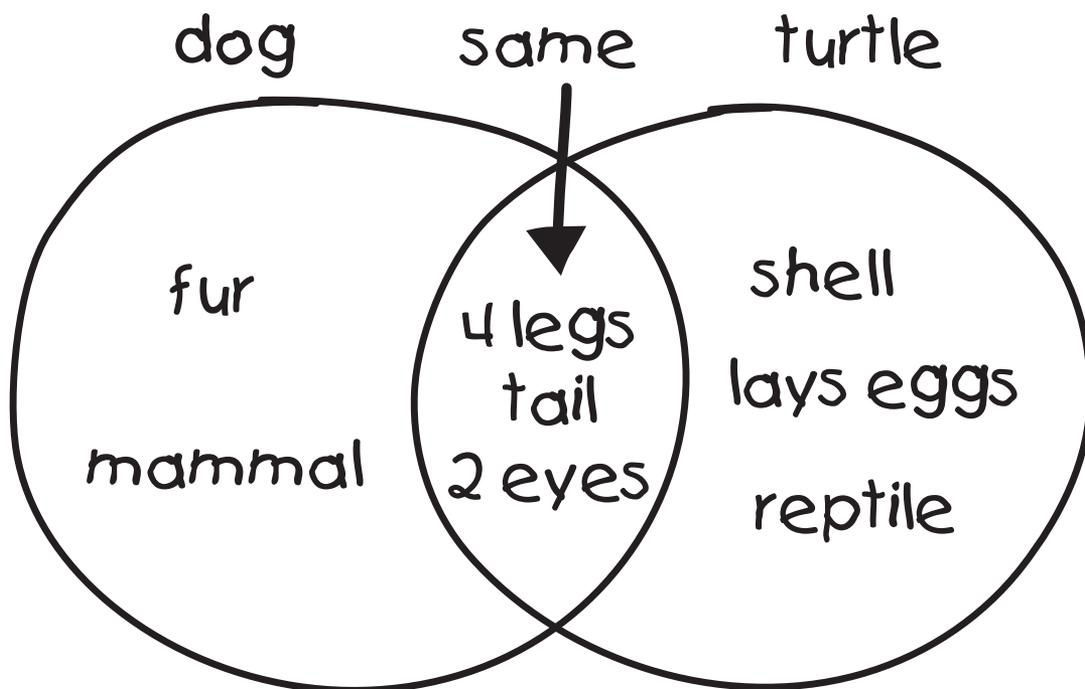
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# Learn to Compare

## 1 Learn It

When you **compare** two things, you look for ways that they are the same and different.

Ray compared a dog and a turtle. He made a Venn diagram to show how they are alike and different.



## 2 Try It

Look at the pictures of the alligator and the duck.



### What to Do

1 How are they the same?

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2 How are they different?

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## 3 Apply It

On a separate piece of paper, record what is the same and different in these pictures in a Venn diagram.





# Worms up close

## What to Do

- 1 Dig up worms. Place them on the ground. Wash your hands.
- 2 Look at the worms with your magnifying lens. Describe them.

### You need

- worms
- magnifying lens
- ruler

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- 3 Pick one worm to draw.



- 4 Measure the length of the worm using centimeters. How long is your worm?

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# Draw and compare

**1** Choose an animal to draw.

What is it?

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**2** Draw your animal. Label its parts.

**3** Write about the parts of your animal. Tell how each part helps the animal to get what it needs.

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**4** Look at your classmates' animals. How is yours the same? How is yours different?

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### You need

- animal photos
- animal books
- paper
- crayons or markers
- pencil

# How do teeth help you eat different foods?

## What to Do

- 1** **Observe.** Try each type of food. Use a mirror to see which teeth you use.
- 2** **Communicate.** Draw and write about which teeth you used.

### You need

- carrots 
- fruit leather 
- popcorn 
- mirror 

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**3 Compare.** Look at the shape of your teeth.

Why are they different shapes?

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**4 Explore More**

**Predict.** Which teeth would you use for biting and chewing a piece of chicken? Why?

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# A dentist in the classroom

**1** Think about the last time you went to the dentist. Write down one question that you would like to ask the dentist about different kinds of teeth.

### You need

- paper
- crayons

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**2** Ask the dentist your question when he or she comes to visit.

**3** What did you learn from the dentist?

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# What kinds of teeth do animals need to eat?

## You need

- paper
- tape
- pencil
- scissors
- pictures of different food

**1** Your teacher will tell you whether to make teeth for an herbivore or a carnivore. Fold your paper in half to make the jaw. Draw teeth and cut them out. Tape them onto the mouth.

**2** What do an herbivore's teeth look like?

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**3** What do a carnivore's teeth look like?

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**4** What are some foods that herbivores can eat?  
What can carnivores eat?

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# What do animals eat?

## What to Do

**1** **Compare.** Look at the pictures. How are the animals alike? How are they different?

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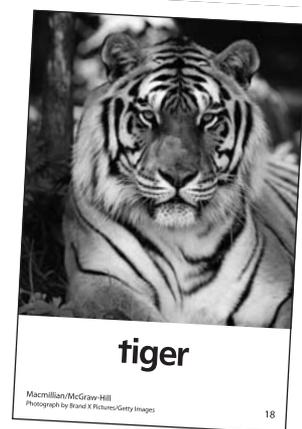
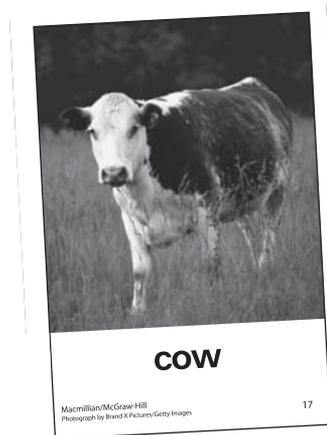
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### You need

- animal cards  
- modeling clay 
- pattern blocks  
- paper plate 

**2** **Infer.** What kinds of food does the animal in each picture eat? How do you know?



**3 Make a Model.** Use clay to make a model of the teeth of a meat-eating animal. Make a model of the teeth of a plant-eating animal.



**4 Communicate.** Explain to a friend how you decided what type of teeth the animals have.

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# What kinds of plants and animals live together?

## What to Do

- 1 Draw an animal. Draw the plants that live with the animal.

### You need

- paper
- crayons



- 2 **Communicate.** Share your picture. Tell how plants and animals get what they need to live.

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# Picture clues

## What to Do

**1** **Observe.** Look at the picture that your teacher gave you. What do you see?

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**You need**

- pictures of different places from travel magazines

**2** **Tell About the Picture.** How do plants and animals get what they need in this picture?

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# Soil comparisons

**1** Use the magnifying lens to look at the soil from the woods and the soil from the grass.

**2 Compare.** How are the soils the same? How are they different?

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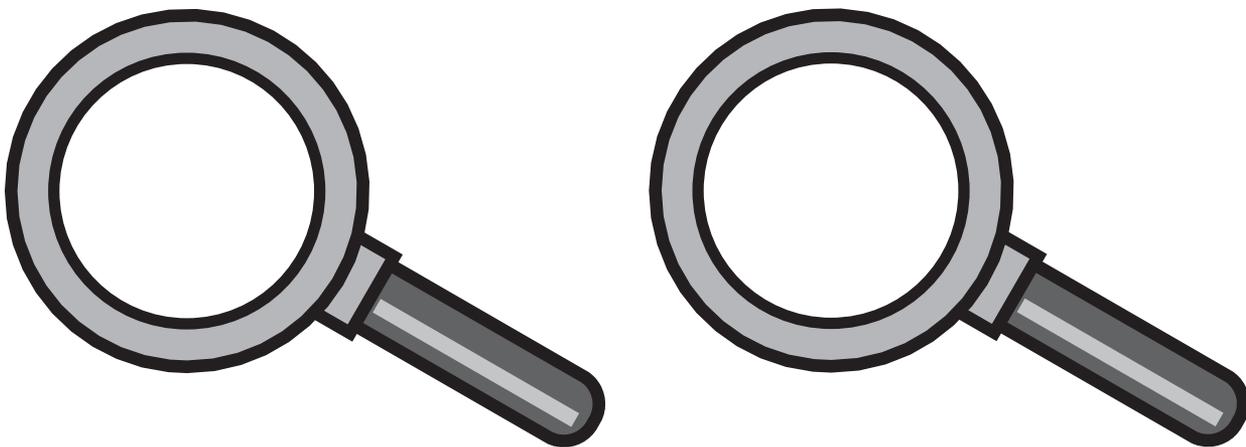
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**You need**

- soil
- leaves
- sticks
- grass attached to soil
- magnifying lens

**3 Communicate.** In the magnifying lenses below, draw what you saw.



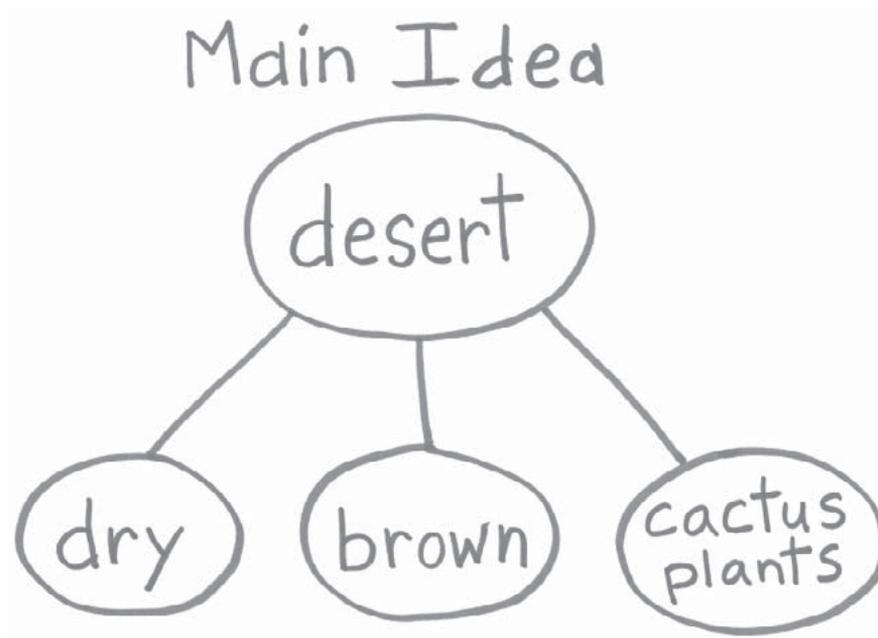
# Communicate

## Learn It

When you **communicate** you share information with others.

