STEM in a Box

Sludge to Salt

Greenergy

Delight


Welcome
to your STEM in a Box adventure!
You are going to do an experiment and
discover how to reveal the salt in your Sludge.
Science
ENGINEERING
MATHS

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Safety



Before we do an experiment **scientists need to think about safety.**

Take responsibility

for looking after yourself and your team.

Wear your goggles

at all times – this is to protect your eyes.

Listen to your teacher

at all times and follow any safety instructions they give you.

Evaporating

You will be using a candle so you need to be careful of the flame.

The salt can spit so don't get too close.

Allow time for the evaporating dish to cool down before picking it up.

Have Fun!!

STEM Team

You each have a job in your STEM team. **Decide in your team who will be responsible for each process and put on the badge to match. You can ask for help from other members of your team but you are in charge of the process on your badge.**

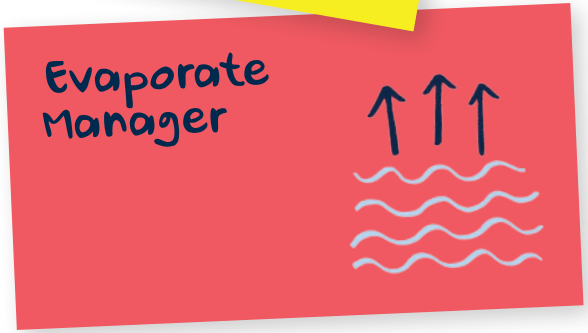








Wear your badge so everyone is clear who is responsible for each process.

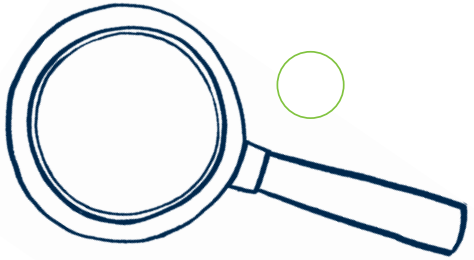


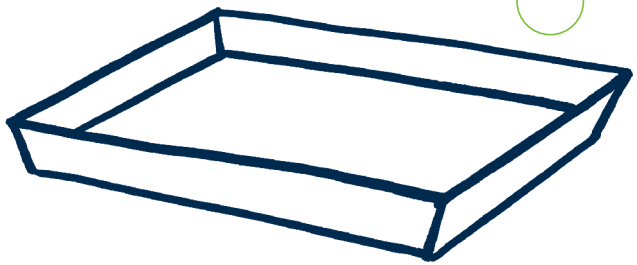
Equipment

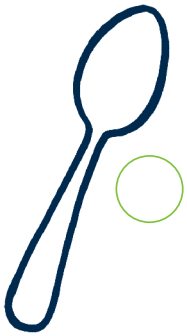
Name the equipment in your STEM in a Box.
Firstly, lay out the equipment so that you can see everything. Then, write the correct number from the list of words below in the circle next to each picture.

