Keeping an eye on LONDON

SPONSORED BY MALTBY SURVEYS

HEY THERE! I'M ***STANLEY*** FROM ***MALTBY SURVEYS***, AND JUST LIKE YOU I'VE BEEN EXPLORING ONE OF THE BIGGEST, COOLEST, MOST HISTORIC CITIES IN THE WORLD! WHAT HAVE YOU SPOTTED WHILE LOOKING AROUND THE GET KIDS INTO SURVEY LONDON EXPLORATION POSTER? LUCKY FOR ME AND MY SURVEYOR-BIRD'S EYE VIEW, I'VE SEEN PLENTY OF THINGS I WANT TO FIND OUT MORE ABOUT! WILL YOU JOIN ME TO DISCOVER WHAT MAKES THIS AWESOME CITY WORK? LET'S GO!

TASK 1: WRANGLING A RIVER

(GEOGRAPHY OBJECTIVES - GEOGRAPHICAL AND LOCATIONAL KNOWLEDGE / COMPUTING OBJECTIVES - SMART SEARCHES)

Running right through the heart of London is the River Thames - a world-famous waterway with a history that spans thousands of years. During the Great Ice Age (10,000 years ago) the Thames was a high-energy, fast-flowing river, fuelled by melting ice sheets, and 10 times its present size! As time moved on, successive settlers built castles and forts to protect their possessions along the river. Famously, the Romans built city walls around their newly-founded town of Londinium - with a fort where the Tower of London would eventually sit. From its importance in terms of trade and transport during the Industrial Revolution, to its modern tourist attractions (e.g. its famous bridges, the London Eye, the HMS Belfast etc.), the Thames has played a massive part in London's storied history. But there's always been a problem with the iconic river... its unpredictability!

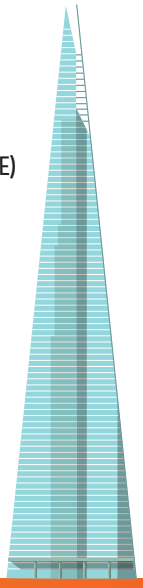
Did you know that in the past, the river has frozen over so completely, Frost Fairs were held on its solid surface, featuring ox-roasting, food stalls, bands and fairground amusement? Did you know that during the Industrial Revolution, at a time called the Great Stink, fumes from the polluted river made their way into the Houses of Parliament, and MP's refused to continue to work until the odour was eliminated? And did you know that the threat of flooding was so severe, locals kept their eyes on mooring rings shaped like lions dotted around the banks of the Thames; they had a rhyme to identify a flood threat:

Thankfully, a solution to this problem finally came in 1984 with the opening of the Thames Barrier - the second-largest retractable flood defence barrier in the world. Your first challenge is to find out all about this feat of hydrography and engineering, using the 'Wrangling a River' quiz sheet!

TASK 2: REACH FOR THE SKY

(GEOGRAPHY OBJECTIVES - GEOGRAPHICAL AND LOCATIONAL KNOWLEDGE / HISTORY OBJECTIVES - EXPLORING CHANGE OVER TIME)

The sprawling cityscape of London features some of the most iconic buildings in the world; each towering structure is a testament to the awesome contributions of surveyors. Without land surveyors and the work they do in planning, building and maintaining these magnificent structures, there would be no bonging Big Ben, no shiny Shard, and no gleaming Gherkin!



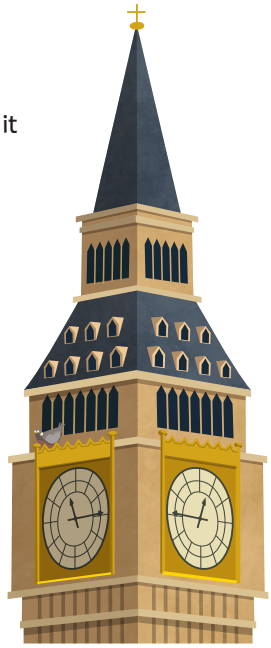
As this is written, the tallest building in London is the Shard - standing a dizzying 310m tall and housing 72 storeys. But, just as the Shard replaced One Canada Square (which measures in at 235m), there's always a new, bigger building being planned, and you can bet surveyors will play a massive part in its development! For now, can you complete the 'Reach for the Sky' sheet and create a fact file for some of London's most famous buildings?