You can talk, write, or draw to communicate.

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



## 2 Try It

- 1 What shape are the leaves?  
What color are they?



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- 2 What does the ground look like?

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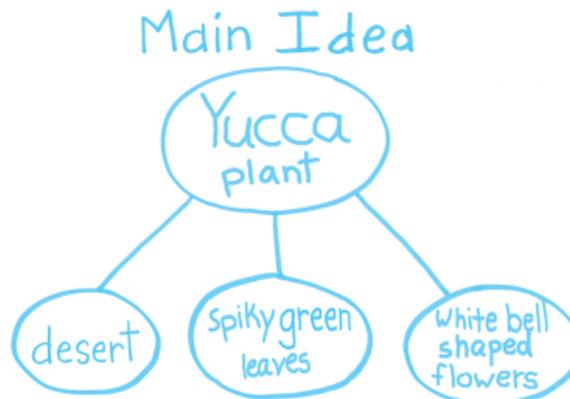
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- 3 Write About It. Communicate by filling in your own web about the picture.



# 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 tank.

**2** **Observe.** How does the fish move in the water?

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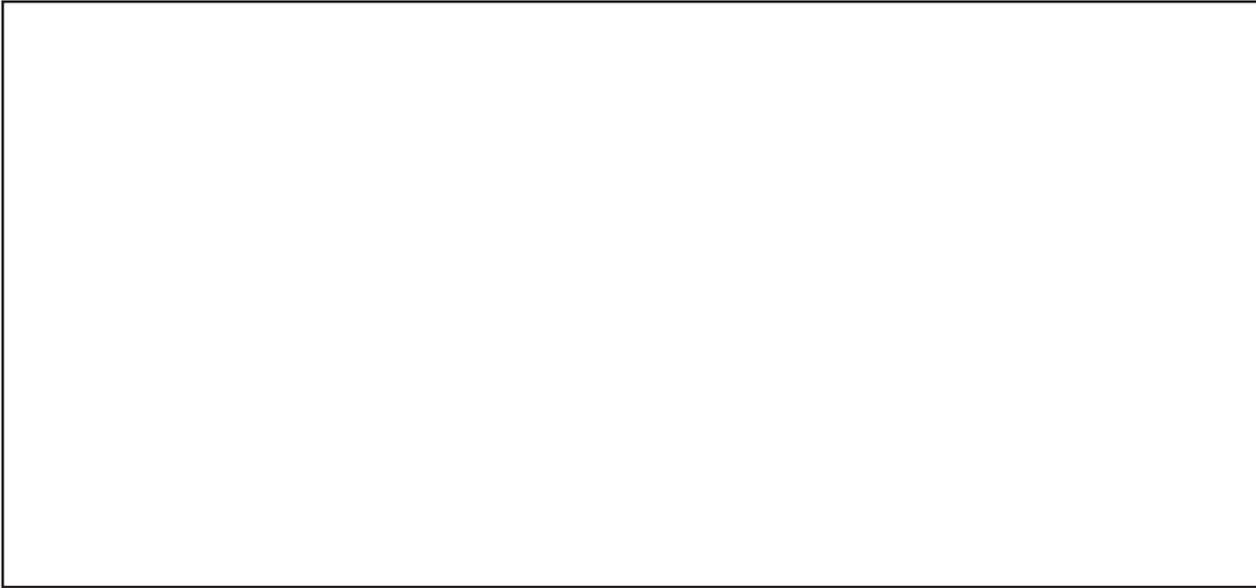
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### You need

- clear tank 
- pebbles 
- water plant 
- fish 



**3 Communicate.** Draw a picture of your aquarium.



**Explore More**

**4 Infer.** How does the plant help the fish live in the water?

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# Habitat sorting

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

## You need

- pictures of many kinds of animals

## What to Do

**1** What are some animals that live in water?

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

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# Find your habitat

- 1 Sit in a circle with your class.  
Place your animal photo card face down until your teacher tells you to turn it over.

- 2 What animal is on your photo card?

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- 3 Find a partner in the circle who has the same animal card that you have. In which habitat does your animal live?

- 4 Why is that habitat good for your animal?

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**You need**

- animal photo cards
- ocean photo cards

# Why do plants and animals live together?

## What to Do

**1** **Observe.** Look closely at a plant near your school.

**2** **Classify.** What animals can you find near, in, or on the plant?

**You need**

- paper 
- crayons 

Animals I see in the plant	Animals I see near the plant	Animals I see on the plant



**3 Record Data.** Draw a picture of what you observed.

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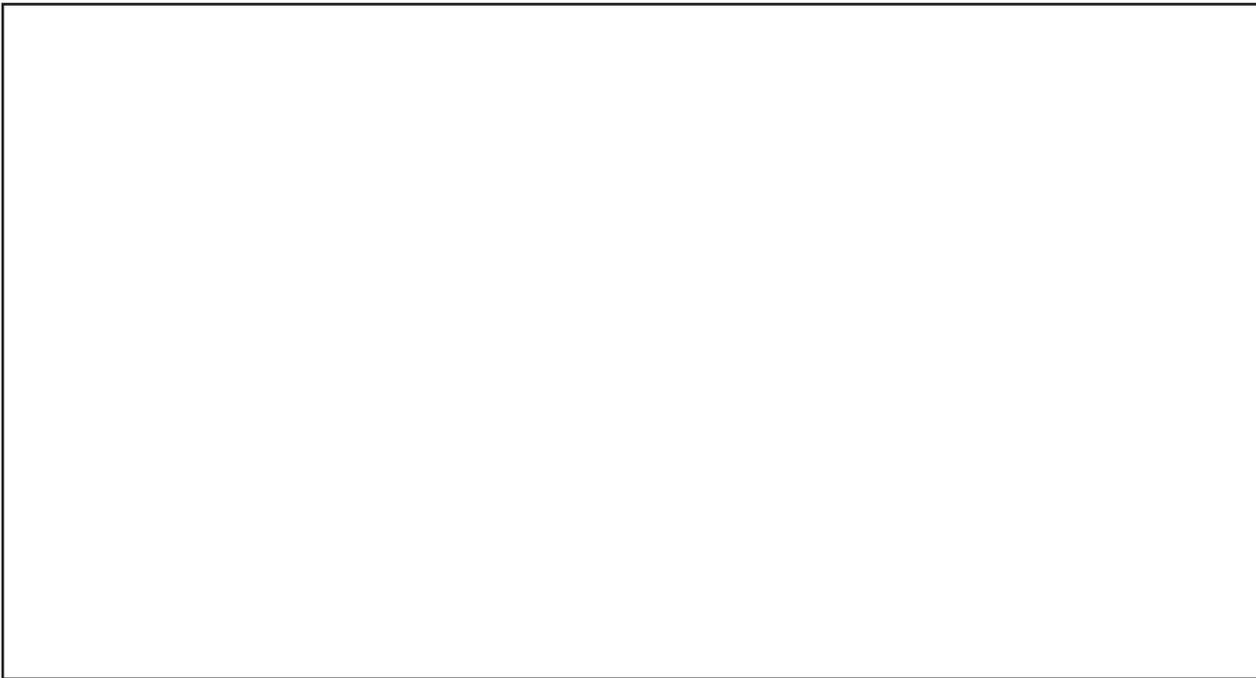
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## Explore More

**4 Communicate.** How is the plant helping the animals survive?

# Tree comparisons

In this activity you will describe and write how animals use trees and plants in their habitat.

## You need

- pictures of trees and wildlife from nature magazines
- scissors
- paper
- crayons

## What to Do

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

Cut out the pictures. Work with a partner. **Be careful!** Scissors are sharp!

**2** What animals do you see in or near the trees?

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**3** Draw your own picture of an animal using a tree in its habitat. Share your picture with a partner.



# How does my animal live?

Your teacher will invite you or classmate to come to the front of the room. Your teacher will show you a photo animal card and ask you to act out the animal on the card. Think about how the animal gets what it eats, how it eats, where it lives. Students take turns acting out animals.

## You need

- photo animal cards

**1 Observe.** What your classmate is doing at the front of the classroom. Can you guess what the animal he or she is acting out?

