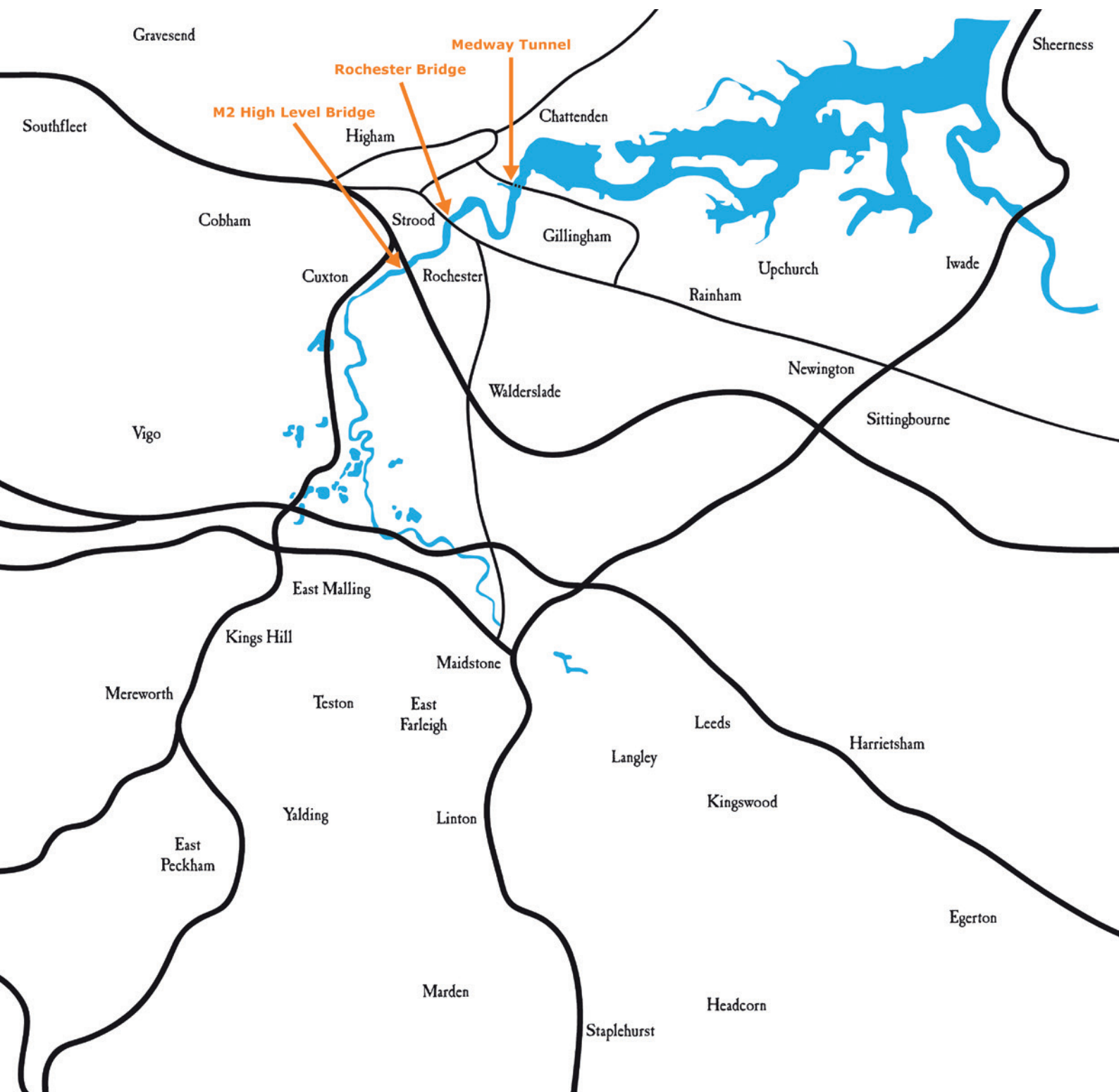




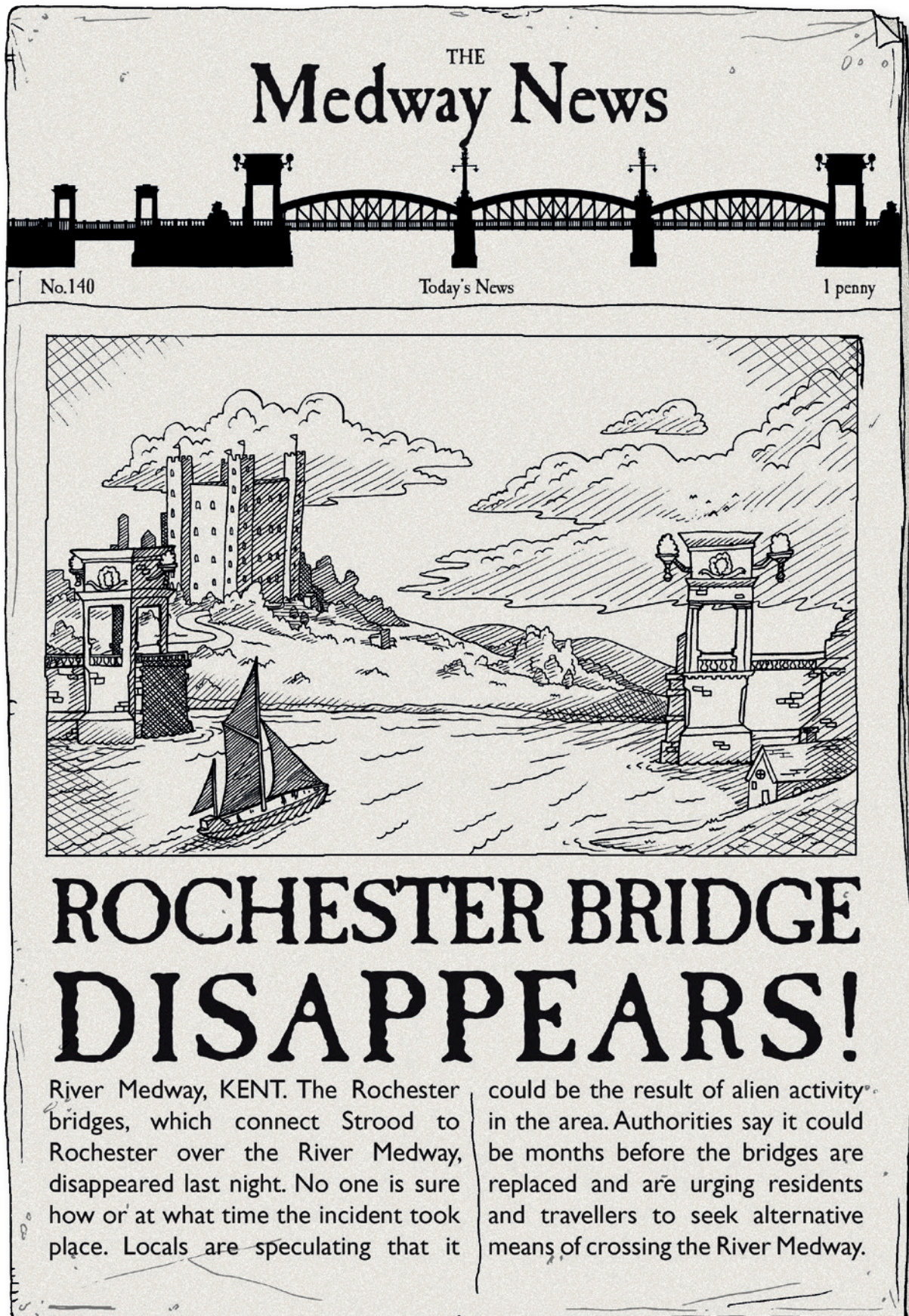
# Map of the River Medway







## Newsflash!







# Testing everyday objects record sheet

Object tested	With which force is the material stronger?		
	Tension	Compression	Both





# Standing on the shoulders of giants

*"If I have seen further, it is by standing on the shoulders of giants"* Isaac Newton

Using the template below, find out about a famous engineer, scientist or inventor. Can you think of a question you would like to ask them about their work or what they found out?

