Materials

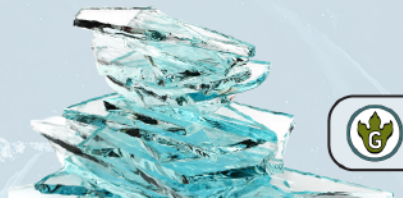
How are materials chosen in design?

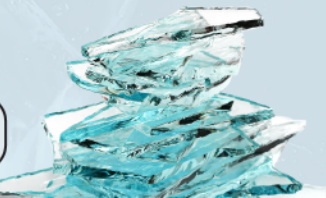
Lesson 2

What do we use materials for?









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Scientific enquiry types and skills



Scientific enquiry types

- Testing
- Researching
- Observing
- Pattern seeking
- **Identifying & classifying** ✓
- Problem solving

Working scientifically skills

- Asking questions
- Making predictions
- Setting up tests
- Observing & measuring
- Recording data
- **Interpreting & communicating results** ✓
- Evaluating

How are materials chosen in design?



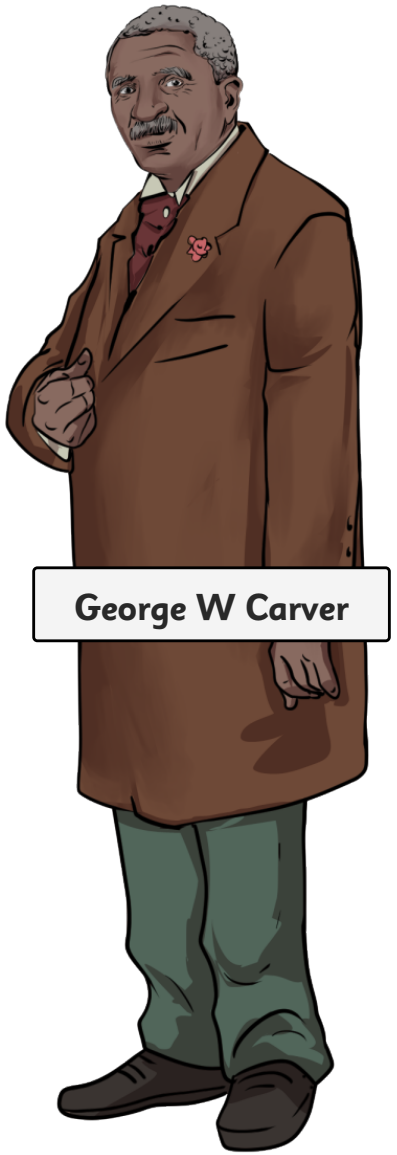
Lesson 1: What are materials?

Lesson 2: What do we use materials for?

Lesson 3: How can we change the shape of materials?

Lesson 4: Which material should the pigs make their house from?

Lesson 5: Which material will protect Humpty Dumpty?



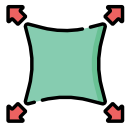
Key vocabulary for this lesson



hard – something that keeps its shape and is not easy to press or bend



soft – something that is easy to press, bend or change shape



stretchy – something that can be pulled to make longer then goes back to its original shape



rough – something that feels bumpy and uneven when you touch it



smooth – something that feels flat and even when you touch it

Identifying and classifying

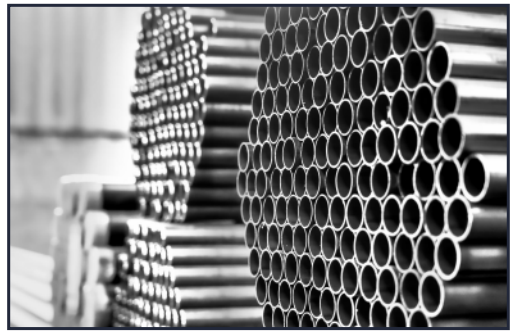


Hi, I'm **Harriet** and I'm a **builder**. In my job, I have to choose materials that are **right for what I need**.

For example, if I'm asked to build a house, I could choose to use bricks, as they are **strong** and **difficult to break**. Building houses from brick means that they will not fall over easily and they will keep out the bad weather.