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**2** What does this animal eat? How does it get what it eats?

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# How do animals need plants to survive?

## What to Do

- 1 Spread peanut butter onto a paper roll with a craft stick.
- 2 Cover the roll completely with bird seeds. Wash your hands.

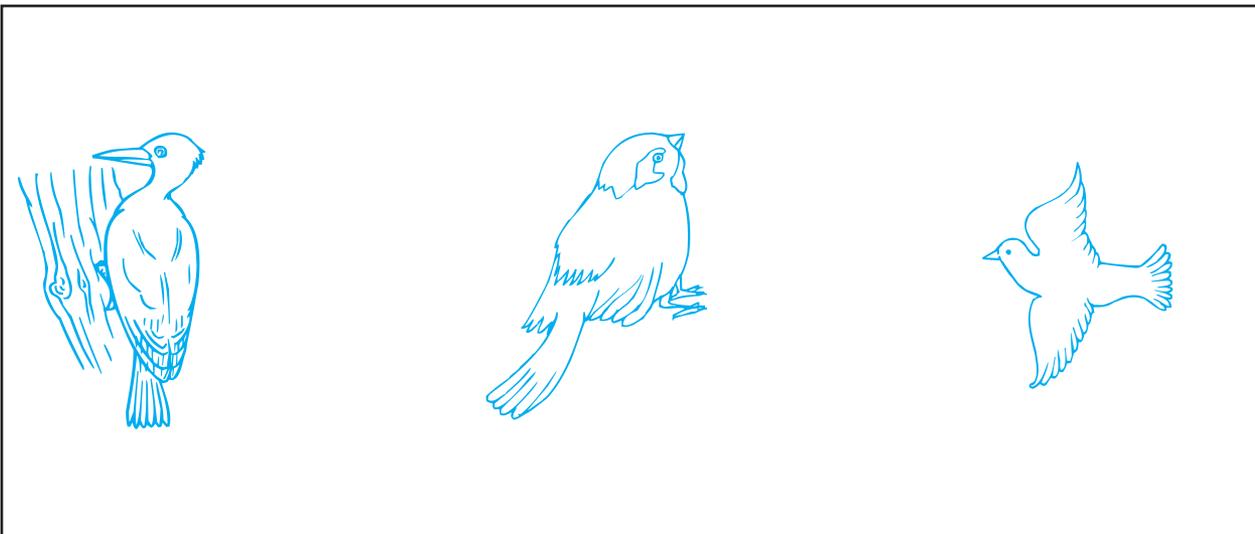
### You need

- paper roll 
- peanut butter 
- bird seed 
- string 
- craft stick 
- paper plate 

- 3** Loop a piece of string through the paper roll. Tie both ends of the string in a knot. Hang the bird feeder on a tree branch outside.



- 4** **Observe.** Look at the bird feeder every day for one week.
- 5** **Record Data.** Draw the different kinds of birds that you see.



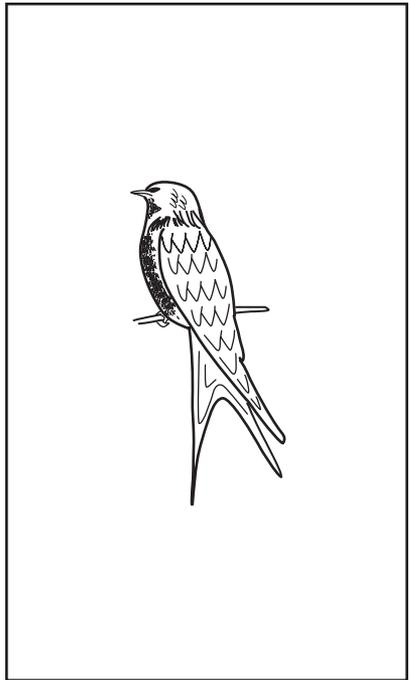
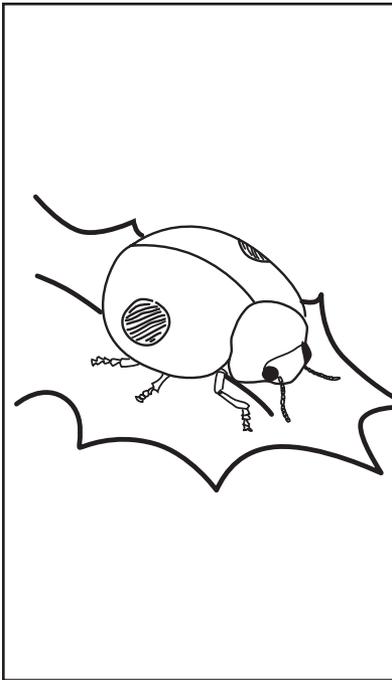
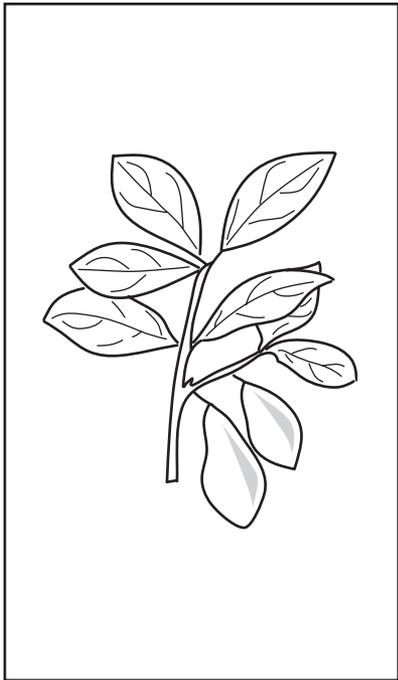
# What do animals eat?

## What to Do

**1 Communicate.** Draw a picture of a plant. Draw a picture of an animal that eats a plant. Draw a picture of an animal that eats that animal.

**You need**

- paper 
- crayons 



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**2 Put Things in Order.** Put your drawings in order to show what happens to the plants and animals.

**3 Classify.** What animals eat plants? What animals eat animals?

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**4 Explore More**

**Infer.** What kinds of food do people eat?

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# What does your animal eat?

In this activity you will explore food chains.

## What to Do

- 1 Your teacher will give you a picture. It is part of a food chain.
- 2 Your teacher will ask volunteers to go to the front of the classroom with a picture. Each volunteer will have a picture of a plant or animal that will form a food chain.
- 3 Draw a picture of the food chain of your animal or plant.

### You need

- animal photos from nature magazines
- photo of grass
- photo of a plant
- photo of a tree
- crayons



# Acting out food chains

- 1** **Observe your Classmates.** They are acting out a food chain. Do you see any clues that can help you figure out what it is? Write them below.

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- 2** **Infer.** What do you think the food chain is?

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- 3** **Draw that food chain below.**



# What is today's weather?

California Standard  
IE 4.a.

## What to Do

- 1 Look outside. What is the weather like today?

**You need**

- paper
- crayons



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- 2 Communicate.** Draw a picture of today's weather.

## Explore More

- 3 Predict.** What will the weather be like tomorrow?

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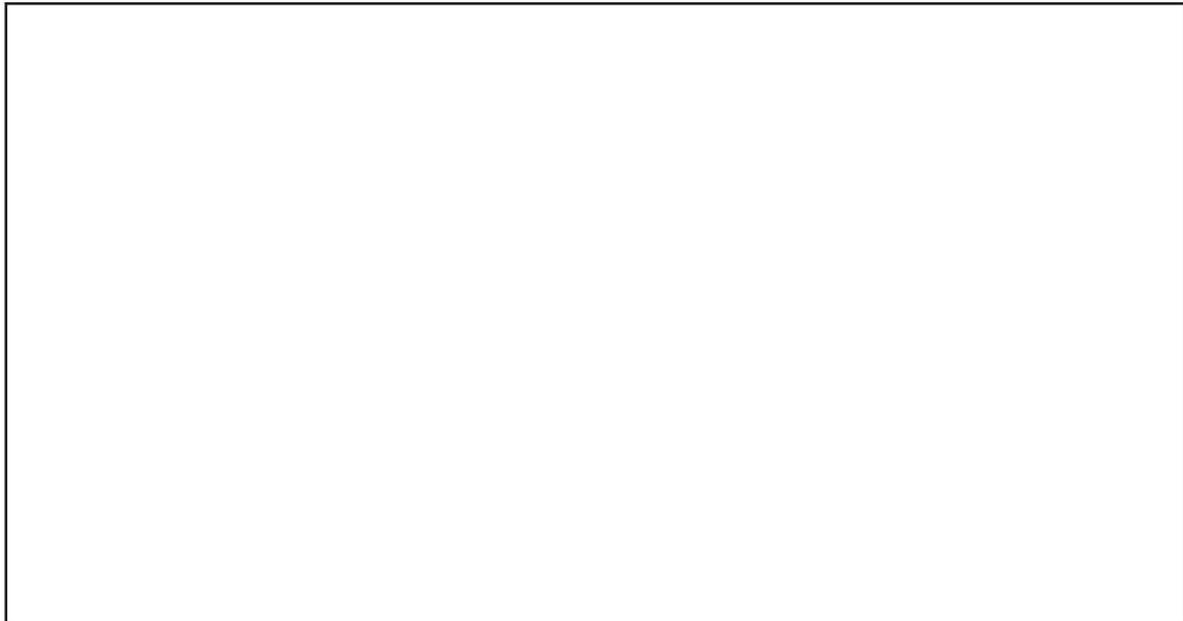
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# What is your favorite weather?