Name:

When did they live?

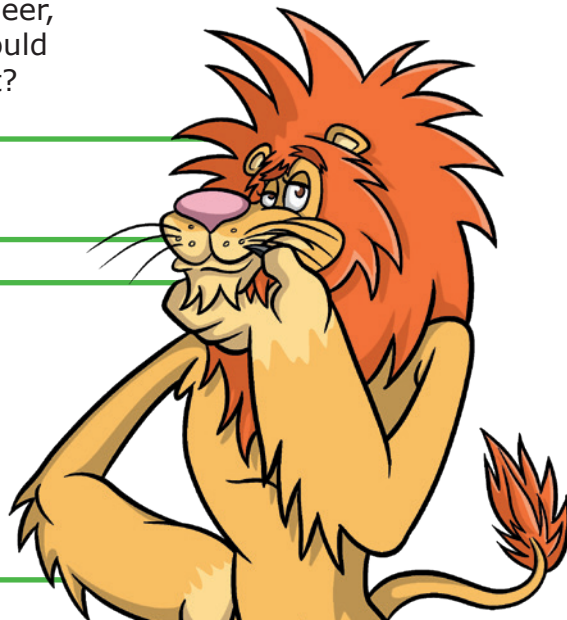
Where were they born/did they live?

What did you find out about their life?

Draw/find a picture

What did they discover or find out?

What question would you ask them?





# Materials and their properties 1

Item	Property					
	Hard	Soft	Transparent	Flexible	Rigid	Waterproof
Fabric						
Pencil						
String						
Cardboard						
Toilet Paper Tube						
Straws						
Glass						





# Materials and their properties 2

Can you explain why the following materials are used to make these items?  
Try to give more than one reason – the words below may help you.

rigid

durable

impermeable (waterproof)

