
# KEEPING EVERYONE MOVING

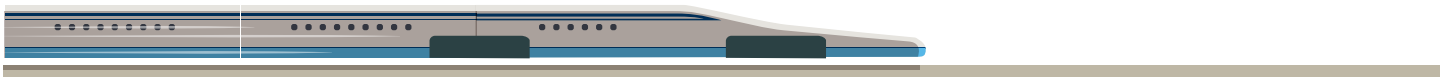
***ALOHA!*** I'M ***KAHA LOA*** FROM ***SURVEYORS SUPPLY CO., INC,*** AND IT'S MY JOB TO KIT OUT HARDWORKING GEOSURVEYORS WITH ALL THE GADGETS AND GEAR THEY NEED TO DO THEIR IMPORTANT JOBS -- LIKE KEEPING EVERYONE YOU'VE SEEN IN THE ***GET KIDS INTO SURVEY TRANSPORT POSTER*** MOVING! THERE'S SO MUCH MOMENTUM IN THIS BUSY CITY -- HOW DO ALL THE DIFFERENT SYSTEMS WORK TO KEEP EVERYONE ON THE GO? LET'S FIND OUT TOGETHER!

## TASK 1:

### TRANSPORT TRIVIA

There are so many different modes of transport being used across the city! There are trains, planes, boats and boards! There are skaters, scooters, bikers and drivers. There's even a horse, a hot air balloon, a helicopter, and a spaceship! Can you spot examples of all of those methods of moving in the poster? Did you manage to find me on my paddleboard in G,2! I'm a whizz on the waves!

To get you warmed up for our movement exploration, I've prepared a research quiz for you that spans all kinds of modes of transport - from the biggest passenger airplane in the world (the Airbus A380, with a wingspan the length of six London buses!) to the fastest train on the planet (Japan's LO Series Maglev, with a speed record of 374 mph!). It's your task to find the fastest, the tallest, the biggest, the smallest, and every other 'est' we can cram into TRANSPORT TRIVIA!



## TASK 2:

### SUPER SCANNERS

So what does it take to keep such a complex transport system going? Well, it has to be constantly checked and monitored - and for GeoSurveyors, that means using tricked-out tech to keep an eye on things - even when they can't be seen! For example, take a peek at grid reference (H,4). You'll see a surveyor with what might look like a lawnmower! Although she's rolling it over the concrete, she's not trying to keep the tarmac tidy! The machine she's using pushes sound waves through the ground and measures the echo, which allows the surveyor to build up a picture of what's beneath her feet! The technology she's using is called SONAR, which is short for SOund NAvigation Ranging. It's a lot like the echolocation that bats use to 'see' in the dark!

Now, take a look at B,4 - did you spot the drone flying off into the air? It has a special device attached to it that emits laser pulses and records the time it takes (at nano-second speeds) for the signal to return. It does this over and over to generate a 3D model with pinpoint accuracy. This technology is called LiDAR - Light Detection And Ranging. It's even used in modern mobile phones to help with augmented reality apps - like when you make a dinosaur take a virtual walk around your living room!

At SSCI, we help surveyors get the tech they need for the job - and that's where you can help! Look at the scenarios on the SUPER SCANNERS worksheet and help the surveyor to decide whether they need a SONAR device or a LiDAR scanner - and what they should mount it to in order to suit the situation and surroundings!

# TASK 3:

## MOVING THE MASSES

(GEOGRAPHY OBJECTIVES - PHYSICAL GEOGRAPHY / LOCATIONAL KNOWLEDGE / DESIGN TECHNOLOGY - PLANNING, DESIGN AND EVALUATION)

GeoSurveyors are heavily involved in the design, construction and maintenance of public transport systems - from digging tunnels and laying tracks for trains and trams, to keeping winding waterways safe for boats, to monitoring miles of motorways! In fact, my name - Kaha Loa - is the Hawaiian name for "turn and then go straight for a long distance," - and for Surveyors, that can mean covering a lot of land to make sure transport systems work!

But what if a whole new system was introduced? A new means of mass transport? There are plenty of 'unique' methods of keeping people moving around the world that must have been a tough job for Surveyors to help plan!

For example, there's a train in Wuppertal, Germany that hangs from its roof and passes over a market full of people! The Central-Mid- Levels escalator and walkway system in Hong Kong covers a distance of over 2,600 ft! And in Madeira you can ride basket sledges whose design dates back to early 19th century!

Now it's your turn to come up with a new method of mass movement; a vehicle or system that will help people get around quickly, safely, cheaply and cleanly! Will you transport people through air, water, or over land - or a combination! Will your system run on wheels, or tracks, or wings, or something else altogether? And how will you power it - can you use green energy? Use the MOVING THE MASSES sheet to design your new method of public transport, and fill in the fact file to explain its features!