True or false activity



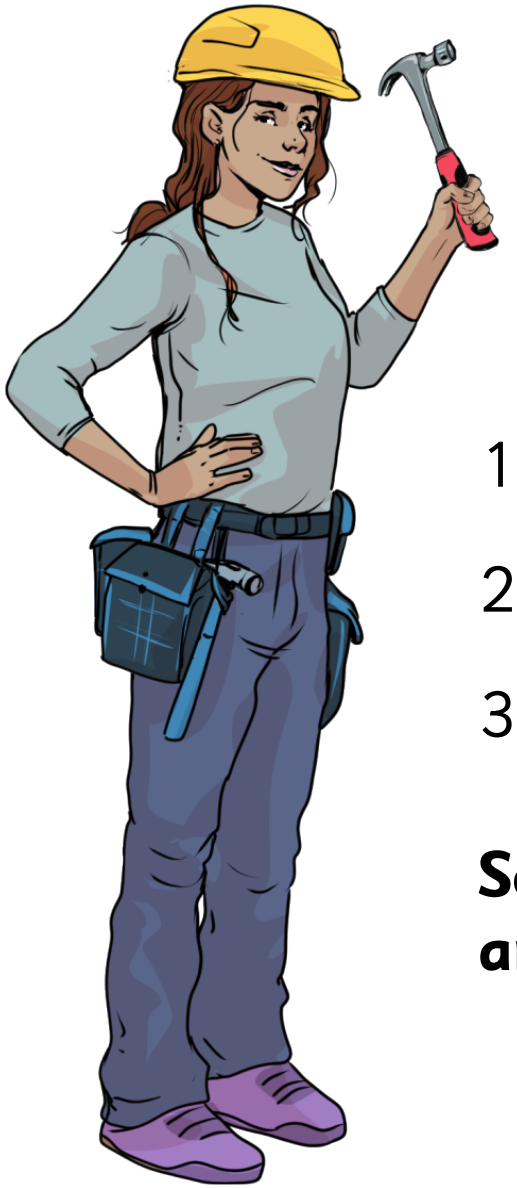
Discuss these statements with your **learning partner** and decide if they are **true or false**.

	True	False
1. Objects can be made from different materials.	☐	☐
2. An object can be made from more than one material.	☐	☐
3. All materials are natural.	☐	☐

Be ready to **feed back** to the class before the **answers** are revealed.

True or false activity

Answers



	True	False
1. Objects can be made from different materials.	✓	
2. An object can be made from more than one material.	✓	
3. All materials are natural.		✓

Some materials are natural, and some are human-made.

Properties



In Year 1, we learnt that we can **describe** materials.

Materials can be **hard, soft, bendy, heavy, light, rough** or **smooth**. These are called **properties** .

When we describe a material's **properties**, it helps us to understand what a material is **like** and **how it behaves**.

Class activity



We are going to sit in a circle and pass around a feely bag full of objects. When it is your turn, pull an object out of the bag, say the **object name**, the **material** it is made from and describe its **properties**.
Use the **word bank** and **sentence starters** to help you.

This is a ruler. It is made from plastic. It is smooth, bendy and waterproof.



Use these sentences starters to help you:
"This is a …"
"It is made from…"
"It is …"

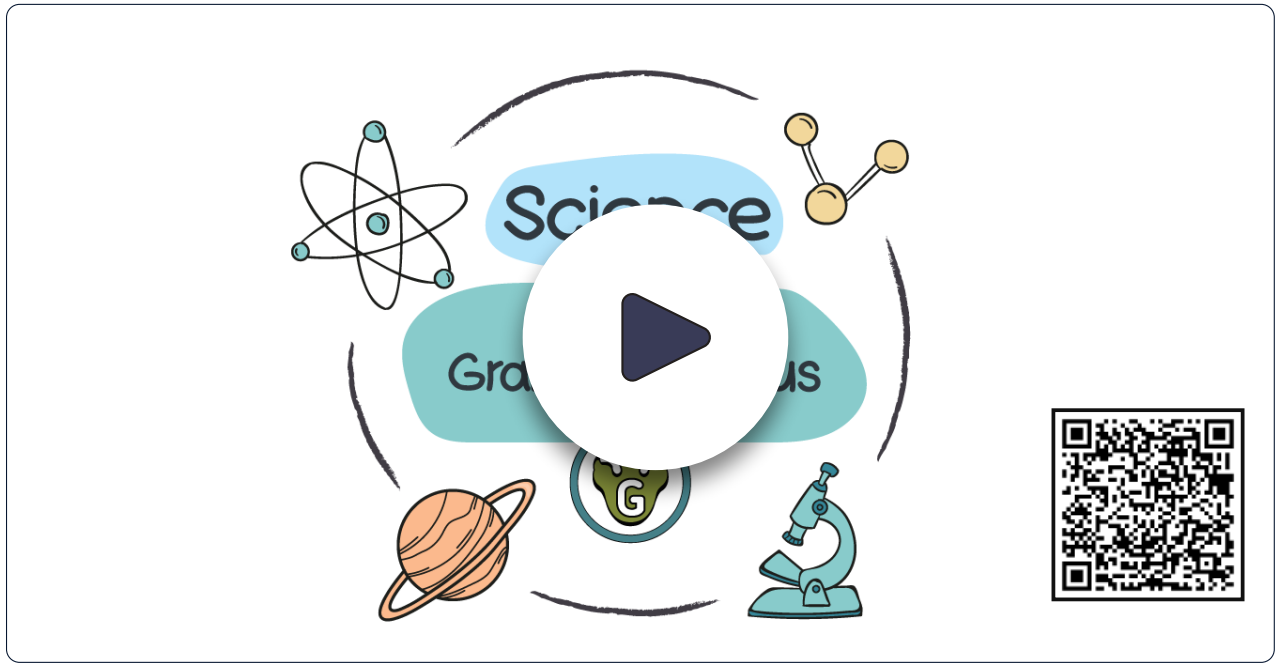
Word bank:

hard, dull, waterproof, soft, rough, bendy, stretchy, smooth, stiff, shiny, light, heavy

Let's watch



When **making objects**, we need to decide on the best **material** for the job. We need the material to be **suitable**. If a material is **unsuitable**, it is not the thing for the job!



https://www.bbc.co.uk/bitesize/topics/zg4skhv/articles/zd9w8hv

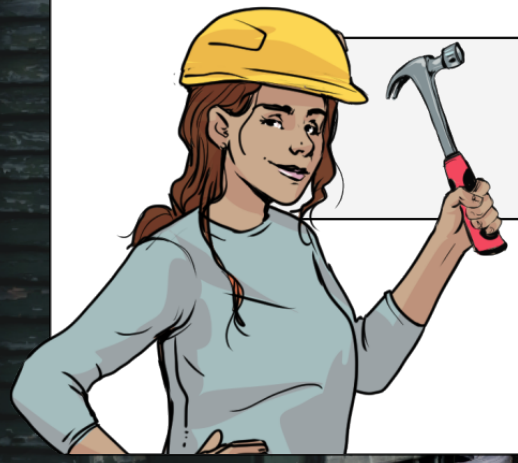
New word alert!

suitable – something that is right for the job it has to do
unsuitable – something that is NOT right for the job it has to do

Materials

This is **a window**. Windows are made from **glass**. Glass is **see-through** or **transparent** which makes it a **suitable** material for a window, as it lets **light** into your house and allows you to see out. The glass also stops **rain** and wind entering your house.





I wonder... what would happen if windows were made from **fabric**?

Discuss this question with your learning partner. Be ready to **share your ideas** with the class.

New word alert!



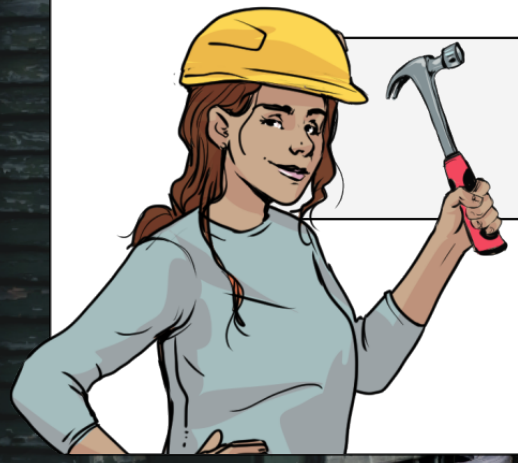
transparent – see-through

Materials

We wear wellington boots when it is wet and muddy, to keep our feet dry.

This is a pair of **wellington boots**. They are made from rubber. Rubber is **strong, waterproof and bendy** which makes it a **suitable** material for wellies. They will be **comfy** on your feet, keep your feet **dry** and not damage easily.



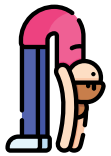


I wonder... what would happen if wellies were made from **glass**?

Discuss this question with your learning partner. Be ready to **share your ideas** with the class.

Materials

These are clothes. They are made from different fabrics. Fabric is soft, flexible and opaque which makes it a suitable material for clothes. They will be comfy to wear and allow you to move easily.



Did you know that a flexible material can bend easily without breaking!





I wonder... what would happen if clothes were made from **wood**?