warm

soft

hard

opaque

transparent

insulator

conductor

absorbent

smooth

light

dense

flexible

grip

tough



Glass for windows



Metal for electricity pylons



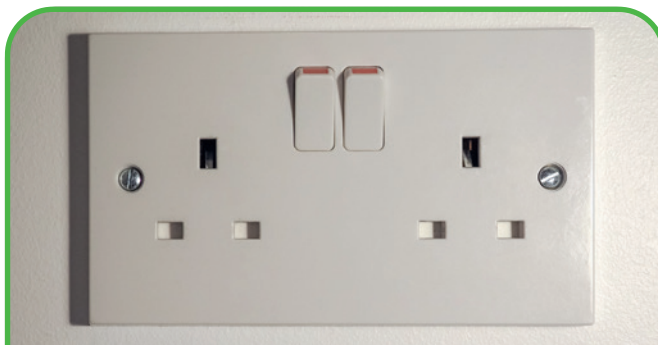
Cotton for towels



Wood for chairs



Bricks for houses



Plastic for sockets





# Examples of wooden bridges



Photo courtesy of Cristina Ruiz Cortina

Wooden truss bridge over a river



Photo courtesy of AchterboschZantman

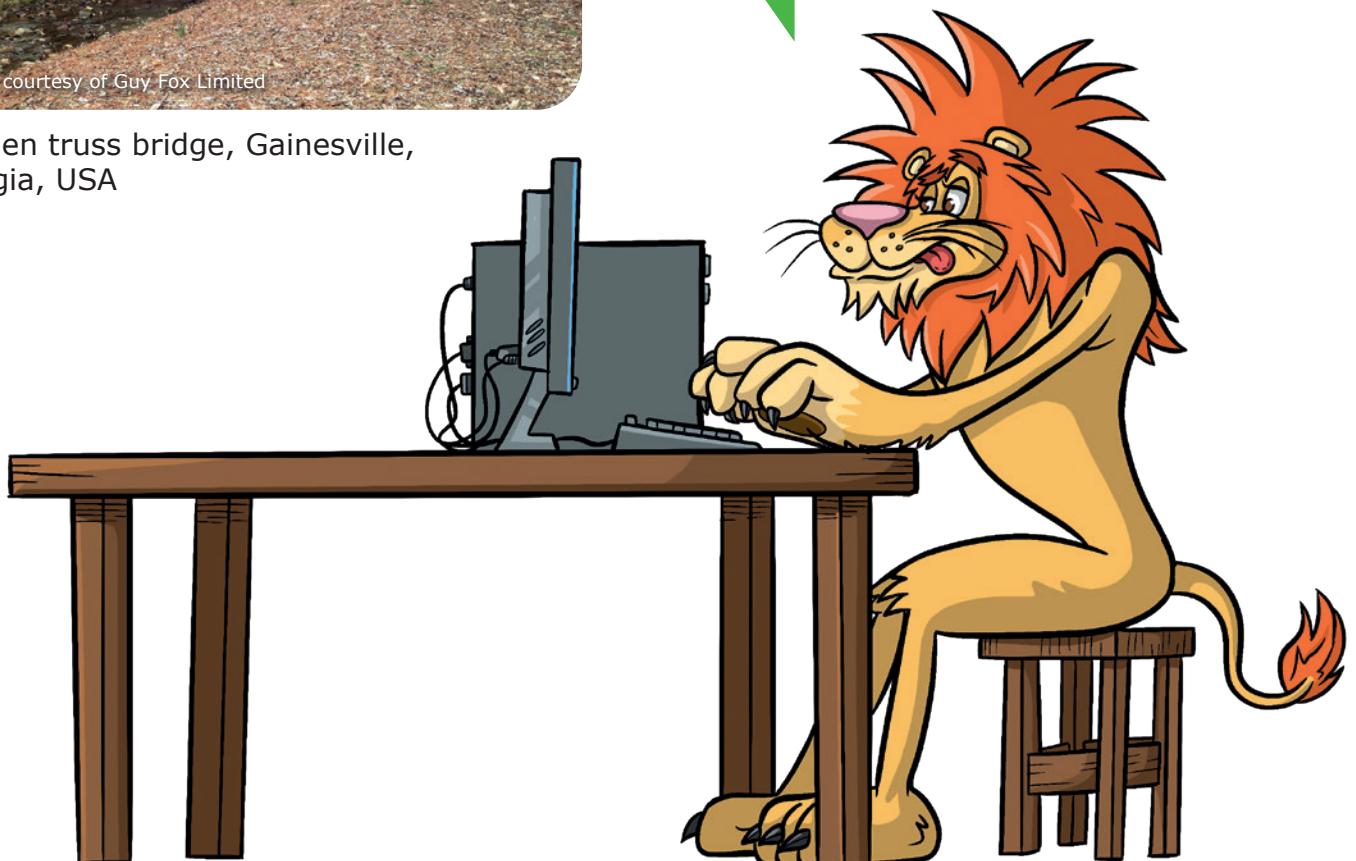
Laminated wood road bridge, Sneek, Netherlands



Photo courtesy of Guy Fox Limited

Wooden truss bridge, Gainesville, Georgia, USA

***Wood is a very common material for bridges, and you can find lots of wooden bridges on the internet.***





# Making concrete

## Instructions

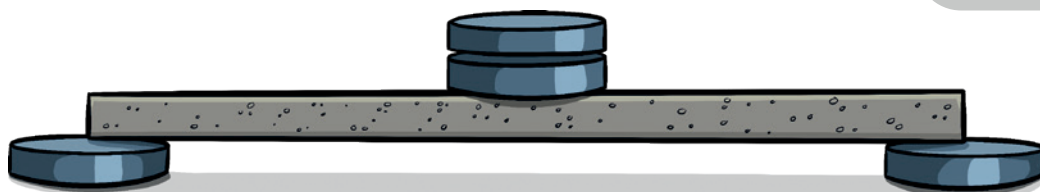
### SAFETY FIRST!