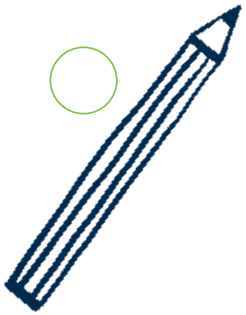


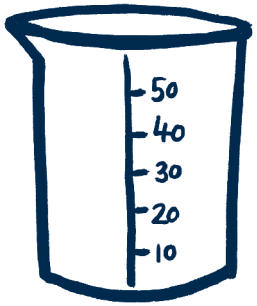


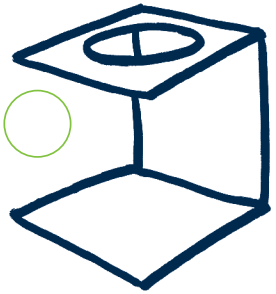


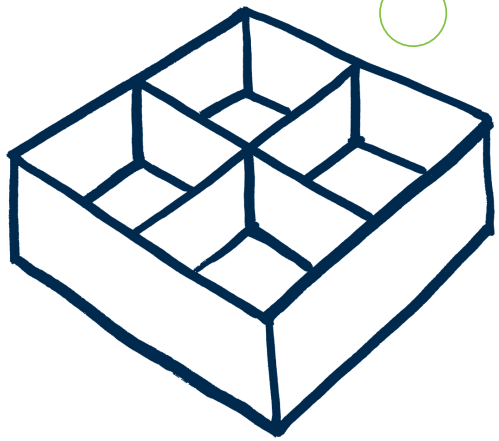






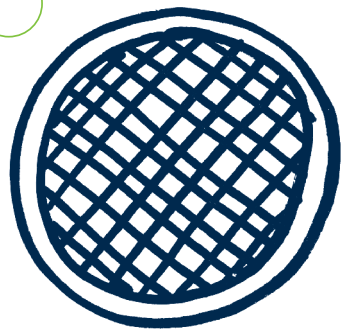


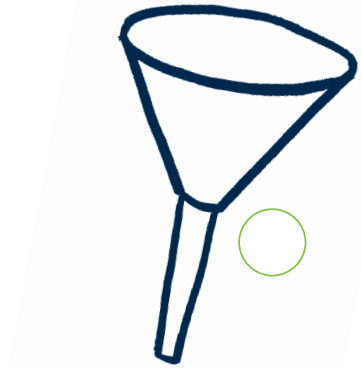




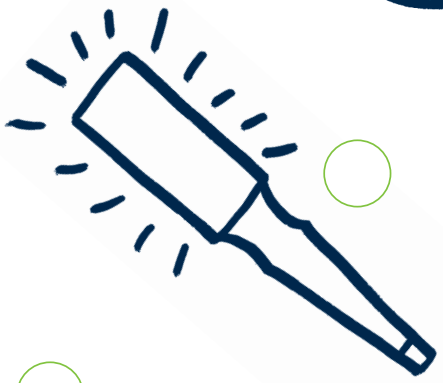
1 Goggles
2 Collection tray
3 Funnel
4 Evaporating dish
5 Spoon
6 Magnifying glass
7 Magnet
8 Sieve
9 Candle holder
10 Candle
11 Filter paper
12 Pot of Sludge
13 Measuring cylinder
14 50ml measuring jug
15 100ml measuring jug
16 Small tray
17 Large tray
18 Pencil
19 Felt-tip pen
20 Post-it notes





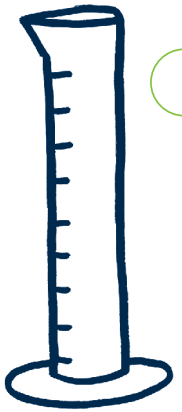


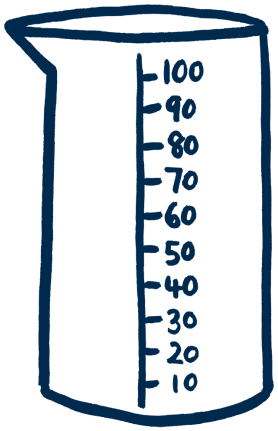


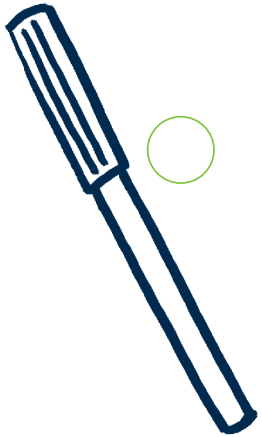









100
90
80
70
60
50
40
30
20
10







Let's **observe** the Sludge.

Look at the equipment in your STEM in a Box and choose which piece of equipment is the best to help you look closer at your Sludge.

What materials did you observe in your Sludge mixture?

1 _____

2 _____

3 _____

4 _____

Write here the piece of equipment you chose

Draw a picture of the equipment you chose

To **observe** something means to **look closer**.

Question

What question do you want to find the answer to through this experiment?

