



Chapter Ai: Do we need Bridges?

AIMS & OBJECTIVES

- To understand what makes a bridge
- To consider why we need bridges
- To discuss reasons for bridges being where they are

CONTEXT

Bridges are vital to our way of life. Bridges are unique to their location. Understanding how bridges fail is an important part of learning how to make them stronger.

We are going to start thinking about bridges and why they're so important...

LANGUAGE OF BRIDGES:

Bridge: a structure that goes over an obstacle to carry or support something else.

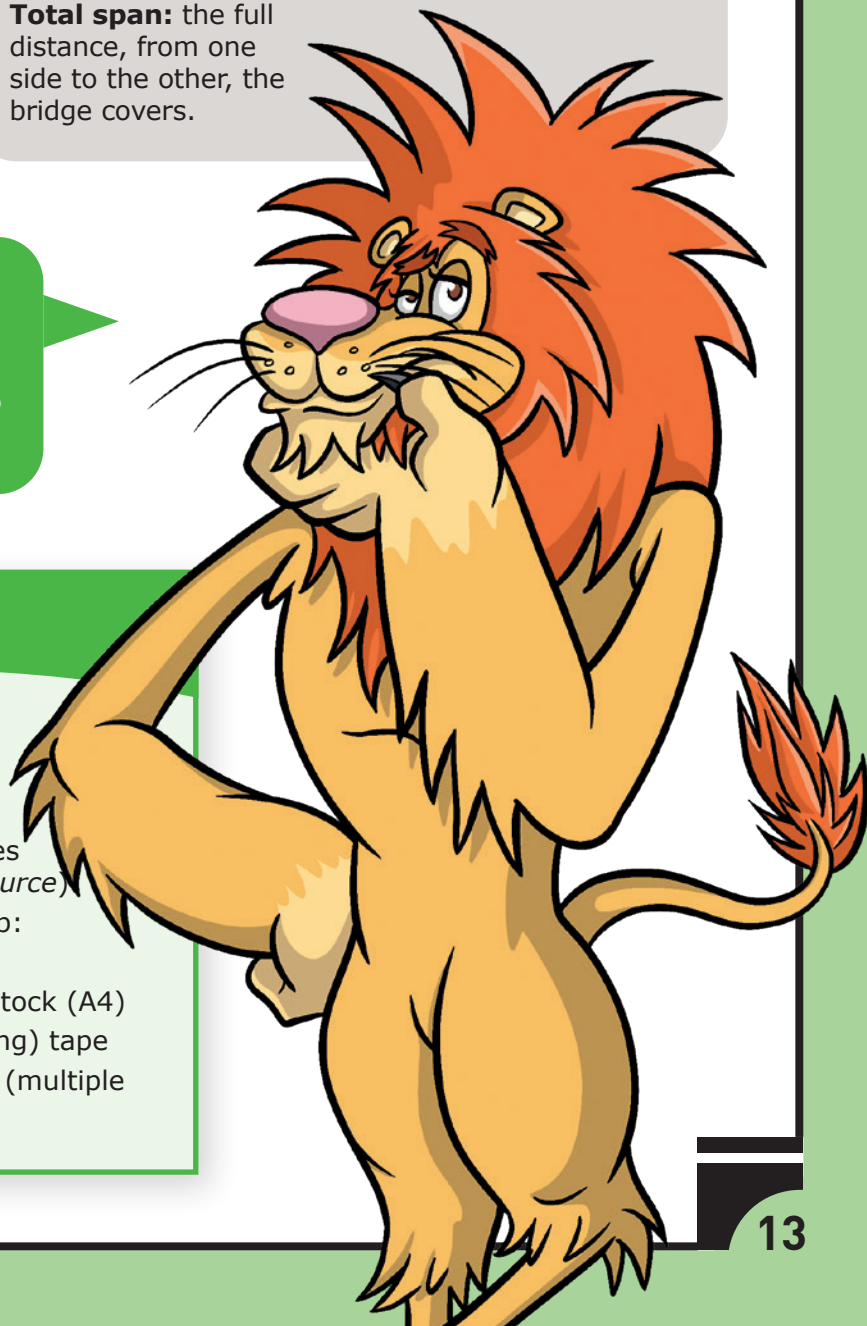
Pedestrian: a person walking, rather than travelling in a vehicle, and for bridges, can refer to a bridge made solely for people to walk across, or for part of the deck that people are able to walk safely across (for example, the pavement).