TASK 3: BIG BOWING BEN

(GEOGRAPHY OBJECTIVES - LOCATIONAL KNOWLEDGE / MATHS OBJECTIVES - ANGLES AND MEASURES)

Take a close look at the building to the left of the Gherkin in the London Exploration Poster and you'll find something interesting sittng on the roof. This is a total station, and it's a favourite tool of GeoSurveyors. It uses laser scanning to keep an eye on the buildings around it for signs of damage or movement. And that's a relief, because a nearby building - one of London's most recognisable - isn't actually straight, and hasn't been for a while. Big Ben is leaning. The tower in which the famous clock and bell are housed (which has actually been called Elizabeth Tower since 2012) has been monitored closely since 1999. The question is, is it dangerous, and could it be fixed?

Well, that's where you come in! Can you discover the exact angle the Elizabeth Tower is leaning at, and can you find out how far out of alignment this makes the structure at its highest point? Then, when you know what you're dealing with, could you come up with three different ideas for straightening the structure without damaging it? You could work up some plans and sketches and discuss them with an adult.

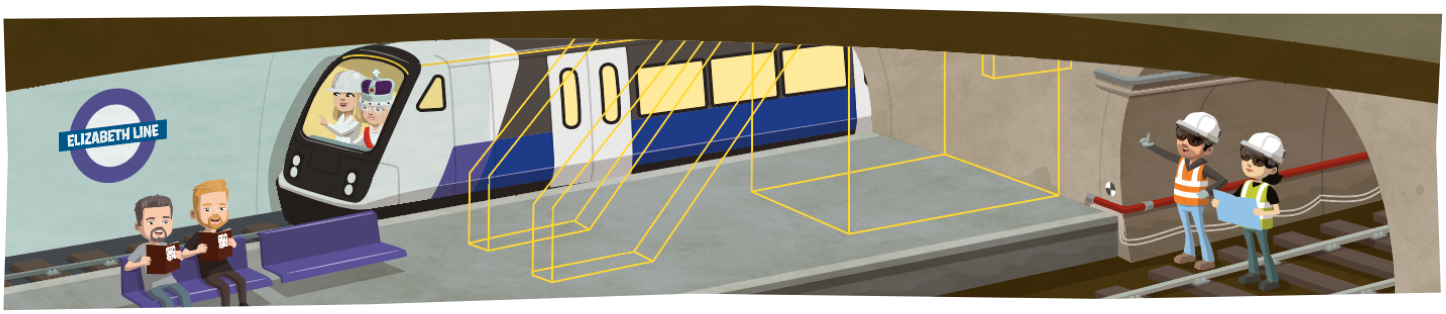


TASK 4: TUBE RACERS

(GEOGRAPHY OBJECTIVES - LOCATIONAL KNOWLEDGE / MATHS OBJECTIVES - TIME AND DISTANCE)

Another incredible feat of survey, planning and building in London is the tube system. You can see a pair of surveyors in the London Exploration Poster using virtual reality tech to visualise where a new staircase will be positioned on the underground platform. The London Underground is the world's oldest metro system - dating back to 1863. With 160 years of history under its belt, you can bet the tube system needs a lot of looking after, which is where surveyors come in yet again! For example, they can use laser scanners to measure the tracks and make sure they haven't buckled. They can use ground-penetrating radar to scan below-ground without having to dig. They can use remote control vehicles to explore dark, potentially hazardous places. Important jobs like these help the tube system to run smoothly - which is good news for your next challenge!