Use the sticky notes provided in your STEM in a Box to write down as many scientific questions as you can think of. Discuss as a group and choose the best question that you want to investigate. Stick this question into your workbook.

Can you use all of these words in your question?

materials

processes

separate

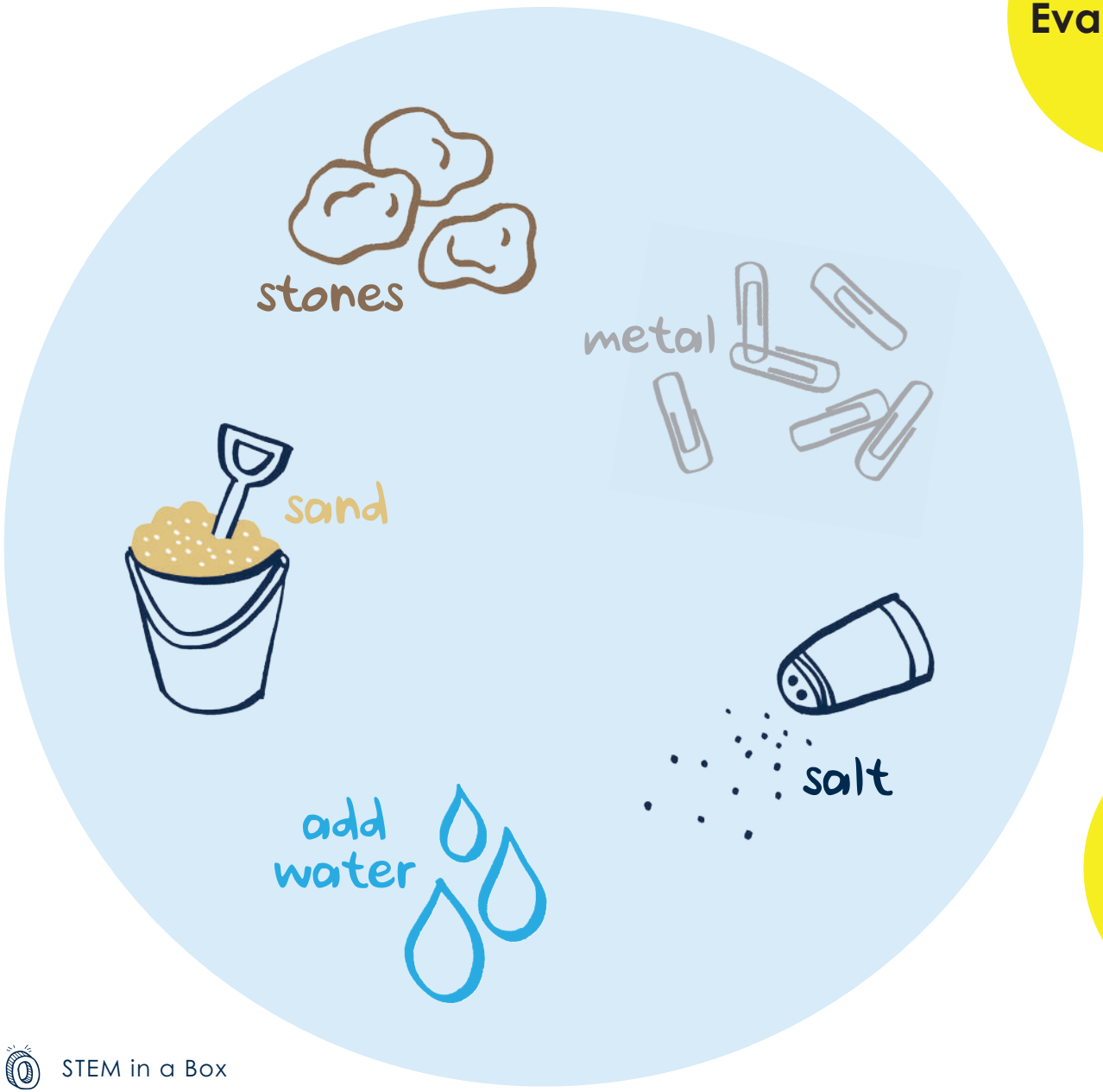
mixture



Stick your best question here

Plan

Draw a line to connect the best process for taking out each material from the Sludge.