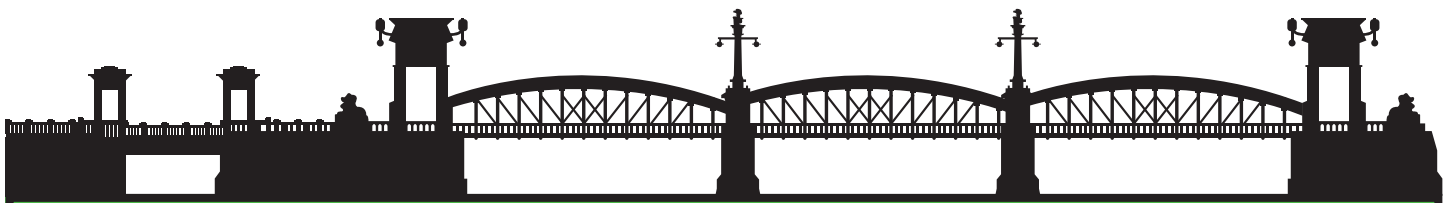
Span: the distance between bridge supports.

Total span: the full distance, from one side to the other, the bridge covers.

You will need...

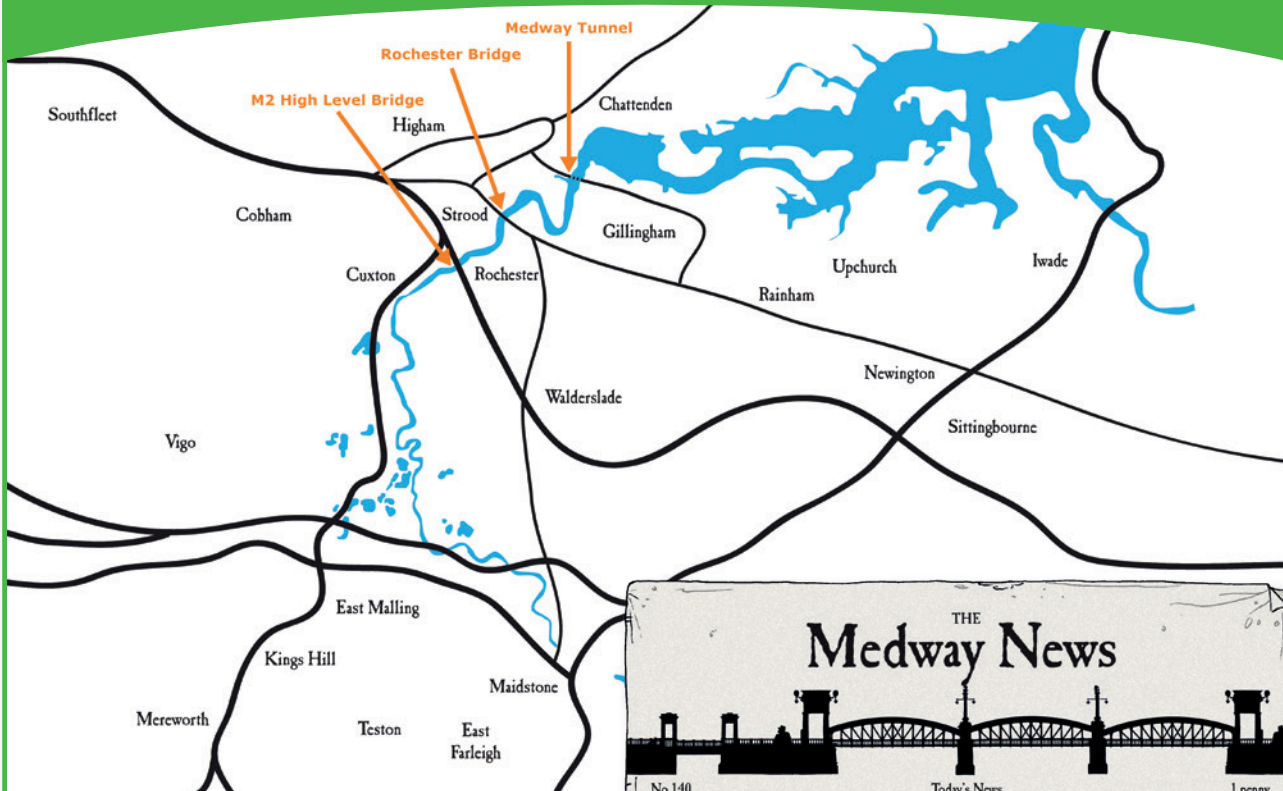
- Handout: *Map of the River Medway*
- Handout: *Newsflash!*
- Map of your local area
- Selection of images of different types of bridges (*Classifying Bridges Resource*)
- Bridge Building Challenge, per group:
 - 30 paper art straws
 - 1 piece of thick paper/thin card stock (A4)
 - Roll of Washi (paper-based crafting) tape
 - Masses such as coins or washers (multiple per group) for testing