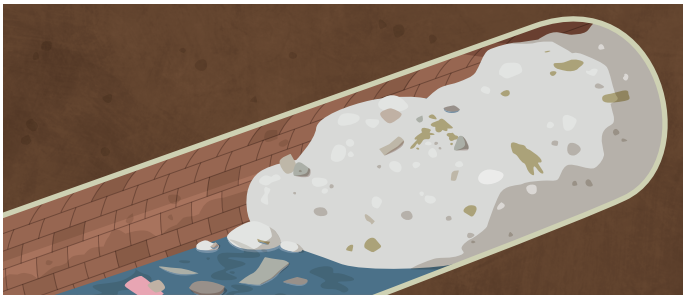
Can you use the 'Tube Racers' sheet to plot out the speediest routes across one of the busiest cities in the world? Compare the underground to some other modes of transport and see which one comes out on top!



TASK 5: THE FEARSOME FATBERG

Another element of London's longstanding success is the utility network that runs below the surface of its streets, like veins under skin, transporting the lifeblood that is power, water and communication to the almost-nine million people who live and work there. Surveyors have a massive part to play in the planning, installation and smooth operation of these utiliGes - and yet, things can still go wrong - sometime in a BIG way!

In 2017, a 130 tonne, 250m long blockage consisting of concealed grease, wet wipes and other unsavoury items that don't belong down the drains was discovered in a Victorian sewer tunnel beneath Whitechapel. It was known as a 'fatberg'. It took sewer workers nine weeks to remove the blockage! For your final challenge, could you turn the fatberg into a villain character for your own mini comic, and create the story of how the GeoSquad used their survey skills to defeat this dastardly, dirty danger!

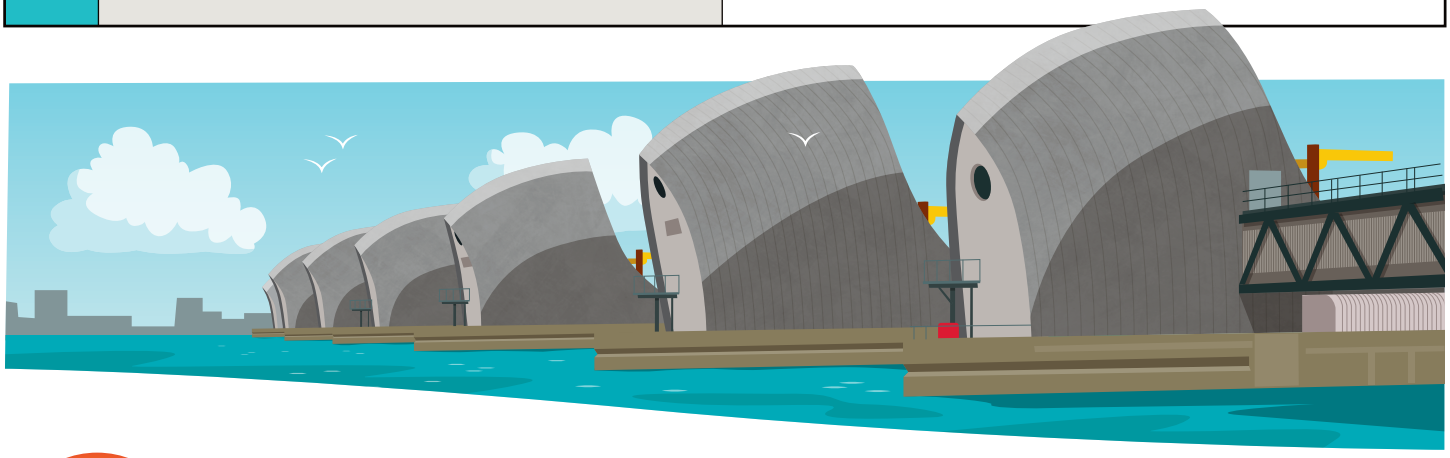


TASK 1:

WRANGLING A RIVER

IN 1984, THE THAMES BARRIER - THE SECOND-LARGEST RETRACTABLE FLOOD DEFENCE BARRIER IN THE WORLD -- OPENED ITS GATES. YOUR FIRST CHALLENGE IS TO FIND OUT ALL ABOUT THIS FEAT OF HYDROGRAPHY AND ENGINEERING!