## What to Do

**1** Observe the cards. Which type of weather is your favorite?

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### You need

- weather photo cards
- pencil and paper

**2** What kind of weather do your classmates like best? Record your answers in the graph.

**Favorite Weather**

# Spin in the wind

**1** Blow softly on your pinwheel.

**2** What do you see?

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\_\_\_\_\_

**3** This time, blow on your pinwheel harder.

**4** What happens when you blow harder?

\_\_\_\_\_

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**You need**

- store-bought pinwheel

# Learn to predict

When you **predict**, you use what you know to tell what will happen.

## Learn It

Cindy looked closely at the picture below and made a prediction. You can record your predictions in a chart like the one Cindy made.



What I Predict	What Happens
It will rain and the game will stop.	

## Try It

Look at the picture below.



**1** What do you know about the weather in the picture?

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**2** What do you think the children will do?

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**3** Use a chart like Cindy's to predict what the weather will be like when you go home today. Use another piece of paper.

# What will the Sun do?

## What to Do

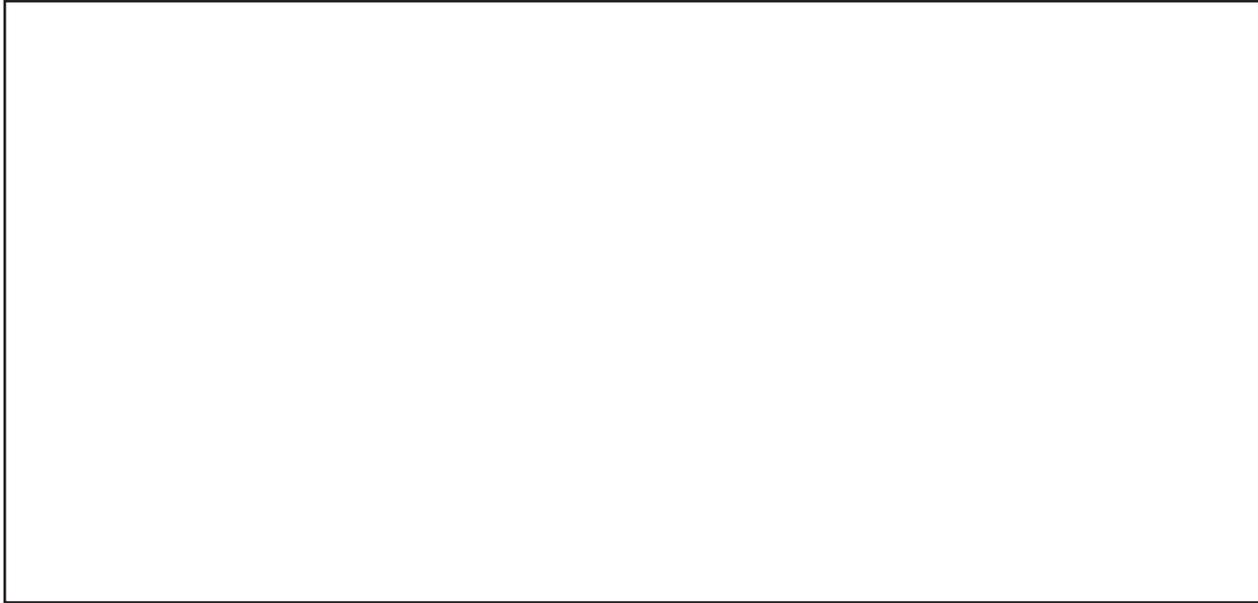
- 1 Fill two cups with soil. Feel the soil in both cups. Put one cup of soil in a sunny place. Put the other cup in a shady place. Wait one hour.

### You need

- 2 cups
- soil



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



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## Explore More

- 3 Predict.** How might the soil feel at night?

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# Does the Sun warm water?

## What to Do

### You need

- 2 cups
- water

**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?

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**3** **Predict.** How might the water feel tomorrow?

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# Rain in a bottle

1 Put a tablespoon of water in the clear bottle. Cap it and then place it in a sunny spot.

2 **Predict.** What do you think will happen to the water in the bottle?

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3 Wait one hour. Then **observe** the bottle. What do you see?

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4 **Predict.** What do you think will happen to the water in a shady spot?

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**You need**

- clear bottle with cap
- water

# What is the temperature outside today?

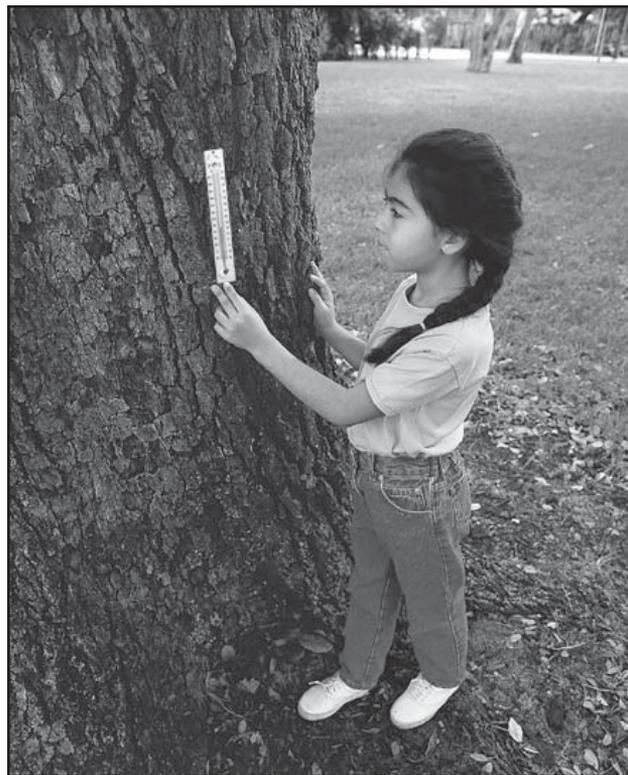
## You need

- thermometer



## What to Do

- 1** **Observe.** Look at a thermometer.
- 2** **Record Data.** What is the temperature outside?

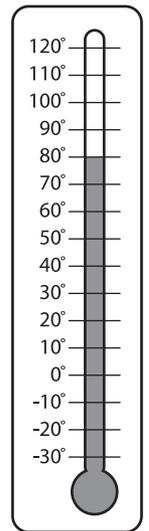
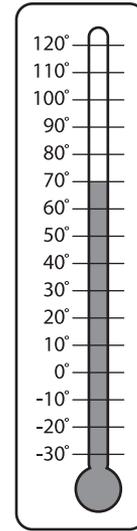




# Reading thermometers

## What to Do

- 1** Observe the temperature on the 2 thermometers.
- 2** Record the temperature on the lines below each thermometer.
- 3** Look at the inside and outside temperatures that your teacher has written on the board.
- 4** Fill in the blank thermometers.

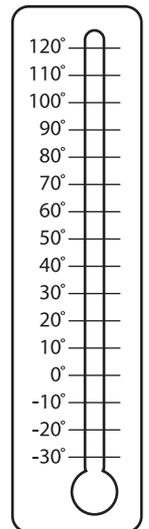
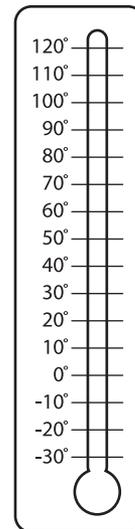


**inside**

**outside**

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\_\_\_\_\_

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# Where did it go?

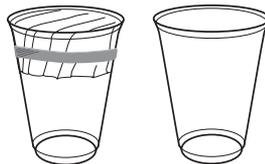
- 1 Fill 2 cups with water. Use the marker to draw a line on the cup to mark where the water is. Cover one cup with plastic wrap and a rubber band.

**You need**

- clear plastic cups
- plastic wrap
- rubber band
- marker

- 2 Put both cups in a sunny spot.

- 3 Draw lines on the diagram to match the lines on your cup.



- 4 What happened to the water in each cup? Why?

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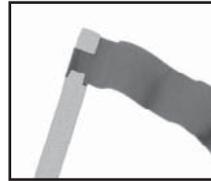
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# What is the weather like this week?

## What to Do

1 Make a wind vane and a rain gauge.



wind vane

2 Measure. Take your wind vane, rain gauge, and a thermometer



rain gauge

outside. Record what you find.

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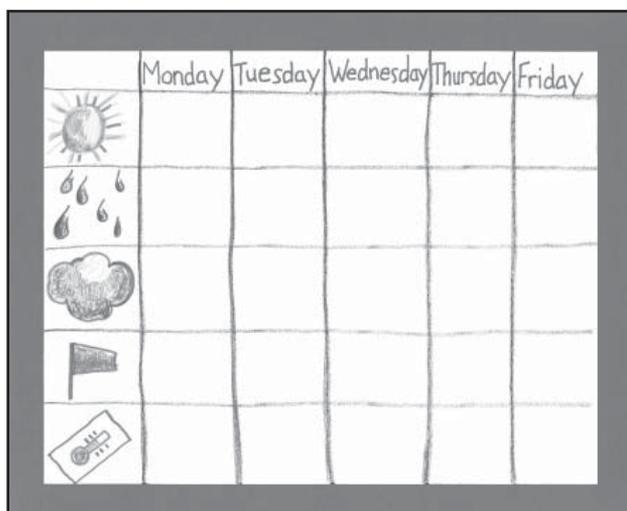
## You need

- craft stick 
- streamer 
- tape 
- jar 
- thermometer 
- ruler 



**3 Communicate.** Make a weather calendar.

Observe and record the weather every day for one week. Use your weather tools.