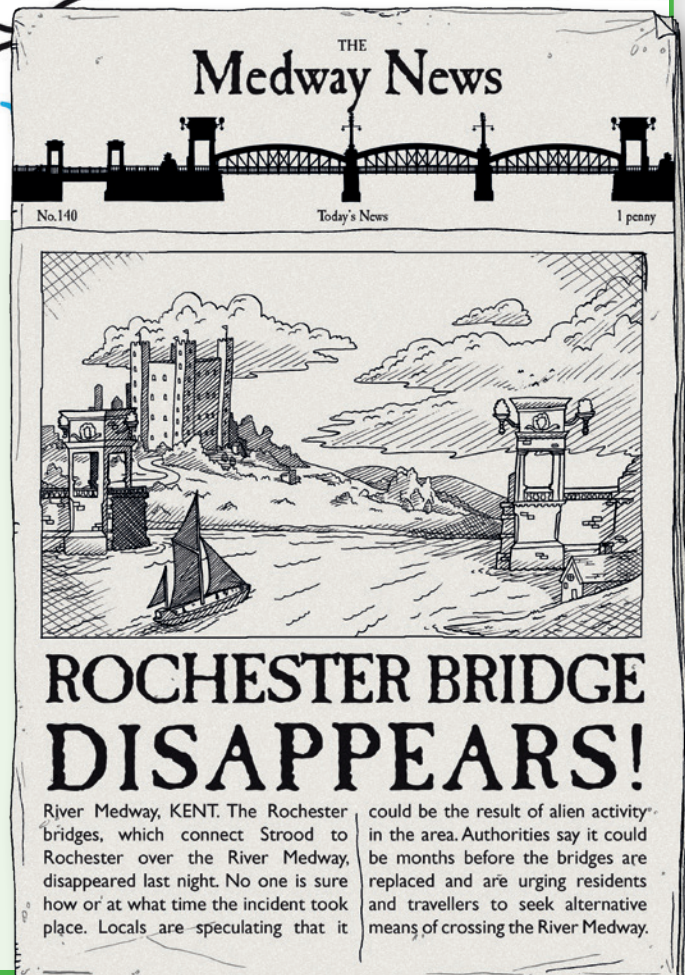
Something to Try:

Look at the *Map of the River Medway* handout showing the Medway Tunnel, Rochester Bridge, M2 high level motorway bridge and towns.



Talk about all the places that learners might visit if they live locally, and using the *Newsflash!* handout, discuss the outcomes if the Rochester Bridge disappeared overnight.

If you live outside of Medway, try using a map of a more local river, and highlight the different towns and crossings around it.