Take Note!

For one of the Materials Separated answers you need to write *add water*, which is adding rather than separating!!

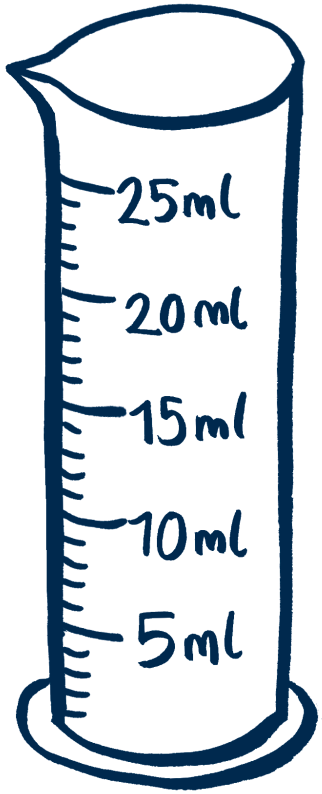
ORDER	PROCESS	MATERIAL SEPARATED
1st		
2nd		
3rd		
4th		
5th		

Measure

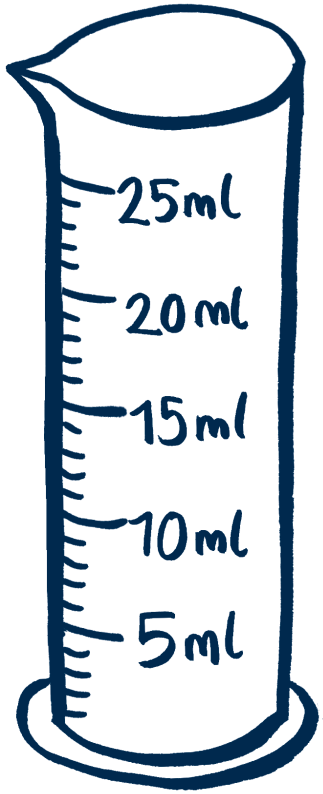
How much water did you **measure**?

Colour in the measuring cylinder to show how much you used.

To dissolve your Sludge?



To reveal the salt?





Below **record** the materials you found and the processes you used to take them out of the Sludge.

Then draw a line to **record** why each process worked.

Material:

Process:

It worked because:

Material:

Process:

It worked because:

Material:

Process:

It worked because:

Material:

Process:

It worked because:

…the sand cannot pass through the filter paper because it is too big. It does not dissolve in water.

…the salt can pass through the filter paper because it is small and can dissolve in water.

When you evaporate the water you are left with salt.

…the nickel paper clips are magnetic

…the stones were too big to fit through the holes in the sieve

Conclusion



Think about the question you wanted to answer (see p.9)

We think the order we completed the processes in was ___% successful because...

This is what we did to find the salt in the Sludge:

First we...

Next we...

Then we...

After that we...

Finally we...

Scientific Words

Why not test each other
to see which scientific words you know.



Magnet
a substance that **attracts magnetic materials**
e.g. iron, nickel and cobalt



Dissolve
to **mix** with a **liquid** and form a **see-through solution**
e.g. salt in water



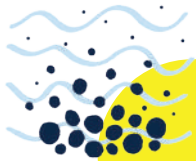
Evaporating
to turn a **liquid into a gas** – this will leave a solid behind if it is a solution e.g. salt



Sieving
to **separate smaller pieces** of **solid** from **larger pieces**
e.g. sand and stones



Filtering
separate a mixture by passing it through a piece of **filter paper**
e.g. sand and water



Solution
when a **solid dissolves** in a **liquid**

Congratulations

You've completed your STEM in a Box adventure!