**4 Predict.** What will the weather be like next week?

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**Investigate More**

**Compare.** Record the weather for another week. Does the weather change from day to day?

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# What is winter weather like in different places?

## What to Do

- 1 Observe.** Look at pictures showing winter in two California cities, Lake Tahoe and San Diego.
- 2 Compare.** How is winter weather in different places?



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**3 Record Data.** Write your ideas in a Venn diagram.

Lake Tahoe	Both	San Diego
_____	_____	_____
- - - - -	- - - - -	- - - - -
_____	_____	_____
_____	_____	_____
- - - - -	- - - - -	- - - - -
_____	_____	_____
_____	_____	_____
- - - - -	- - - - -	- - - - -
_____	_____	_____

**4 Communicate.** Tell what winter is like where you live.

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- - - - -

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- - - - -

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# Relate to personal experience

## What to Do

**1** Talk with your classmates about images you have seen of winter. Think of movies, books, and places you have been.

**2** How is winter weather different in these places? Why?

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**3** What is winter like where you live?

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### You need

- pictures of winter in different places
- pencil

# How do animals live through winter?

Look at the Winter and Not-Winter areas.

**You need**

- plastic game pieces
- cones
- stopwatch

**1** Which area do you think will have more “food” in it?

\_\_\_\_\_

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\_\_\_\_\_

**2** Record how many game pieces you can find in the “winter” and “not-winter” areas in one minute.

winter	not-winter

**3 Predict.** If there were fewer animals, would it be easier or harder to find food?

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# Learn to record data

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

## Learn It

The children in Miss Hayes' class made a tally chart to record data about their winter clothes.

Winter Clothes	
Hats 	
Coats 	
Mittens 	

## Try It

Look at the tally chart.

- 1 How many children in Miss Hayes' class are wearing coats?
- 2 How many children are wearing hats?
- 3 Make a tally chart about what your classmates are wearing to keep warm.

Warm Clothes	



# What do seeds need to sprout?

## What to Do

- 1** Put seeds on a dry and wet paper towel. Put each paper towel in a bag.
- 2 Record Data.** Look at your seeds. Draw and write what happens to the seeds.

### You need

- seeds 
- paper towels 
- water 
- plastic zipper bags 

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## Explore More

**3 Predict.** What would happen if you put seeds in a freezer? Try it!

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# Using pictures

## What to Do

- 1 Observe the Spring photo sorting cards. Talk about them with your classmates. What does this child need to help the garden grow?

### You need

- spring photo cards
- pencil
- paper

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- 2 Do you think he will have to water it more in the spring or more in the summer?

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- 3 If you had a garden what would you plant?

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# Using pictures

**1** Observe the photos. How do you know the weather in these photos show spring?

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**You need**

- *spring* photo sorting cards
- paper
- pencil

**2** How do the plants in these photos show spring?

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**3** How do the animals in these photos show spring?

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# Which does the Sun warm more?

## What to Do

- 1 Place a cup of water and a cup of sand each in a sunny place.

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**You need**

- cup of water 
- cup of sand 
- thermometer 

- 2 Compare. Did the sand or water get hotter in the Sun?



**3 Record Data.** Write about results.

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**Explore More**

**4 Measure.** Repeat the activity using a thermometer. Were your results the same?

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# A day at the beach

## What to Do

**1** Do all of the objects feel the same temperature now?

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**2** **Predict.** If I put these objects in the sun for a long time, which ones would feel hotter than the others?

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**3** **Infer.** Why would some objects get hotter in the Sun?

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### You need

- sand
- plastic shovel
- white shirt
- black shirt
- metal keys

# What color is the coolest?

**1** Tape the thermometers to different colors of construction paper. Put these in a sunny spot.

**2** What colors will get the warmest? What colors will stay the coolest?

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**3** Wait one hour. Record the temperatures of the thermometers on a chart.

**4** Draw an outfit that would help you stay cool in the desert.

**You need**

- construction paper of different colors
- three thermometers
- tape
- paper
- pencil

# How do leaves change in the seasons?

**1** **Observe.** Look at the pictures of leaves in different seasons.



**2** **Compare.** How are the leaves alike? How are they different?

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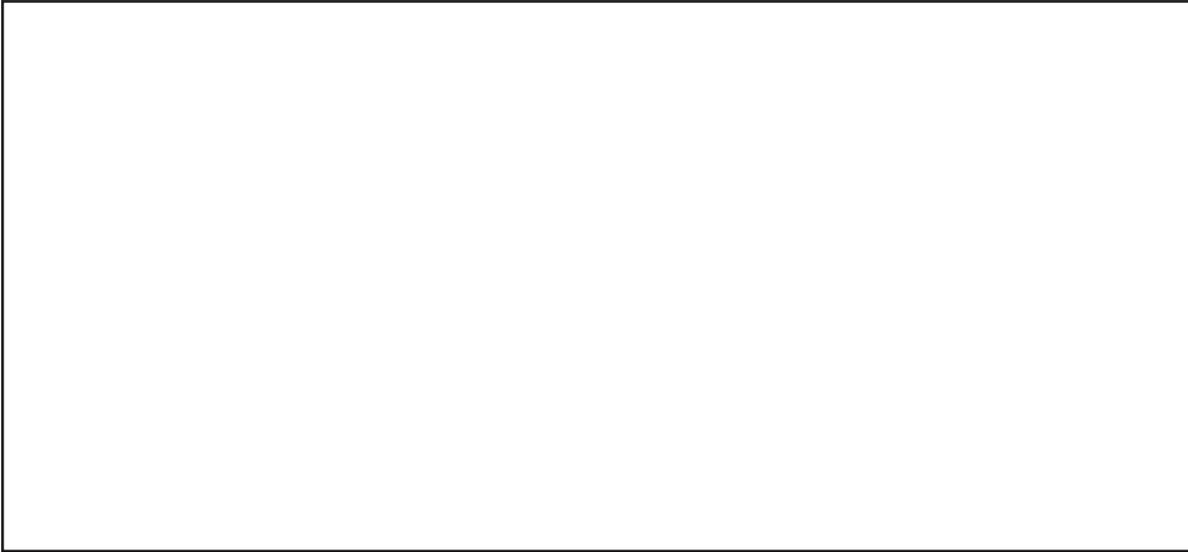
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**3 Record Data.** Draw and color the leaves.

Write the season when you might see each leaf.



### Explore More

**4 Communicate.** What happens to leaves in different seasons where you live?

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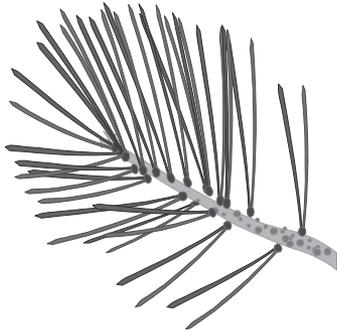
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# Use pictures

## What to Do



### You need

- pictures of leaves

**1** Look at the pictures of leaves. Predict which leaves will change color and which leaves will not.

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**2** How are the leaves alike? How are they unlike?

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# Falling temperatures

## You need

- pencil
- map of California

## Average Temperature in California Cities

City	September	October	November
Mount Shasta	60	51	40
Sacramento	72	64	53
San Diego	72	68	62

- 1** Compare the temperature in each city between September and November.

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- 2** Which city has the lowest temperatures? Why?

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- 3** Which city has the highest temperatures? Why?

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# How many hours of sunlight are there in a day?

## What to Do

**1** Find the chart in a newspaper that tells the time of sunrise and sunset.

**2** **Record Data.** Write the times of sunrise and sunset for a week on a chart like the one below.

**You need**

- newspapers 
- paper 
- pencil 

Date	Sunrise	Sunset
Monday	7:00 a.m.	6:16 p.m.
Tuesday	7:00 a.m.	6:14 p.m.
Wednesday	7:01 a.m.	6:13 p.m.
Thursday	7:02 a.m.	6:12 p.m.
Friday	7:03 a.m.	6:11 p.m.

**3 Draw Conclusions.** How did the amount of sunlight change in a week?

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### Investigate More

**Predict.** Will sunrise happen earlier or later next week?

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# How can you describe an object?