CLASSIFYING BRIDGES



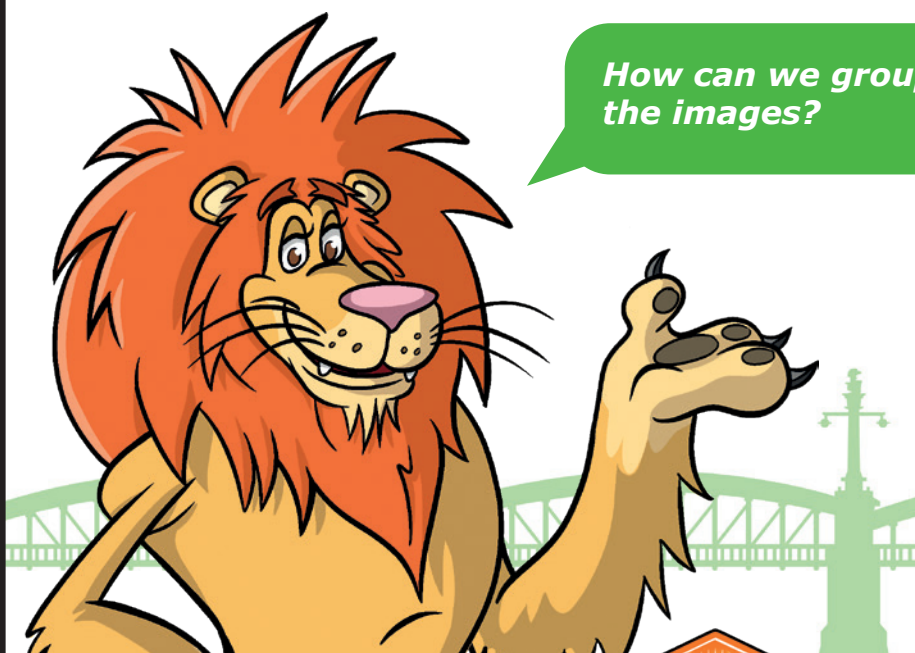
Give learners various bridge images; you can use the *Classifying bridges* resource. Give groups copies from the various bridge images, each one numbered. There are 60 different images to choose from – you do not need to use all 60 images, simply select a few depending on your particular circumstances. Ask learners to physically group the bridge images, or to write down the numbers of the bridges that they consider go together. When they have done this, ask them to classify each set, for example, “this set of bridges is made of stone”, or “these are all road bridges”. Ask each group to share their thoughts with the whole group. They can repeat the classification step a number of times, asking learners to classify the bridges in a different way. You might ask them to draw Venn diagrams to categorise their groups.

How can we group the images?



Identifying, classifying & grouping

Learners make sense of how the world is organised. Identification is the process of using differences to name something and classification is organising things into groups.



Challenge Time!



Give each group the art straws, card and 1 roll of tape. Challenge them to build a bridge with the largest capacity, to carry the heaviest load. The gap they have to span should be slightly narrower than the length of the straws – in the picture, we used 40cm straws of two different diameters (6mm and 4mm diameters) and a gap of about 35cm.

To test the bridge, use small masses such as coins or washers which you can balance on the structure, enabling you to identify the bridge that holds the most items and is therefore the winner. In the event of a tie, perhaps choose the one that actually holds the greatest mass or has the most aesthetically pleasing design.





HOT TOPICS!

You could write a news article or blog about the disappearance of a bridge. It could be Rochester Bridge, another bridge local to you, or a famous bridge such as Tower Bridge or the Golden Gate bridge. You could think about the disappearance as a result of alien activity, as per the handout, or by a Master Villain as in the film Despicable Me.

Bridges are featured in lots of stories and nursery rhymes – such as London Bridge is falling down and The Three Billy Goats Gruff. How many more can you find? Could you build a junk model of a bridge from a fairy tale or song, using anything you have lying around?



Can you spot any bridges near where you live?
What is it going over, and what is using the bridge?



DID YOU KNOW?

The Old Bridge at Rochester is thought to be in line with the original Roman built bridge, but other versions of the bridge have been in slightly different positions.



Langdon presents:

- *Map of the River Medway* handout
- *Newsflash!* Handout
- *Classifying Bridges* Resource

Handouts can be found at
www.rochesterbridgetrust.org.uk