

# SCIENCE



## Lesson 3

Prep

### Topic: Exploring materials and their properties

#### Aboriginal and Torres Strait Islander histories and cultures

Aboriginal peoples and Torres Strait Islander peoples are warned that resources in this lesson may contain images, voices and names of persons who may now be deceased.

#### Exploring hats

##### Lesson concepts

- Objects are made of materials that have observable properties
- Science involves exploring and observing the world using the senses
- Questions can obtain responses
- Observations can be made using the senses
- Observations can be discussed and ideas can be represented
- Observations and ideas can be shared

#### Learning alerts

Be aware of students thinking that the properties of materials are unrelated to the purpose of the hat.

#### Suggested next steps for learning

Explain that when objects are made, the materials selected must match their purpose. Use examples to illustrate how the properties of materials determine whether the material is suitable to make that object.

Today students will:

- ▶ use their senses to identify observable properties of materials.

## Resources

### Digital

Video — Slip, Slop, Slap, Seek and Slide - Sid the Seagull Video (YouTube, Cancer Council Victoria)  
(<https://www.youtube.com/watch?v=FzA47J7QsVk>)

Slideshow — Hats from different cultures

### Find and prepare

Objects and materials science word list cards (Prep)

Material word cards

Property word cards (keep 'waterproof' separate from other property cards until needed)

A selection of hats, for example: sun hat, beanie, swim cap, shower cap, hard hat or helmet, party hat, paper hat, costume hat, cultural hat.

## Key terms

materials, properties, fabric, waterproof, flexible

For definitions and explanations of terms, please see the [Glossary](#).

## Lesson

### Identify materials and properties of sun hats



Throughout these lessons, you may like to use the [Objects and materials science word list cards \(Prep\)](#) to prompt and support discussion with students.

### Say to students

‘ Scientists must make observations. Today we are going to practice the important science skill of observation. We are continuing to observe objects and the properties of materials and today we are focusing on hats. ’

### Focus questions

Q: *Why do people wear hats?*

A: For example: To keep the sun off.

Q: *Can you think of any other reasons?*

A: For example: safety, to keep warm or dry, as part of a costume, as part of a uniform, as part of their religion, for a party, to go somewhere special

### Say to students

‘ In Australia, we wear hats to protect us from the sun and from getting skin cancer. We even have advertisements on TV sometimes to remind us. ’

1. View the **Video — Slip, Slop, Slap, Seek and Slide – Sid the Seagull Video** (YouTube, Cancer Council Victoria) (<https://www.youtube.com/watch?v=FzA47J7QsVk>).

### Say to students

‘ We know it is important to wear a hat in the sun but there are so many types of hats. ’

### Focus questions

*Q: How do we decide if a particular hat is good for wearing in the sun?*

A: For example: We look at the shape. It needs to have a part that goes out to shade your face and ears (a brim).

### Say to students

‘ When designing a hat for the sun, people need to look at the shape properties of the hat. ’

### Focus questions

*Q: What about the material it is made from, is that important? Why or why not?*

A: For example: Yes, it needs to keep us cool.

*Q: Could we make a good sun hat out of glass?*

A: For example: No, it would hurt our heads and let the sun through.

### Say to students

‘ We are going to observe some hats. Use your senses to explore and make observations of the hats. I want you to pick one hat that you think is the best for a sun hat and one that you think would make the worst sun hat. ’

2. Provide the selection of hats or look for photos/pictures of different types of hats that people wear, for example: sun hat, beanie, swim cap, rain hat or shower cap, hard hat or helmet, party hat, paper hat, costume hat, cultural hat.
  - a. Students observe all the hats.
  - b. Students choose two hats, one suitable for the sun and one not suitable.