Discuss this question with your learning partner. Be ready to **share your ideas** with the class.

New word alert!

opaque – you can't see through it

Materials

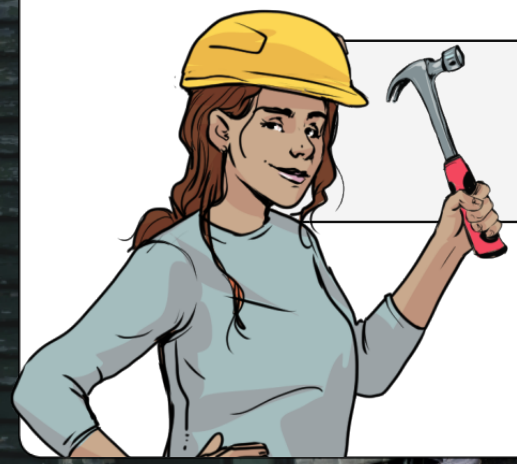
These are all **tables** and **chairs**. They are made from **wood, plastic and metal**.

These are all suitable materials for making tables, as they are all **strong, rigid** and **hard**.









I wonder... what would happen if the tables were made from **paper**?

Discuss this question with your learning partner. Be ready to **share your ideas** with the class.

New word alert!



rigid – doesn't bend easily

Matching activity



Can you **match** these properties to their definition?

Discuss this question with your learning partner. Be ready to share your ***feedback*** with the class before the **answers** are revealed.

transparent	you can't see through it
opaque	a material that can bend easily without breaking
flexible	something that doesn't bend easily
rigid	see-through

Matching activity

answers





transparent

opaque



flexible



rigid

you can't see through it

a material that can bend easily without breaking

something that doesn't bend easily

see-through

Activity

You are going to find and sort materials according to their properties with your table group.

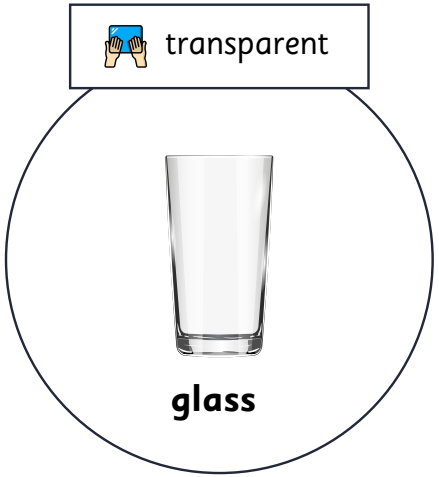
You will need:

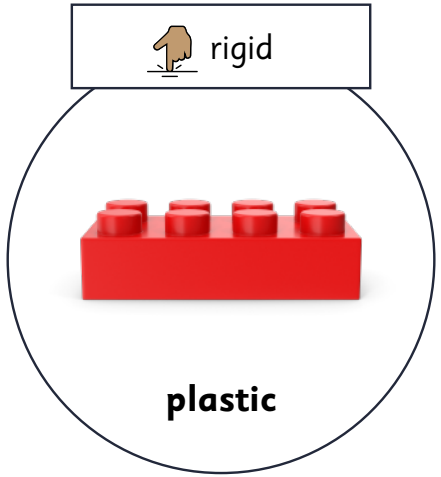
- sorting hoops
- sticky notes or labels
- pencils
- objects from the classroom

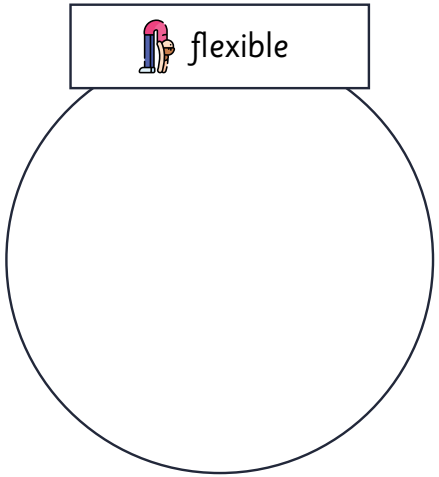
Activity:

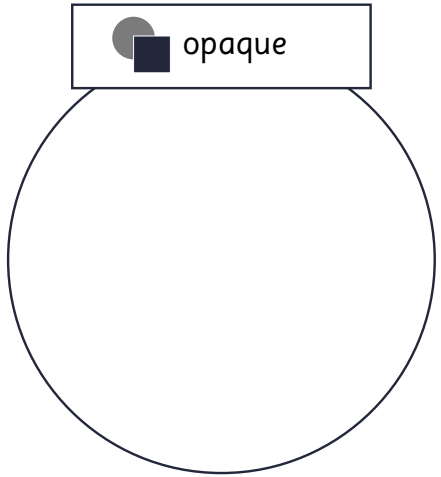
1. Label the sorting hoops with a material property (transparent, opaque, flexible and rigid).
2. Find objects in the classroom made of a material with that property.
3. Use a sticky note to label the material the object is made from.

