
















#### Topic: Investigating physical changes to materials

#### Investigating ability to contain objects

##### Lesson concepts

-   Everyday materials can be physically changed in a variety of ways
-  Science involves asking questions and describing changes
-  People use science in their daily lives
-   Questioning can obtain responses, questions can be posed and predictions can be made
-   Investigation can explore and answer questions
-   Observations can be collected and recorded
-  Observations can be compared with others
-   Observations and ideas can be represented and communicated

Today students will:

- ▶ understand that the shape of some materials can be physically changed for a purpose.

#### Resources

##### Digital

Slideshow — Physical changes: made for holding

##### Activity book

Sheet 8 — Investigation: Holding

##### Find and prepare

Samples of everyday materials for example, aluminium foil, paper, wood, fabric, waterproof modelling clay, plastic wrap, hard plastic (for example, container lid)

A collection of everyday objects for example: cup, plastic mug, bowl, food container, bucket, box, vase, tray, book, pencil, ruler, sharpener, fork, spoon, face cloth, tissue, wallet, fabric bag, envelope, newspaper, strainer, gift bag, scissors

A cup of rice

A small jug of water

Two bowls or basins (one for the rice, one for the water)

Marbles (20 or more)

#### Key terms

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

## Lesson

### Consider how shape affects the ability to hold objects

#### Say to students

‘ In this lesson you will be investigating how you can make physical changes to materials so that they can contain or hold things. But first, let’s find out about objects we use to contain things. Let’s have a look at these objects and find out which ones can be used to hold things. ’

1. Display a collection of everyday objects arranged randomly.



Ask students to:

- look at the objects
- identify an object that can be used to hold things
- explain what the object can hold
- identify features of the object that help it to hold things (for example: its shape, sides).

### Focus questions

Q. *What is it about the items that will allow them to hold things?*

A. For example: their shape, they have sides; they stay in a cup shape.

Q. *What is it about the items that means they won't be able to hold things?*

A. For example: their shape, they are flat, they don't stay in a cup shape.

### Say to students

“ Those objects that can hold items, and those that cannot hold items depend on the shape.

Now let's see what items some of these objects can hold. ”

2. Show students the marbles, rice and water.
  - a. Ask students to consider which of the objects might be suitable for holding marbles, water or rice. Support students to ask 'What would happen if' questions about putting marbles, water or rice in the objects, for example:

What would happen if I put marbles in the object?

What would happen if I put water in the object?

What would happen if I put rice in the object?

- b. Allow students time to test an object for:
  - holding marbles
  - holding water
  - holding rice
- c. Ask students to consider why the object may or may not be suitable for holding each item.

### Focus questions

Q. *Will the object (for example, strainer) hold the marbles?*

A. For example: Yes.

Q. *Why? / Why not?*

A. For example: It has high sides.

Q. *Will the object hold the rice?*

A. For example: Yes.

Q. *Why? / Why not?*

A. For example: The holes are too small for the rice to go through.

Q. *Will the object hold the water?*

A. For example: No.

Q. *Why? / Why not?*

A. For example: It has holes in it and the water runs through.

### Note

It is not necessary to test all of the objects with all of the items. Testing a few objects made from different materials for example, a fabric bag, a cup, a wallet will provide a variety of results. If the rice is poured over one basin and the water over another, the possibility of mess will be reduced.

### Say to students

“ You have seen that the shape of an object affects its ability to contain things. You have also seen that the material an object is made from determines what types of things it is able to hold.

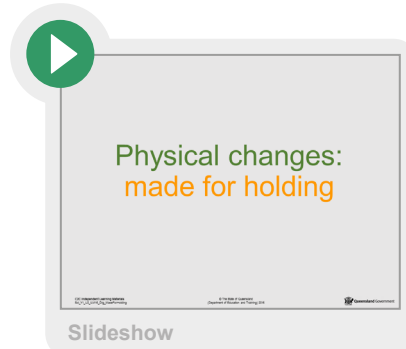
People all over the world use their knowledge to physically change materials to make objects for holding.

Now we are going to watch a slideshow which shows how some materials have been physically changed for the purpose of holding things. ”

3. View the **Slideshow — Physical changes: made for holding**.

As each slide is viewed:

- read the text to students and discuss how the material has been physically changed and why, as shown on each slide
- ask students to identify familiar items that have been physically changed in a similar way (for example, cups, bowls).



### Investigate materials for the ability to hold objects

#### Say to students

“ Now let’s investigate an object for holding marbles. ”

4. Display **Sheet 8** — [Investigation: Holding](#).

a. Explain the steps of the investigation one at a time for students to follow.

- Choose a material to physically change so that it will hold marbles.
- Make a prediction about its suitability to hold marbles.
- Provide a reason to support the prediction, for example: When I bend it up, the sides will hold the marbles in. (**Note:** You may write what students dictate.)
- Physically change the material to make a container.
- Draw a picture of how the material looks after it is physically changed and list the actions used to make the changes.
- Test the changed material by filling it with marbles.
- Explain what happened.

b. Have students conduct the investigation and complete **Sheet 8**.

5. Ask students to record new understandings about physically changing materials to hold things.