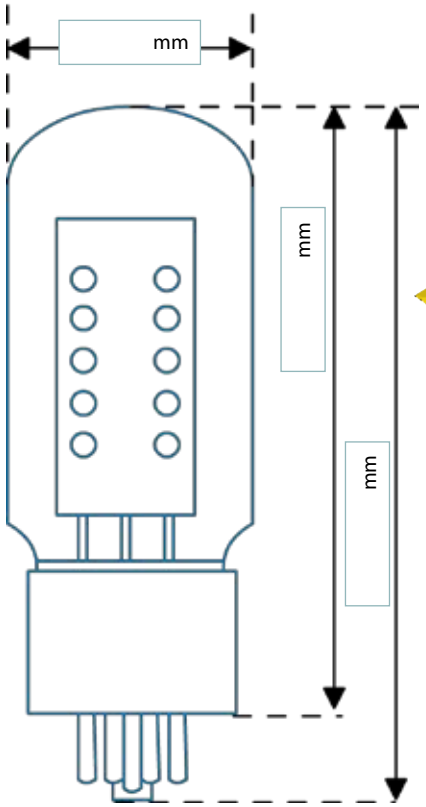
03 – Building Colossus
Student Activity Card 01



The Colossus prototype, built at Dollis Hill, contained 1,500 valves.

This is a valve drawn at actual size, also known as a scale of **1:1**.

1mm on the drawing is equal to 1mm in real life.

Fill in the three missing measurements on the drawing.

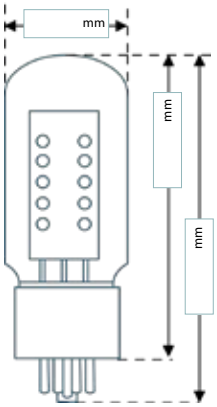
To keep the design of Colossus top secret, Tommy Flowers ripped up his blueprint into five pieces. After the war the blueprint was completely destroyed!

Colossus was around the size of a classroom.
We know that it was **2.3 metres tall**.

Estimate how wide it was:

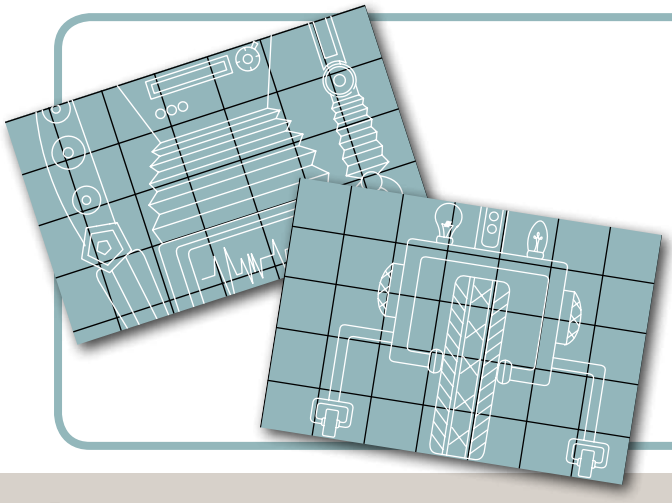
Blueprints are drawn to scale to fit more information onto a piece of paper. The scale **ratio** tells us how many units in real life are equal to **one** unit on the drawing.

This is a drawing of the same valve but at a smaller size.



Tick the correct scale ratio that this valve has been drawn to.
(Measure the height of the small valve and compare the measurement to the full size drawing)

1:2 ☐ 1:5 ☐ 1:8 ☐



Scale up!

Imagine that Tommy designed a secret robot.

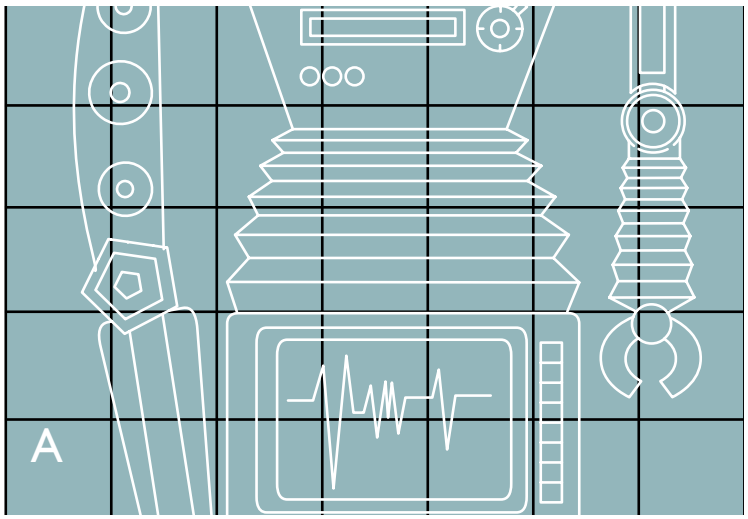
You will be given a piece of the robot blueprint.