## What to Do

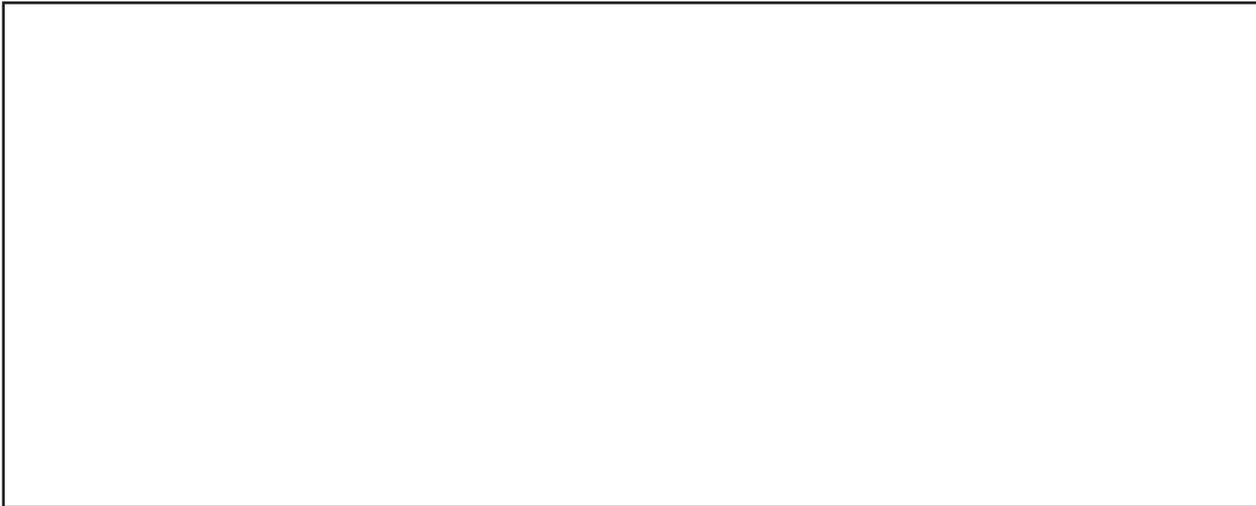
- I** **Observe.** Look at a cracker. Now use a hand lens.

### You need

- crackers 
- hand lens 



- 2 Communicate.** Draw a picture of what you observed. Share your picture with a partner.



- 3 Measure.** Look at other crackers. Are they all the same size? How do you know?

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## Explore More

- 4 Infer.** How can you change the cracker?

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# 20 Questions

**1** Your teacher has an object. Can you guess what it is? Ask questions to help you learn about the object. Your teacher can only answer yes or no.

**You need**

- classroom objects
- pencil

**2** Make a list of questions that will help you learn about the object.

Question #1  
\_\_\_\_\_  
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\_\_\_\_\_

Question #3  
\_\_\_\_\_  
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\_\_\_\_\_

Question #2  
\_\_\_\_\_  
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Question #4  
\_\_\_\_\_  
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**3 Infer.** Use the questions to guess the object.

\_\_\_\_\_  
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\_\_\_\_\_

**4** Discuss which questions were the most helpful. Which were the least helpful?

# Measure with your senses

- 1 **Observe** the apple cider vinegar in the cup. Use all of your senses.
- 2 **Record** what you observe in the chart below.

## You need

- small paper cups
- apple cider vinegar

My Senses	What I Observe
Sight	
Touch	
Smell	
Taste	
Hearing	

# Measure

## Learn It

You **measure** to find out the size or amount of something. You can use a string or cubes to measure how long or wide something is.

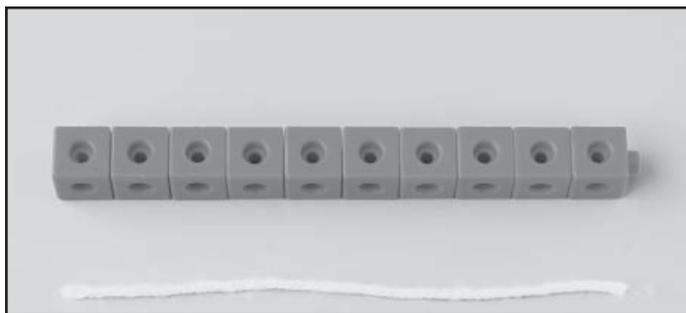
Whitney used cubes to compare the length of three books. She made a chart to show what she found out.

### How Long Is a Book?

I Spy	13 cubes
The Biggest Tree	8 cubes
Watch It Grow	8 cubes

## Try It

Look at the pictures below.



## What to Do

- 1 How many cubes wide is the can in the picture?
- 2 Use string to measure the width of two classroom objects.
- 3 Make a chart to show what you find out.

Object	How Many Cubes

# What are some properties of solids?

## What to Do

- 1 Collect different rocks.
- 2 **Classify.** Sort them by their properties.

### You need

- rocks 
- hand lens 
- balance scale 



- 3 Measure.** Use a balance scale to find out which rocks have more mass.

### Explore More

- 4 Infer.** Can you do anything to change the shape of the rocks? Why or why not?

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# What is in my school bag?

**1** Use a sheet of paper to make a list of things that are in your school bag.

**2** What are some properties you can use to classify the things in your bag?

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**3** **Classify.** Which of your objects are solids? Which are not solids? Tell how you know.

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**You need**

- school bag
- pencil
- paper

# Sensing without sight

1 What is in your school bag?

Make a list.

2 What properties can you use to **classify** the objects in your school bag?

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3 **Classify** the objects in your school bag. Which objects are solids? How do you know?

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**You need**

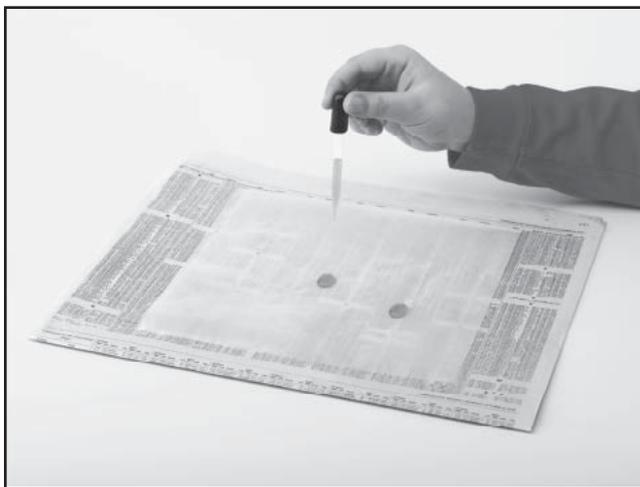
- school bag with school supplies
- paper
- pencil



# How is a liquid different from a solid?

## What to Do

- I Measure.** Fill a dropper with the colored water. Place drops next to each other on wax paper.



## You need

- colored water 

- wax paper 

- dropper 

- toothpicks 

**2 Observe.** Use a toothpick to change the position of the drops. What happens?

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### Explore More

**3 Infer.** Do liquids have their own shape? How do you know?

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# Comparing liquids and solids

**1** Work with a partner. **Observe** the water. Feel it. Tell about it.

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### You need

- clear plastic cup half-full with water
- clear plastic cup half-full with marbles
- pencil

**2** **Observe** the marbles. Feel them. Tell about them.

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**3** Use your hand to move the marbles in the cup. Then use your hand to move the water. Tell what happens.

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# Elastic strength

**1** Measure and record. How much water is in the measuring cup?

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**2** Pour the water into different containers. How did the shape of the water change?

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**3** Pour your water back into the measuring cup. Do you still have the same amount?

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\_\_\_\_\_

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**You need**

- measuring cup
- water
- containers of different shapes and sizes
- pencil

# What liquid flows the fastest?

## What to Do

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

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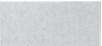
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### You need

- dish soap 
- honey 
- ketchup 
- mustard 
- teaspoon 
- cardboard 



**2** **Measure.** Place a teaspoon of each liquid on one end of a piece of 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.

Fast Moving Liquids	Slow Moving Liquids

### Investigate More

**Classify.** Repeat the experiment with different kinds of liquids.

Fast Moving Liquids	Slow Moving Liquids

# What is in the cup?

## What to Do

- 1 Push a cup to the bottom of a pan of colored water.
- 2 **Communicate.** What happens?

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**You need**

- plastic cup 
- food coloring 
- plastic bin 



**3 Infer.** Why do you think the water does not fill the cup?

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### Explore More

**4 Measure.** Add one cup of water to the pan.  
Did adding water change your results?

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# Gases and your body

In this activity, you will observe the properties of air. Air is a mixture of gases you need to live.

## You need

- pencil

**1** Take a big, slow breath. Hold it for a moment.

Then breathe out as much as you can.

**Observe** the way your chest moves as you breathe.

**2 Communicate.** How do you know that air is moving in and out of your body when you breathe?

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**3 Infer.** What shape is the air when it is in your chest? What shape is the air that leaves your chest when you breathe out?

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# The sniff test

- 1 Predict.** Who do you think will smell the perfume first? Last? Explain.

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## You need

- bottle of perfume
- list of classmates
- stopwatch
- pencil

- 2** Close your eyes. Use your sense of smell to **observe** the air. When you smell the perfume, raise your hand. Record the results.

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- 3 Infer.** How did the perfume gas behave?

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# How can heat change water?

## What to Do

- 1 Measure.** Take the temperature inside a cup with ice cubes. Place cup in a sunny place.
- 2 Observe.** Wait ten minutes.
- 3 Measure.** Take the temperature inside the cup again. How has the temperature changed?