### Focus questions

*Q: Tell me why you have chosen these two hats.*

*A: For example: This hat is a good sun hat because it has a wide part at the front and a flap that hangs down over your neck. This other hat is made from wool and has no part to cover your face. It would be very hot and you would get burnt.*



### Identify materials and properties of other hats

#### Say to students

Look at all the hats again to see what types of materials hats can be made from. Use your senses to explore the hats and identify the materials you know. I will find the matching material word card.



Display material word cards cut from **Sheet** — [Material word cards](#).

#### Say to students

Now that we have identified different hat materials, we are going to look at some of the properties of those materials. We will use our property word cards.

Choose one hat to observe more closely.



- a. Find the relevant property word cards cut from **Sheet** — [Property word cards](#) as you discuss the following questions.

### Focus questions

Q: *Why is this hat worn?*

A: For example: This is a bicycle helmet that protects your head when you are riding a bike.

Q: *What material or materials is the hat made from?*

A: For example: plastic and foam

Q: *Can you identify any of the properties of these materials?*

A: For example: hard, light, a bit springy, red, shiny

Q: *Are there properties that are important to the purpose of the hat?*

A: For example: yes, hard and light

Q: *Looking at all the hats now, are there any other hats that have a property that is very important to the purpose of the hat?*

A: For example: The construction hat needs to be very hard in case something falls on your head.

### Say to students

‘ There is one more property word that we need to learn about. I will show you a hat which gives you a clue. ’

3. Display or find a picture of a shower cap, rain hat or swimming cap.

### Focus questions

Q: *What is the most important thing about this hat?*

A: It keeps your hair dry by not letting the water in.

### Say to students

‘ We call this property **waterproof**. This is the word card for ‘waterproof’. If water does not soak into the material or through it, the material is called waterproof. If water can soak into or through the material we call it not waterproof. Being waterproof is a very useful property. ’

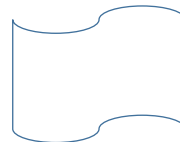
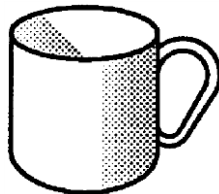
## Say to students

‘ We are now going to investigate which hat materials are waterproof and which are not.

I will use a cup of water and an eyedropper and put three or four drops of water on each hat. Observe closely to see what happens.

(Demonstrate)

I will use a tissue to dab any water that runs off. After I have added the water, feel the hat material carefully. (Demonstrate)

’

- a. Give students eyedroppers and water and allow them time to investigate some hats.

## Focus questions

*Q: Tell me something you have observed.*

*A: For example: The water ran off the rain hat but went/soaked into the beanie.*

*Q: Which hat do you think is made from material that is waterproof?*

*A: For example: the rain hat*

*Q: Which hat do you think would be a bad choice to wear in the rain?*

*A: For example: the paper hat*

## Say to students

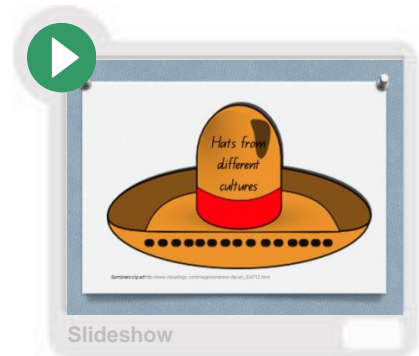
‘ We are beginning to understand that different materials have very different properties. The material we make a hat from needs to be suitable for how we use the hat. ’

## Investigate hats from other cultures

### Say to students

‘ The hats we have looked at are only a small sample of the many hats we can find around the world. We are going to look at some images of other hats and see if we can see what materials they are made from. ’

4. View the **Slideshow — Hats from different cultures** and share ideas about materials used.



Sombrero clip art, [http://www.clipartlogo.com/image/sombrero-clip-art\\_434712.html](http://www.clipartlogo.com/image/sombrero-clip-art_434712.html)

## Consider science knowledge learned

### Say to students

‘ In our next lesson, we will learn about the materials used to make houses. Before the next lesson we need to find and read or listen to the tale of ‘The three little pigs’. ’