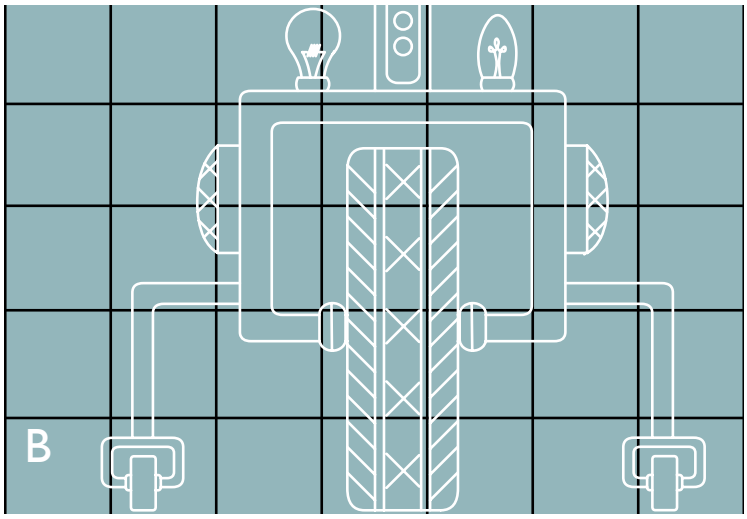
Your challenge is to draw the blueprint at full scale on a grid sheet.

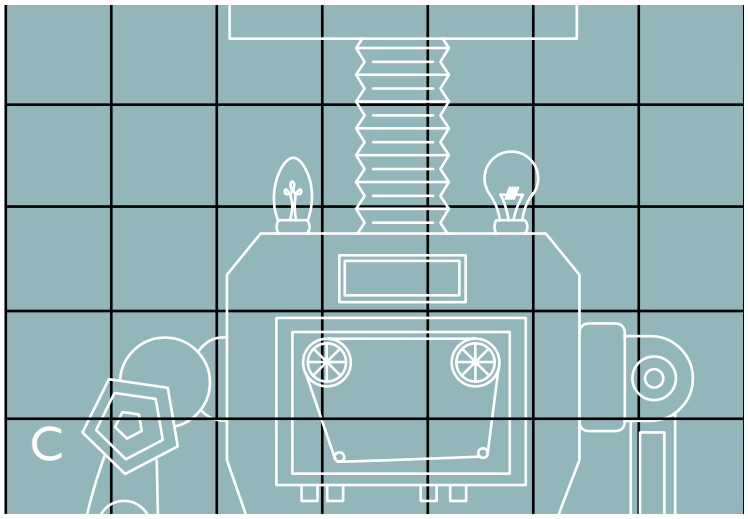
In your team, fit together your blueprint drawings to see the full size robot.

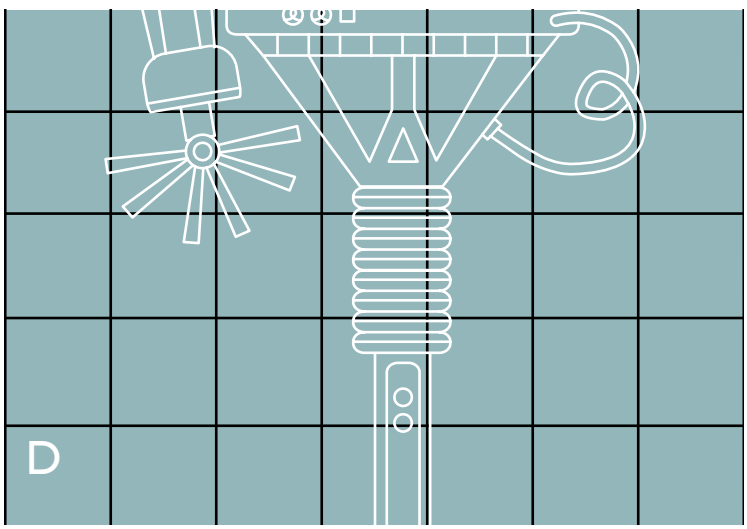
Teacher instructions – Scale up!

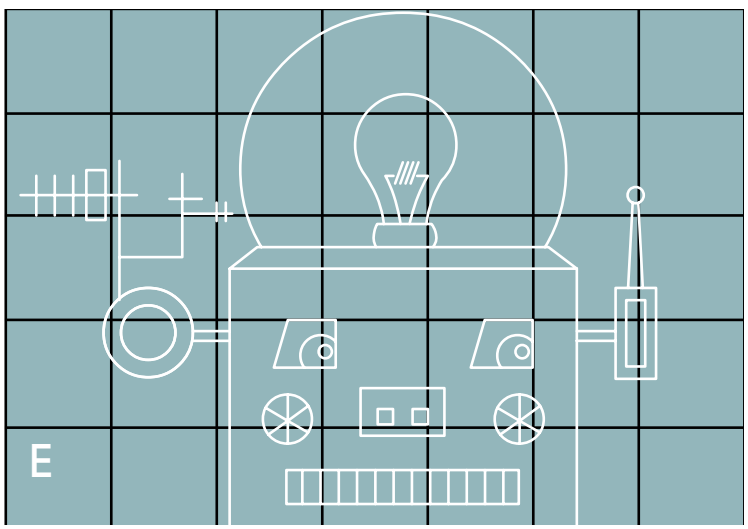
- Divide the class into teams of five.
- Photocopy this page the required number of times (e.g. six times for a class of 30).
- Cut out the blueprint pieces (A-E).
- Give each student a piece of blueprint and a grid sheet in A4 or A3 for a larger drawing.
- Ask students to draw their piece of blueprint onto the grid sheet to create the 'full scale' drawing.
- Ask students to focus on a square at a time to transfer the blue print to a bigger scale.
- In teams, fit together the five parts to reveal the robot.
- Top tip: Use a roll of wallpaper or large paper to draw a giant grid. Give each team one piece of blueprint to work together and draw a class robot.











03 – Building Colossus – Student Activity Card 01 – Grid Sheet