**You need**

- cup with ice cubes 
- thermometer 

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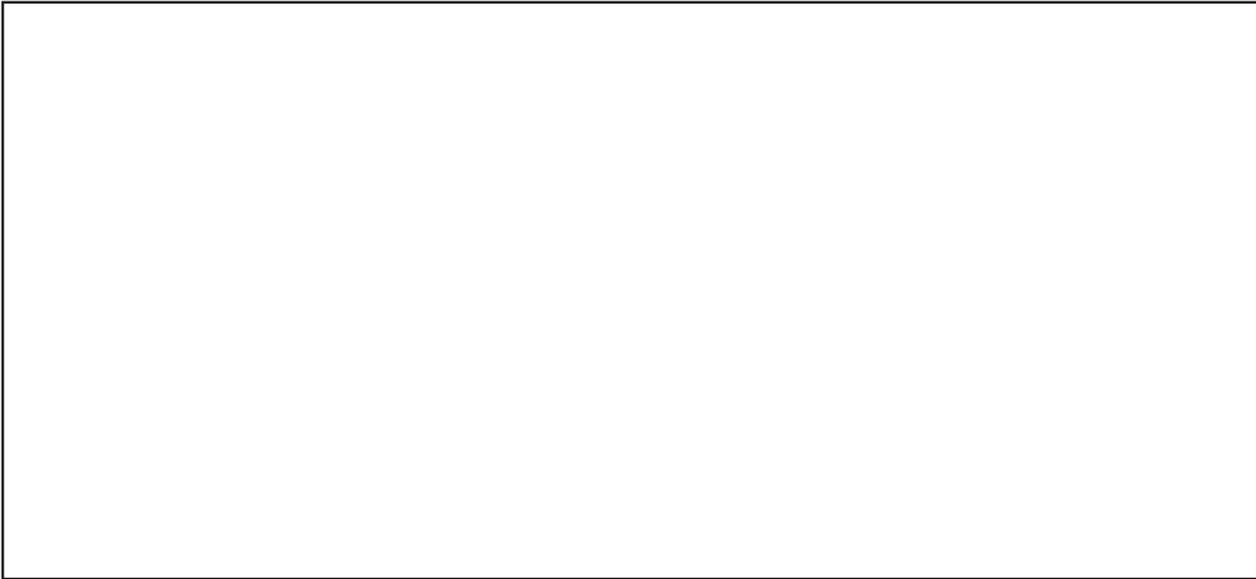
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- 4 Record.** Draw a picture of what your ice cubes look like.



## Explore More

- 5 Put Things in Order.** Write what happened to the ice cubes.

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# Hot chocolate

## What to Do

Put one chocolate bar in the sun or a warm place. Put an identical bar in a refrigerator or cool place.

### You need

- 2 chocolate bars

**1** Is chocolate a liquid or a solid?

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**2** How do you think chocolate can be changed from a solid to a liquid?

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# Liquid to Gas to Liquid Again

## What to Do

**1 Measure.** Pour two cups of water into the pot. Record the temperature of the water. Then cover the pot. Your teacher will place the pot on the hot plate and set it to "high." Start the stop watch when your teacher tells you.

### You need

- hot plate
- pot of water with lid
- thermometer
- stop watch
- piece of paper
- oven mitts

**2** When the water is boiling, stop the watch. How long did the water take to boil? How has the temperature changed?

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**3** Your teacher will hold paper over the pot. What happens to the paper? Why?

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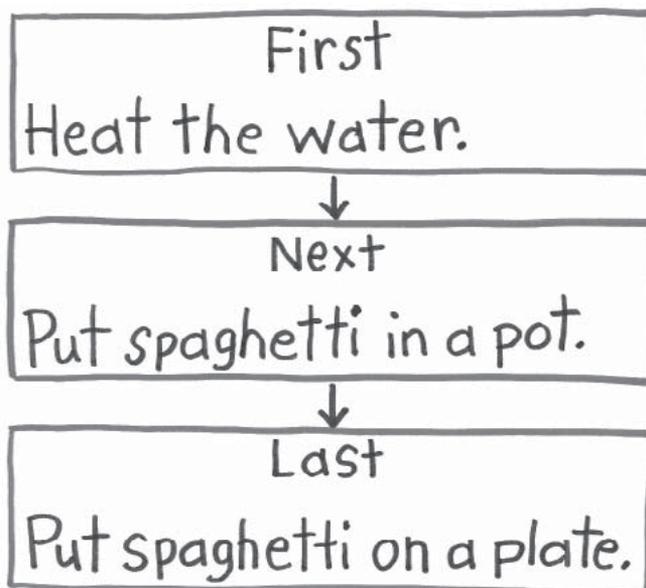
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# Put Things in Order

## Learn It

You **put things in order**, when you tell what comes first, next, and last.

Peggy cooked spaghetti. She made a chart to show the steps.



## Try It

Look at the picture below. Then try the skill.



1 What is happening in this picture?

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2 What do you think will happen next?

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3 Use a chart like Peggy's to show what came first, next, and last.

First	Next	Last



# How does cooling change a liquid?

## What to Do

- 1** Fill a cup with water.
- 2 Measure.** Take the temperature of the water. Then put ice cubes in the cup.
- 3 Measure.** Take the temperature of the water after 10 minutes and again after 20 minutes.

### You need

- cup of water 
- ice cubes 
- thermometer 

Time	Temperature
Temperature of water before ice cubes	
Temperature of water after 10 minutes	
Temperature of water after 20 minutes	

## Explore More

- 5** Put Things in Order. Tell how you changed the temperature of the water.

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# Compare solids and liquids

## What to Do

### You need

- juice
- ice cube trays

**1** **Observe.** Look at the juice in each cup. Tell what kind of matter is in each cup.

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**2** What kind of matter is the juice in the cup?  
What kind of matter is the juice cube?

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**3** Write a sentence about how cooling affects liquids.

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# Slow as Cold Molasses

**1** **Observe** as your teacher pours warm molasses back and forth between two cups. How fast does the molasses flow?

**You need**

- 3 cups of molasses

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**2** **Communicate.** How is the classroom different from the refrigerator?

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**3** **Predict.** Which cup of molasses do you think will flow the slowest?

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# What happens to salt in water?

## What to Do

- 1 Measure.** Mix four tablespoons of salt into one-half cup of water.
- 2 Pour** the mixture into a pan. Put the pan in a sunny place for a few days.
- 3 Put Things in Order.** Write what happened, first, next, and last.

### You need

- pan 
- salt 
- bottle of water 

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## Explore More

**4** **Predict.** What would happen if you mix sugar instead of salt?

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# Lemonade taste test

## What to Do

**1** **Observe.** Look at the three cups your teacher gave you.

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### You need

- pitchers
- water
- lemonade mix
- small cups
- spoon

**2** **Compare.** How are the mixtures the same?  
How are they different?

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# Snow Globe

## What to Do

- 1 You will make a snow globe.
- 2 Glue waterproof craft items on the inside of the jar's lid to create the snow scene.
- 3 When the glue is dry, fill the jar with water leaving a little room at the top. Add glitter. Screw on the lid.
- 4 **Observe.** What kind of mixture is created when you shake the globe?  
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- 5 What do you have to do to keep the water and glitter mixed together? What happens when you stop?  
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## You need

- clear jars
- water
- glitter
- measuring spoons
- glue
- waterproof craft materials
- mineral oil or baby oil

# What happens when you mix baking soda and vinegar?

## What to Do

- 1 Measure.** Put four teaspoons of vinegar into a plastic bottle.

**Be Careful.** Wear your safety goggles!

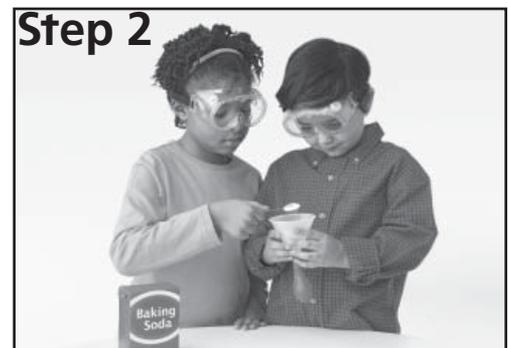


- 2 Measure.** Put one teaspoon of baking soda into a balloon.

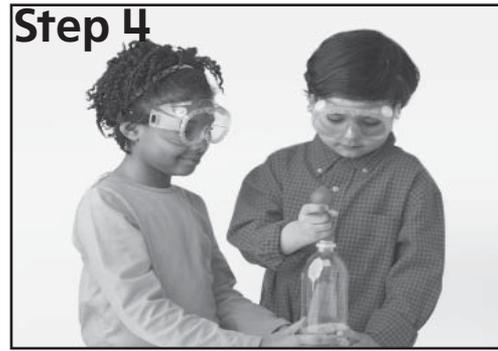
- 3** Stretch the balloon over the top of the bottle. Do not let the baking soda fall into the bottle.

### You need

- vinegar 
- baking soda 
- plastic bottle 
- funnel 
- balloon 
- safety goggles 



**4** **Observe.** Hold the balloon straight up so the baking soda falls into the bottle. What happens?



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**5** **Put Things in Order.** Write what happened first, next, and last.

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### Investigate More

**6** **Infer.** Can you separate the baking soda from the vinegar? Why or why not?

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# What happens to celery when placed in water?

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.

## You need

- celery stalk
- blue colored water



## Purpose

Observe how water travels through a plant.

## Predict

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

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## Test Your Prediction

- 1 Have an adult cut a celery stalk in half.
- 2 Put each celery stalk in a cup of colored water.
- 3 **Record Data.** Look at the celery stalk. Draw what you observe.



## Draw Conclusions

- 4 What happened? Why?

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## Critical Thinking

- 1 Can you think of any stems you can eat?

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# What do squirrels need to live?

