TEACHERS' NOTES

Background information

Opened in 1927 Mail Rail was a hidden underground postal railway that ran under London for over 75 years. The Post Office had millions of letters to carry across London every day. On the busy streets traffic moved very slowly at an average speed of 6.5 miles per hour. The Post Office dug deep and built a clever railway to carry the letters in driverless electric trains underground.

Mail Rail consisted of six and a half miles of tunnels. It had eight stations stretching from Paddington in the west to Whitechapel in the east. The main sorting office Mount Pleasant was the busiest station.

From rivers and sewers to foundations and cemeteries London is just as crowded below ground as above. When Post Office engineers began building Mail Rail in 1914, twenty metres below street level they had to work hard to avoid all these hazards.

Who is it for?

7 - 11 year olds

How long will it take?

1 – 2 hours

Learning outcomes

Students will work as a team of Mail Rail engineers to build a Mail Rail tunnel to move mail (marbles) underground. The aim is to build the cheapest and fastest tunnel they can while avoiding the underground obstacles such as sewers, building foundations and the London Underground.

Equipment list

Each team will need a cardboard box with an A3 map print stuck to the bottom and holes cut in two sides.

Per team of Mail Rail engineers:
1 marble, 1 stop watch, a calculator (optional), rulers (optional to measure length of tunnel).

Building materials:
Cardboard tubes, straws to support and make struts, sticky tape.
Decide how much each tube and straw will cost e.g. tube £200, straw £50. You can make the challenge harder by using tubes of different lengths for different costs.

Railway money:
You can add an additional challenge by using railway money (downloadable in different denominations) and assigning the teams a budget.

Prepare for the challenge	Download the classroom PowerPoint. Collect a cardboard box for each team. Print the CHALLENGE CARDS and one A3 map print for each team.

Stick each A3 map print into the bottom of a cardboard box and cut a hole at either end – see diagram. This represents underground London.
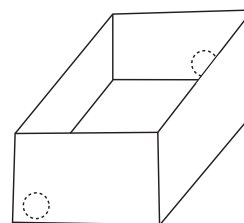
Run the challenge	Read through the classroom PowerPoint to familiarise yourself with the content.

Gather equipment

Assign students into small teams of 3 or 4

Set the scene with the classroom PowerPoint. Show students the photograph of London and explain that over 100 years ago London streets were very busy and congested. It was taking too long to deliver the mail. The General Post Office decided to build its own railway (you can use the Petitioning Parliament! activity to explain this in more detail).

Their challenge is to work as Mail Rail engineers to plot and build a tunnel from the Mount Pleasant sorting office (the centre of the network) to Paddington station. Their aim is to build the cheapest and fastest tunnel they can while avoiding the underground obstacles on the map.

Ask the students to assign one team member to calculate and record the cost of the building materials. You can use the template cost spreadsheet or ask students to design their own.

Explain that the tunnels must have supports. They cannot stick the cardboard tubes to the box.

Begin the challenge. Give students 30 minutes to build their tunnel.

Give each team a marble to do test runs. Ask them to record the time it took to move the mail. For an extra challenge ask the team to work out the cost per second of the marble running.

Bring teams together for a timed competition to work out which team has developed the cheapest, fastest tunnel.

You may wish to give teams a further 15 minutes to make adjustments to their tunnel. For an extra challenge ask them to measure the length of their tunnel.

Extension activities	This is an accredited CREST SuperStar Challenge.

The Challenge can be used towards a CREST SuperStar Award.

Visit postalmuseum.org/learning to claim The Postal Museum CREST SuperStar stickers for their passports.