Remember – it's the material you are labelling NOT the object name!









Let's discuss

Interpreting & communicating results



What did you find out? We are going to share our answers to these questions using the sentence starters below. Be ready to feed back your group's findings to the class.

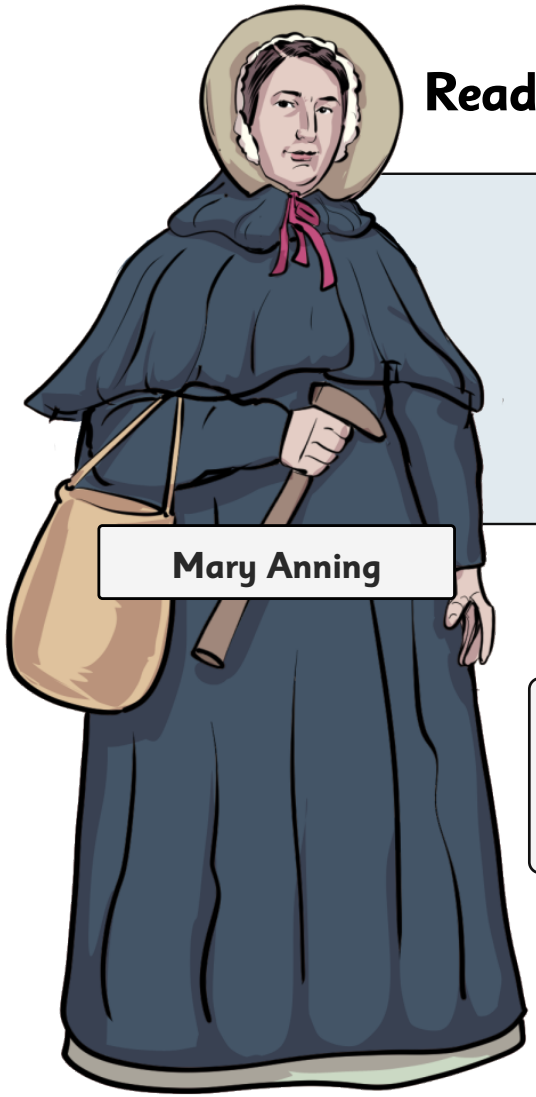
1. **Which materials were opaque?**
2. **Which materials were rigid?**
3. **Which materials were transparent?**
4. **Which materials were flexible?**
5. **Could you put any objects in more than one hoop?**

Use these sentence starters to help you:

"I found out the _____ is a _____material because…"

"I could put the _____ in more than one hoop because …"

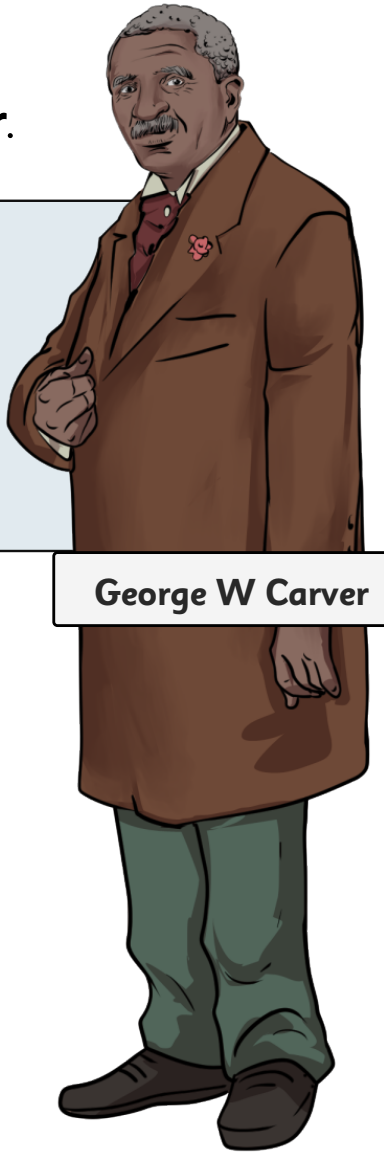
Challenge



Mary Anning

Read the statement below and **discuss** the question with your **learning partner**.