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

## Purpose

To find out what a squirrel needs to live in its habitat.

## Predict

What does a squirrel need to live?

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### 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?

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## Draw Conclusions

**3** Why do squirrels need plants in their habitat?

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# 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

To create a habitat for brine shrimp.

## Predict

What do brine shrimp need to live in their habitat?

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### You need

- bottle
- brine shrimp eggs
- brine shrimp food
- salt



## 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.

### You need

- white paper 
- black paper 
- thermometer 

## Predict

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

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## 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?

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### Critical Thinking

**1** Why do you think people would rather wear white clothing in the summer?

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# 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?

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## Test Your Prediction

- I** 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?

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### Critical Thinking

- 1 What do you think would happen to the eggs if the nest they were in fell?

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# 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!

## You need

- 2 balloons 
- bottled water 
- balance scale 

## 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?

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## Test Your Prediction

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

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



**3 Communicate.** Draw what happens. Which balloon has more mass?

### Draw Conclusions

**4** Does liquid or gas have more mass? Why?

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### Critical Thinking

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

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# 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?

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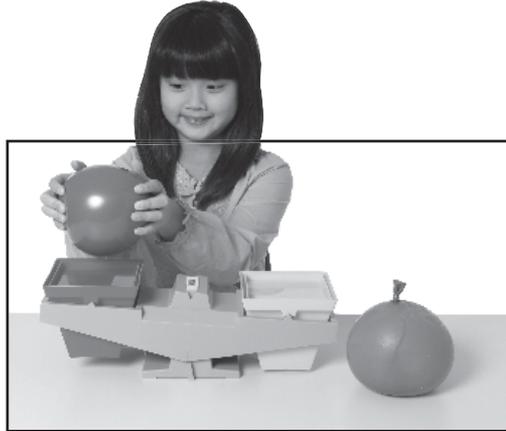
### You need

- 2 balloons 
- bottled water 
- balance scale 

## 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?
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**3 Measure.** Put the balloons on a balance scale.



**4 Communicate.** Draw what happens. Which balloon has more mass?

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### Critical Thinking

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

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# What happens when liquids are mixed?

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?

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## You need

- glass 
- bottle of syrup 
- bottle of vegetable oil 
- bottle of 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.

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### Draw Conclusions

**4** Did the liquids mix together? Why or why not?

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### Critical Thinking

Why do some liquids sink in water and others float?

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# How do different animals meet their needs?

## Ask Questions

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

### You need

- scissors



- celery



## Make a Prediction

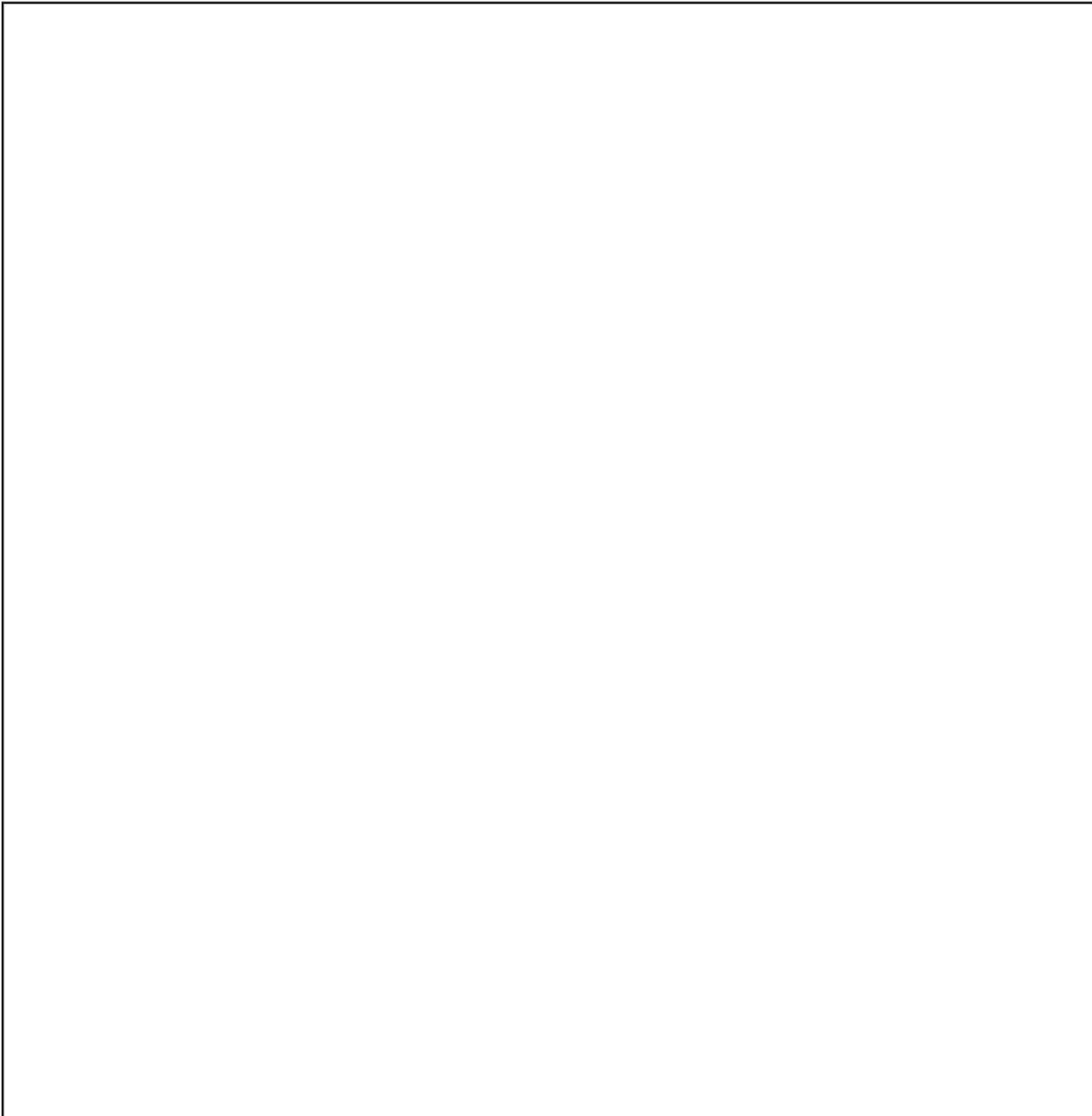
We use sharp teeth to tear food.

## 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.

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



- 5** 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?

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### 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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## All Sorts of Teeth

What would you like to know about how animals use their teeth? What would you like to find out about where animals like to live? Here are some ideas for questions to explore.

- What kinds of teeth do dogs have? How does this help them eat?
- What types of food do isopods like to eat? Would they like a light and moist area or a dry and dark area?

# How can you measure weather?

## Ask Questions

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

### You need

- thermometer 
- paper 
- pencil 

## 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?

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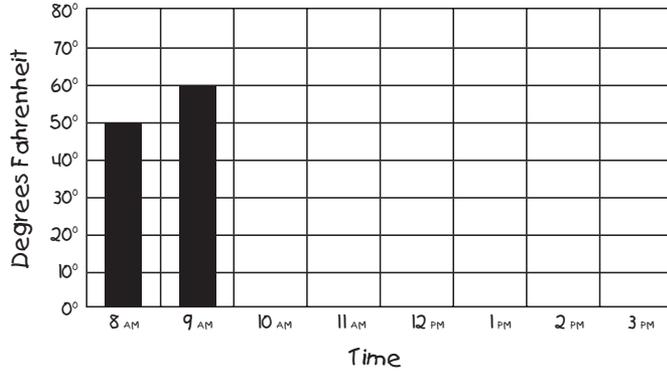
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**2 Measure.** Use a thermometer to take the temperature outside. Check the temperature throughout the day.

**3 Record Data.** Record the temperatures throughout the day on a bar graph.

Today's Temperature



### Communicate Your Results

Share your information and graph with your classmates.

- How did the temperature change during the day?

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- What time was it the warmest? What time was it the coolest? Why?

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- Repeat your experiment on another day. Compare the temperature from the first day you did your measurements to the measurements on the second day.

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- Discuss what makes the temperature change.

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# Measuring Wind

## Ask Questions

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

### You need

- paper
- pencil



## 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.

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

**2 Record Data.** Write the different objects that the wind moved.

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

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## Communicate Your Results

Have a class discussion to share ideas.

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

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

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## **Inquiry: Open Measure 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, Gooley 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

- I 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 
- bottled water 
- laundry detergent 
- measuring spoon set 

**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?

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**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?

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## Inquiry: Guided

# Carrots, water, and salt!

### Ask Questions

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

### Make a Prediction

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### You need

- clear plastic cup 
- bottled water 
- rock salt 
- teaspoon 
- carrots 

### 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?

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**3 Communicate.** Tell what happened to the carrot. Were your predictions correct?

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**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 when you mixed a carrot, water, and salt.

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

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## **Inquiry: Open**

### **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? Fill a lid with water and gently sprinkle 1 container of clear gelatin powder over the water. Did the water change? Did the gelatin change?

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#### **You need**

- jar lid or dish



- gelatin powder



- food coloring



- sugar



- Add 2 drops of food coloring to a cup of water but do not stir. Watch the food coloring for about 5 minutes and describe how it changes. How does the water change?

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- Will carrots float in sugar water?

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