1	What is the span of the Thames Barrier?	
2	How large an area of London does the barrier protect from flooding caused by tidal surges?	
3	How many steel gates does the barrier have, how high do they stand when raised, and how much does each one weigh?	
4	How much did it cost to build the Thames Barrier?	
5	The Thames Barrier is the second largest flood defence barrier in the world - what is the first?	



TASK 2:

REACH FOR THE SKY

COMPLETE THIS SHEET BY CREATING A FACT FILE FOR SOME OF LONDON'S MOST FAMOUS BUILDINGS!

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Address	
Date completed	
Cost	
Height	
Purpose	

Name	
Address	
Date completed	
Cost	
Height	
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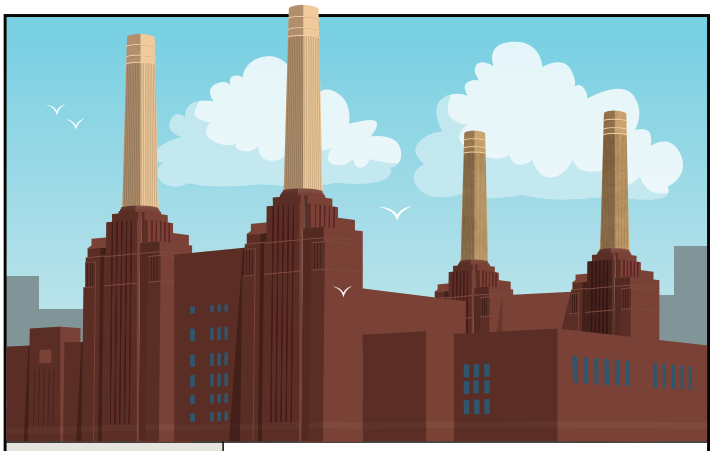

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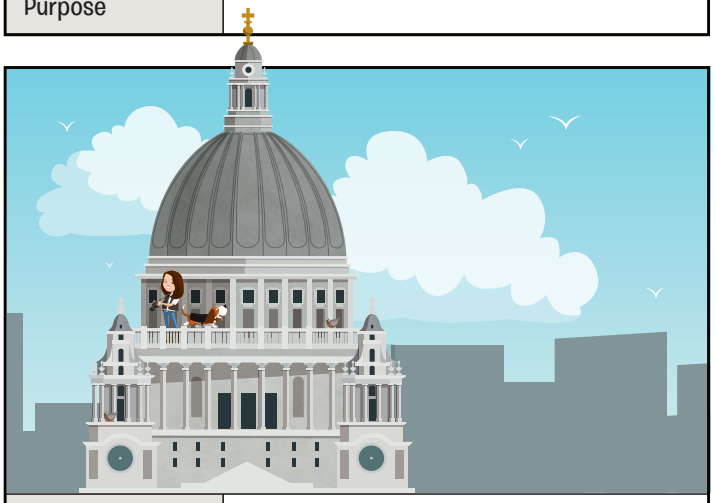

Name	
Address	
Date completed	
Cost	
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Purpose	

TASK 4:

TUBE RACERS

CAN YOU USE THIS SHEET TO PLOT OUT THE SPEEDIEST ROUTES ACROSS ONE OF THE BUSIEST CITIES IN THE WORLD? COMPARE THE UNDERGROUND TO SOME OTHER MODES OF TRANSPORT AND SEE WHICH ONE COMES OUT ON TOP!

1	What's the fastest tube route to get from **The British Museum** to **The British Library**?	Is there a faster mode of transport?

2	What's the fastest tube route to get from the **Tate Modern** to **London Zoo**	Is there a faster mode of transport?

3	What's the fastest tube route to get from **Buckingham Palace** to **Leicester Square**?	Is there a faster mode of transport?