

# + Explore your book!

Richmond Solution BE Primary Science includes nine units in four different areas of science: **Biology**, **Chemistry**, **Physics** and **Earth and Space**.

Each unit teaches a different topic.

## Engage!

Start your adventure here! Think about what you already know about the topic. How does it relate to your life?

## Explore!

Carry out an experiment or observation! This is a chance to explore the topic and your ideas. Make observations and draw conclusions.

## Explain!

Read explanations of new ideas.

### Unit 3

## Properties of materials

### Engage!

**What do our senses tell us about the world?**

Humans and many other animals have five **senses**: sight, hearing, touch, smell and taste. Our senses give us a lot of information about the world. For example, we can feel that our food is hot, and we can hear that there are cars driving past us.

Use your five senses to investigate an apple.

- What does it look like?
- What does it feel like?
- What does it smell like?
- What sounds do you hear when you bite it?
- What does it taste like?

### Explore!

**What is in the bag?**

**Objective:** Use your senses of touch and sight to get information about objects.

**Method**

- Work with a partner. Your partner puts a small object into the bag while you are not looking.
- Without looking, put your hand in the bag and feel the object. What does your sense of touch tell you about the object? Write your observations.
- Now look at the object. Write your observations.
- Put a different object in the bag for your partner to do the same.
- Repeat with two more objects each.

**Observations**

- Complete the table.

| Object | What information does your sense of touch tell you? | What information does your sense of sight tell you? |
|--------|-----------------------------------------------------|-----------------------------------------------------|
| 1      |                                                     |                                                     |
| 2      |                                                     |                                                     |
| 3      |                                                     |                                                     |

**Conclusions**

- Our senses of touch and sight give us different information. Was it possible to identify any of the objects with only your sense of touch?
- Can your other senses tell you more about the objects?

**You will need**

- a bag you cannot see through
- three small everyday objects (do not show them to your partner)

### Lesson 3.1

**What can we observe and measure?**

The world consists of different materials. The **properties** of objects and materials are features that make them different from each other, such as their size, shape, **texture** and color.

We use our senses to help us describe and compare objects and materials.

### Practice

- Which sense is each child using? Write.

My kitten's hair is soft.

a. \_\_\_\_\_

This soup is salty.

b. \_\_\_\_\_

This tree is very tall.

c. \_\_\_\_\_

The water is cold!

d. \_\_\_\_\_

- Look, read and write.

scale

tape measure

thermometer

ruler

- We use a \_\_\_\_\_ to measure the length of a short object.
- We use a \_\_\_\_\_ to measure temperature.
- We use a \_\_\_\_\_ to measure mass.
- We use a \_\_\_\_\_ to measure the length of a long object.

### Lesson 3.5

**What is strength?**

Materials can be strong or weak. A strong material is a material that can carry or support heavy objects and does not break easily—for example, the bricks that we use to build houses or the wood that we use to make tables and chairs.

Bricks and wood are also hard and rigid, but some strong materials are soft or flexible. Shopping bags and backpacks are flexible, but they are also strong. We can use them to carry books and other heavy items.

This shopping bag is made of strong, flexible fabric.

This swing is made of strong materials so it can support a person. The rope is flexible, but the seat is hard and rigid.

### Practice

- Look at the photo. Answer the questions.

- This hammock is made of fabric. Why does the fabric need to be strong?
- Is the fabric hard or soft?
- Is it rigid or flexible?

- Think and write. How can you compare the strength of different plastic shopping bags?

- Find out about strong materials that are used in buildings. Write some of them here.

## Extend!

Check your understanding and find out more!

## Evaluate!

Check your progress!  
At the end of each unit,  
there are plenty of  
activities to see how  
much you have learned.

**Check my progress**

1 Read the words we use to describe materials. Match the opposites.

|              |            |
|--------------|------------|
| a. absorbent | rough      |
| b. smooth    | weak       |
| c. soft      | flexible   |
| d. rigid     | waterproof |
| e. strong    | hard       |

2 Write. Is each object soft or hard?

a. 

b. 

c. 

3 Read and color.

 rough  
 a. a tree trunk

 smooth  
 d. an iguana's skin

b. flower petals

e. a road

c. tomato skin

f. a rabbit's hair

**Chemistry Unit 3 Properties of materials**

4 Complete the sentences.

a. If a material is absorbent flexible rigid strong waterproof, it is easy to bend or squeeze it.

b. If a material is \_\_\_\_\_, it is difficult to bend or squeeze it.

c. If a material is \_\_\_\_\_, liquids go inside it.

d. If a material is \_\_\_\_\_, liquids stay on the surface.

e. If a material is \_\_\_\_\_, it does not break easily.

5 Choose five words to describe the properties of the objects.

  
 a. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

  
 b. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Glossary**

**A** **absorbent** Easily taking in or soaking up liquids; a property of materials

**adapted** Having special features that help a living thing survive

**appliance** A machine that is powered by electricity

**aquatic** Living in water

**artificial** Not existing in nature; made by people

**axis** The imaginary line through Earth; Earth spins around this axis

**B** **battery** Two or more cells; an informal word for a cell

**birth** The first life stage when an animal is born

**C** **cell** An object that uses chemicals to make electricity for appliances like cell phones, remote controls and flashlights

**charge** Put electrical energy into a cell by connecting it to an outlet

**circuit** A path that electricity flows around

**compressed** Squashed; pushed together

**conditions** What an environment or habitat is like

**crust** The outer, rocky layer of Earth

**D** **death** The final life stage when an animal dies

**deforestation** The process of cutting down trees to clear land

**E** **electricity** A form of energy that can be changed into other forms of energy, such as light, heat, sound or movement

**environment** The surroundings of a living thing

**F** **flexible** Easy to bend

**force** A push or a pull

**Glossary**

**freeze** Change a liquid into a solid by cooling it

**friction** A force that causes an object to slow down when it rubs against another object

**G** **gravity** The force that causes objects to fall to the ground

**growth** The second life stage when an animal grows

**H** **habitat** The place where a living thing lives

**hypothesis** An idea or a prediction that can be tested in an investigation

**I** **inherit** (Of an animal) get features from its parents

**investigation** An inquiry to find out something

**irreversible** Describing a change that cannot be changed back

**L** **lamp** An object that changes electricity to light energy

**length** How long something is

**life stages** The four periods in the life of an animal: birth, growth, reproduction and death

**light source** An object that produces light

**limb** A part of an animal's body that helps it move, such as an arm, leg, wing or tail

**litter** Throw trash on the ground in public

**M** **magnet** A metal object that pulls some metals toward it

**magnetism** A force that pulls some metals together

**manufactured** Made by people

**mass** How heavy something is

**melt** Change a solid into a liquid by heating it

## Glossary

At the back of the book, there is a Glossary with definitions of all the important scientific words you will need to understand.

This science course helps you develop these global skills, too.  
Look out for these symbols next to activities:



### Collaborative learning

Work with others to improve your knowledge and develop your interpersonal and social skills.



### Critical thinking

Apply what you have learned, analyze information, form new ideas and communicate them to others.



### Research

Find out new things about the topic in books or online, select important information and present your findings.



### Social and emotional development

Respond to topics as an individual or as a member of society and discuss your thoughts and feelings about them.

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