Attia says "I think wood would be a great material for making a pair of trousers because you can't see through wood. Wood is opaque."



George W Carver

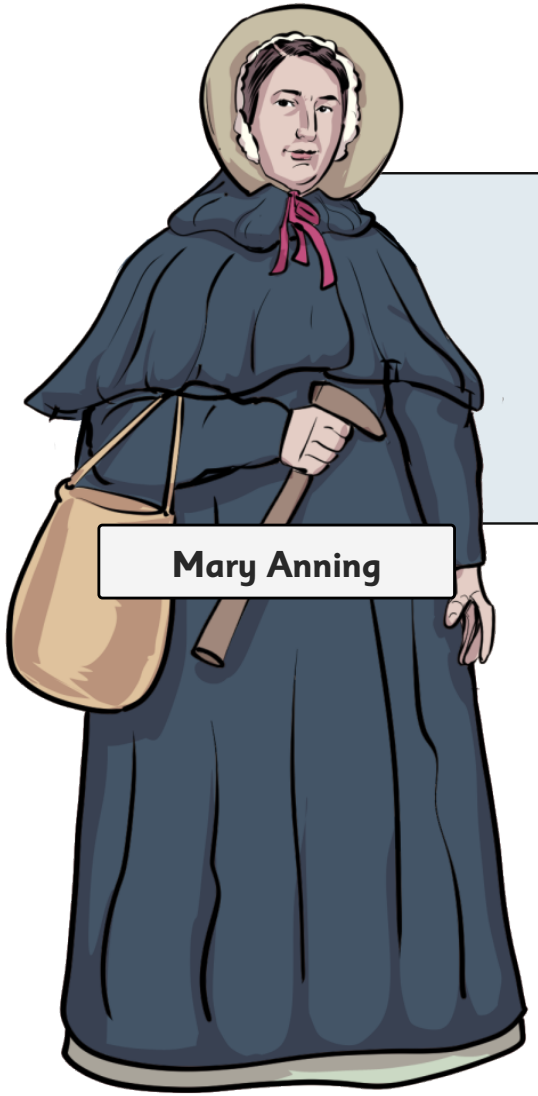
Do you agree? Why or why not?

Use this sentence starter to help you:
"I think wood would be a suitable/unsuitable material because…"

Be ready to **share your feedback** with the class before the answer is revealed.

Challenge

answers

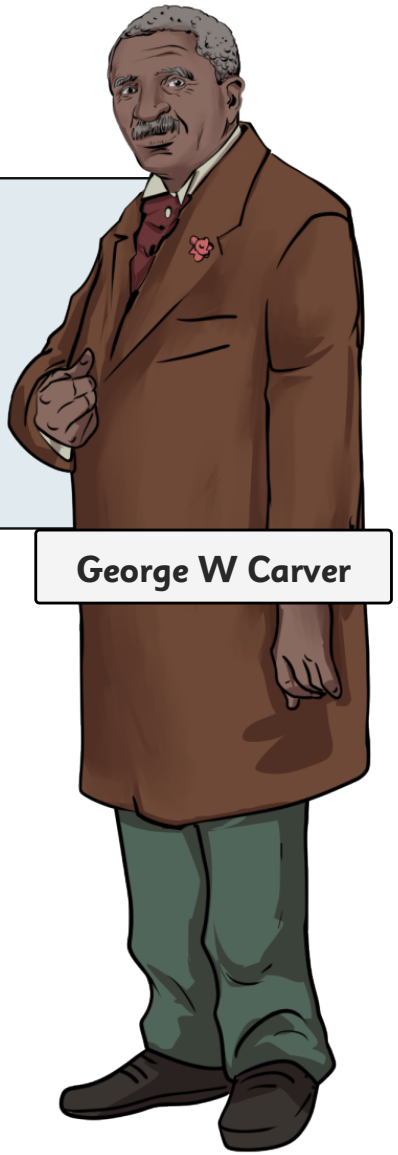


Mary Anning

Attia says "I think wood would be a great material for making a pair of trousers because you can't see through wood. Wood is opaque."

Do you agree? Why or why not?

Wood would be an unsuitable material because it is rigid and not flexible. This means that you wouldn't be able to move, sit down or walk easily.



George W Carver