

Science Experiment: Which Material Absorbs the Most Water?

Investigation Title: Which Material Absorbs the Most Water?

Big Science Question

Different materials behave in different ways when they touch water.

Some materials soak up water quickly.

Some materials soak up a little water.

Some materials do not absorb water at all.

In this investigation, you will test different materials to find out:

Which material absorbs the most water?

Learning Goals

By the end of this investigation, you should be able to:

- write a hypothesis
 - follow a scientific procedure
 - conduct a fair test
 - observe what happens carefully
 - collect evidence
 - record results in a table
 - write a conclusion using evidence
 - write a scientific report
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Safety First

This experiment is safe and simple, but scientists still need to work carefully.

Safety Rules

- Work on a tray, table or waterproof surface.
 - Wipe up spills straight away.
 - Do not drink the experiment water.
 - Do not place wet materials near electrical devices.
 - Wash your hands after the experiment.
 - Ask an adult before beginning.
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Investigation Question

Which material absorbs the most water?

Materials

You will need:

- paper towel
 - tissue
 - cotton cloth
 - sponge
 - plastic bag or foil
 - small bowl or cup of water
 - tablespoon or measuring spoon
 - tray or plate
 - timer or clock
 - ruler, optional
 - pencil
 - evidence collection sheet
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Important Science Idea

What Does Absorb Mean?

To **absorb** means to soak up or take in liquid.

For example:

- A sponge absorbs water.
- A towel absorbs water.
- Plastic does not absorb water easily.

Materials absorb water differently because they have different textures, holes, spaces and surfaces.

Variables

A **variable** is something that can change in an experiment.

In a fair test, we change only **one** thing and keep everything else the same.

Independent Variable

The **independent variable** is the thing you change.

In this experiment, the independent variable is:

The type of material.

Examples:

- paper towel
 - tissue
 - cotton cloth
 - sponge
 - plastic or foil
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Dependent Variable

The **dependent variable** is the thing you measure or observe.

In this experiment, the dependent variable is:

How much water each material absorbs.

Controlled Variables

The **controlled variables** are the things you keep the same.

In this experiment, you should keep these things the same:

- the amount of water added to each material
 - the size of each material
 - the time allowed for absorbing
 - the surface used
 - the way water is added
 - the temperature of the water
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Fair Test Reminder

A **fair test** means the experiment is fair because only one thing changes.

For this investigation, the only thing that should change is the **material**.

Everything else should stay the same.

Example

If you give the sponge 3 tablespoons of water but the paper towel only 1 tablespoon, the test is not fair.

If every material receives 2 tablespoons of water and has 1 minute to absorb it, the test is fair.

Hypothesis

A **hypothesis** is a scientific prediction. It tells what you think will happen and why.

A strong hypothesis uses this structure:

If I test different materials, then _____ will absorb the most water because _____.

My Hypothesis

If I test different materials, then _____ will absorb the most water because _____.

Modelled Hypothesis

If I test different materials, then **the sponge** will absorb the most water because **it has many tiny spaces that can hold liquid.**

Procedure

A **procedure** gives clear steps to follow.

Scientists write procedures so other people can repeat the experiment.

Method

1. Place the tray on a flat surface.
 2. Cut or fold each material so they are roughly the same size.
 3. Place the first material on the tray.
 4. Add **2 tablespoons of water** onto the material.
 5. Wait for **1 minute**.
 6. Observe what happens.
 7. Record your observations in the evidence collection sheet.
 8. Check how much water is left on the tray.
 9. Repeat the same steps for each material.
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10. Compare your results.
11. Decide which material absorbed the most water.
12. Write your conclusion.

Evidence Collection Sheet

Scientists collect **evidence** to support their conclusions.

Evidence can include:

- observations
 - measurements
 - results
 - drawings
 - photographs
 - tables
 - numbers
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Evidence Collection Table

Material	Amount of Water Added	Time Given	What Happened?	Water Left on Tray	Absorption Rating
Paper towel	2 tablespoons	1 minute		None / Some / A lot	1 2 3 4 5
Tissue	2 tablespoons	1 minute		None / Some / A lot	1 2 3 4 5
Cotton cloth	2 tablespoons	1 minute		None / Some / A lot	1 2 3 4 5

Material	Amount of Water Added	Time Given	What Happened?	Water Left on Tray	Absorption Rating
Sponge	2 tablespoons	1 minute		None / Some / A lot	1 2 3 4 5
Plastic or foil	2 tablespoons	1 minute		None / Some / A lot	1 2 3 4 5

Absorption Rating Scale

Use this scale to rate each material.

Rating	Meaning
1	Did not absorb water
2	Absorbed a little water
3	Absorbed some water
4	Absorbed most of the water
5	Absorbed all or almost all of the water

Observation Notes

Use this space to record details.

Paper Towel

Tissue

Cotton Cloth

Sponge

Plastic or Foil

Evidence

Drawing or Photo Space

Draw or paste a photo of your experiment setup.

Results Summary

After completing the experiment, answer these questions.

1. Which material absorbed the most water?

2. Which material absorbed the least water?

3. Which materials absorbed some water?

4. What evidence supports your answer?

Results Ranking

Rank the materials from **most absorbent** to **least absorbent**.

Rank	Material
1	
2	
3	
4	
5	

Bar Graph Template

Create a bar graph to show your absorption ratings.

Title

Absorption Rating of Different Materials

Material	Rating out of 5
Paper towel	
Tissue	
Cotton cloth	
Sponge	
Plastic or foil	

Graph Space

Scientific Report Scaffold

Use this scaffold to write your scientific report.

Title

Which Material Absorbs the Most Water?

Aim

The **aim** explains what you are trying to find out.

Sentence starter:

The aim of this investigation is to find out

_____.

Hypothesis

The **hypothesis** is your scientific prediction.

Sentence starter:

If I test different materials, then _____ will
absorb the most water because

_____.

Materials

The **materials** section lists the equipment used.

I used:

- _____
- _____
- _____
- _____
- _____

Variables

The **variables** explain what changed, what was measured and what stayed the same.

Variable Type **My Experiment**

Independent variable

Dependent variable

Controlled variables

Method

The **method** explains the steps followed.

1. _____
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____
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Results

The **results** show what happened.

Material	Absorption Rating	Observation
Paper towel		
Tissue		
Cotton cloth		
Sponge		
Plastic or foil		

Discussion

The **discussion** explains what the results mean.

Sentence starters:

The material that absorbed the most water was

_____.

This happened because

_____.

The material that absorbed the least water was

_____.

This shows that

_____.

Conclusion

The **conclusion** answers the investigation question using evidence.

Sentence starter:

In conclusion, _____ absorbed the most water. I know this because

_____.

My hypothesis was correct / incorrect because

_____.

Evaluation

The **evaluation** explains how the experiment could be improved.

Sentence starters:

This experiment was fair because

_____.

One thing I could improve next time is

_____.

Next time, I could also test

_____.
