

LEGEND

- direction
- research topic
- conclusion and discussion
- experiments
- safety
- additional information

Hey, nature friends!

Have you ever noticed how **paper objects change their shape when they get wet?**

How can we make a **waterproof dish from paper?**

Wetting is the ability of a liquid to maintain contact with a solid surface (spreading out), resulting from intermolecular interactions

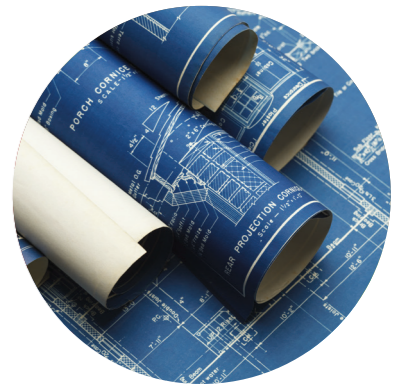
Product development is a process where a solution to a problem is found, by creating a new product or service

Product development starts with looking for ideas

Ideas and their profitability are evaluated

When an idea seems profitable, a sample product is made and tested

When the solution is successful, it can be put to use, or improved further.



START

Build a **paper dish** that you **can use for carrying water**

NB! Safety precautions

When you use **candles** and **open fire**, be sure to have an **adult instructor** with you.

Paper is a material that is made from mostly natural fibres and is mostly used for writing.

Paper is made from cellulose, flax or other fibres.

You can use:

- old newspapers
- copy paper
- paper tape
- scissors
- candles
- measuring cup

1. Write down all the ideas on **how your water carrier could be constructed**. Try to come up with at least **three solutions**.

2. Choose the **three ideas** that seem to work the best and **build the carriers**.

3. Now it's time to **test** if your carriers work!

4. See if you can use them to **carry 0,5 litres of water in one hand**.

After 2 minutes have passed, pour the water back in the cup and **measure how much is left after the experiment**.

Conditions

- * carrier must have capacity for 0,5 litres of water
- * you have to be able to carry your invention in one hand
- * you must not lose any water in 2 minutes

B

The **carrier is not waterproof**, or more than 5% (25 ml) was lost in 2 minutes.

A

The **carrier is waterproof**. In 2 minutes, less than 5% (25 ml) of water as lost.

FINISH

How can you make your good solution even better?



What does the **water resistance** depend on?

How can we make paper more resistant to water?

WATER CARRIER

Have you ever noticed how **paper objects change their shape when they get wet?**

How can we make a **waterproof dish from paper?**

Build a **paper dish** that you **can use for carrying water**

Conditions

- * carrier must have capacity for 0,5 litres of water
- * you have to be able to carry your invention in one hand
- * you must not lose any water in 2 minutes

You can use:

old newspapers, copy paper, paper tape, scissors, candles, measuring cup

Draw at least **three schemes** on how you can build a **water carrier from paper!**

1.

Scheme:

Measurements:

ADDITIONAL INFORMATION:

2.

Scheme:

Measurements:

3.

Scheme:

Measurements:

Which solution was the most effective?

.....
.....

Why?

.....
.....