- Cover your working surface with newspaper or plastic sheeting.
  - Put on safety glasses, gloves and a mask.
1. Check you are wearing your safety glasses, gloves and mask. Label your mould with your group name.
  2. Using the yogurt pots, measure out sand, gravel and cement into the mixing bowl. Mix the dry ingredients together with a plastic spoon until it is well combined. Take care not to create dust when measuring out and stirring the ingredients.
  3. Add a little water and carefully stir the mixture. Keep adding a little water at a time until the mixture is sloppy but your spoon leaves a hole when you take it out. Remember not to add too much water as it can't be removed if the mixture becomes too runny.
  4. When the mixture is ready, scrape it carefully into the mould. There should be enough mixture to fill the mould within about 0.5 centimetre of the top.
  5. Place the used yogurt pots, spoons, bowls and any spare mixture in the bin bag for disposal. Remove the newspaper and plastic sheeting. Pull off the gloves inside out and place in the bin bag.
  6. Wash your hands thoroughly with soap and warm water.
  7. Allow the concrete to set and cure in a safe place for at least a week.

How about exploring which concrete mix makes the strongest concrete? Try the following mixes:

1. 1 pot sand, 3 pots gravel, 2 pots cement
2. 3 pots sand, 1 pot gravel, 2 pots cement
3. 1 pot sand, 2 pots gravel, 3 pots cement
4. 3 pots sand, 2 pots gravel, 1 pot cement

The beams created can then be tested by adding weights until they collapse. Watch out for toes under the falling structures!

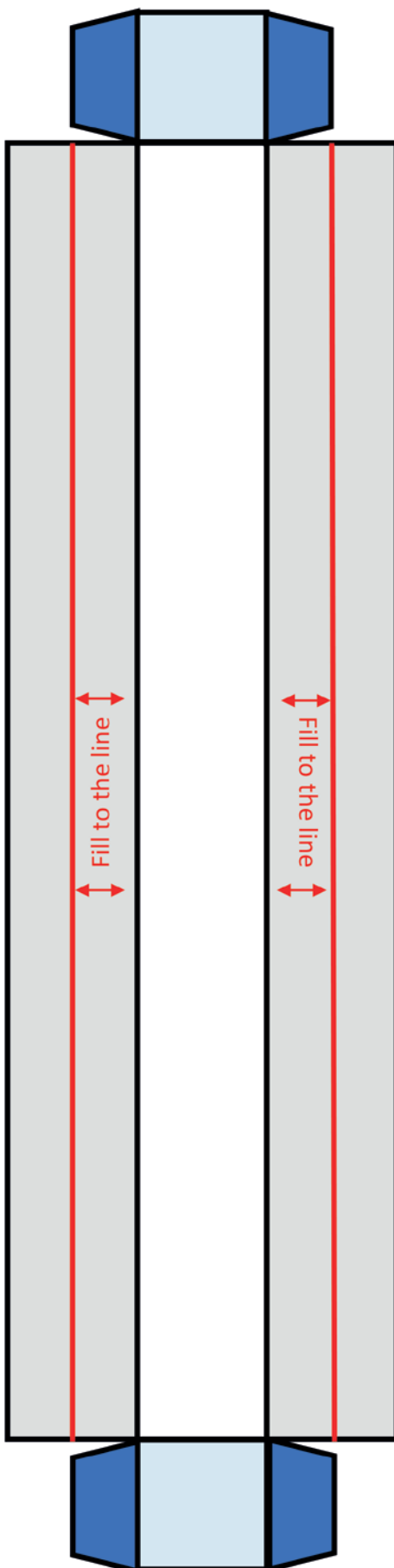






# Cuboid net

**20cmx2cmx2cm**





# Building a model cofferdam

## STEP-BY-STEP INSTRUCTIONS

1



Cut off the top and bottom of the bottles to create two cylinders about 12cm high.

2



Fill the tray with sand up to a depth of about 4cm.

3



Add water until the level is about 3cm above the sand.

4



Insert the larger cylinder in the sand and water until it is flush with the bottom of the tray.

5



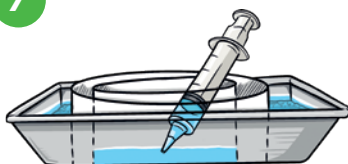
Insert the smaller cylinder into the centre of the first until it is also flush with the bottom of the tray.

6



Fold a piece of paper down the centre and use it as a chute to pour sand into the space between two cylinders.

7



Use the syringe or pipette to remove the water from the centre section into the small bowl until the water level inside the ring is significantly lower than the outside.