# TASK 4:

## KEEP IT CLEAN AND GREEN

(GEOGRAPHY OBJECTIVES - PHYSICAL GEOGRAPHY / LOCATIONAL KNOWLEDGE / LITERACY - WRITING TO PERSUADE)

Can you zoom in on the poster and find the two adverts promoting public transport? Using buses and trains helps protect the environment by limiting the emission of harmful greenhouse gases from petrolpowered vehicles. There are also lots of folk getting around and leaving no emissions behind at all! Can you spot the walkers, the runners, the skaters and the scooters? GeoSurveyors will always have issues like pollution in their minds while helping to plan new transport links - can you help their efforts by making your own KEEP IT CLEAN AND GREEN poster to help persuade people to travel in a more ecofriendly way? You could focus on all the clean, green ways people are moving around in the poster, and try to come up with a catchy tagline - something like, **'SCOOT, DON'T POLUTE!'**



# TASK 5:

## MOVING THE MASSES

(GEOGRAPHY OBJECTIVES - PHYSICAL GEOGRAPHY / LOCATIONAL KNOWLEDGE / DESIGN TECHNOLOGY - PLANNING, DESIGN AND EVALUATION)

Now that you've explored the Transport poster and the hard work that Surveyors do to keep everyone moving, it's time to get kitted out and get out in the field! SSCI sells surveying and construction equipment - like the scanners and drones you saw earlier - but it also sells things like safety vests, hard hats and safety glasses - their cool Bomber eyewear is a favourite with surveyors! Your challenge is to outfit one of the GeoSquad head to toe with new gear that will keep them safe and look good when they venture out onto a survey site. They'll need things like a hard hat, a hi-vis vest, safety glasses, and protective boots - but it's your job to take these items to the max with extra features and cool designs! Ask an adult to help you share your work with @GetKidsintoSurv

# TRANSPORT TRIVIA


TO GET YOU WARMED UP FOR OUR MOVEMENT EXPLORATION, I'VE PREPARED A RESEARCH QUIZ FOR YOU THAT SPANS ALL KINDS OF MODES OF TRANSPORT! SEE IF YOU CAN FIND ALL THE ANSWERS AND LEARN MORE ABOUT TRANSPORT AROUND THE WORLD!

**1** What's the biggest airport in the world?

Answer: _____

**2** How many lanes has the world's Widest freeway?

Answer: _____

**3** How high is the highest railway station in the world?

Answer: _____

**4** How big is the world's largest cruise ship?

Answer: _____

**5** How far down is the deepest subway station?

Answer: _____

**6** How long is the world's shortest street?

Answer: _____

**7** How tall is the world's highest vehicle bridge?

Answer: _____

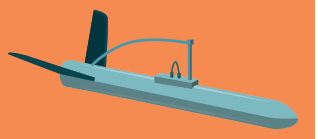
ANSWERS: 1. King Fahd International Airport (DMM), Saudi Arabia. 2. The Katy Freeway in Texas has 26 lanes. 3. The Tanggula Mountain Railway Station in Tibet is 5,068m above sea level. 4. The Wonder of the Seas is 1,188ft long. 5. The Arsenalna Station on the Kiev Metro is 107 meters deep. 6. Ebenezer Place in Wick is the world's shortest street at just 2.06 m. 7. The Millau Viaduct stands 1,104 ft tall.

# SUPER SCANNERS

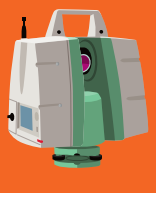

AT SSCI, WE HELP SURVEYORS GET THE TECH THEY NEED FOR THE JOB -- AND THAT'S WHERE YOU CAN HELP! LOOK AT THE SCENARIOS BELOW AND HELP THE SURVEYOR TO DECIDE WHETHER THEY NEED A SONAR DEVICE OR A LIDAR SCANNER -- AND WHAT THEY SHOULD MOUNT IT TO IN ORDER TO SUIT THE SITUATION AND SURROUNDINGS!

## SCANNER TYPE

SONAR SCANNING UNIT



LIDAR SCANNING UNIT



## MOUNTING

DRONE

HELICOPTER

SURVEY BOAT

SURVEY BACKPACK

TRIPOD

REMOTE CONTROL SURVEY VEHICLE

| | |
|---|---|
| **Scenario 1** | You need to scan a skyscraper from bottom to top in the middle of a busy city.<br>You would use a _____ scanner mounted to _____ |
| **Scenario 2** | You need to scan loch ness to understand the shape of the lake bed.<br>You would use a _____ scanner mounted to _____ |
| **Scenario 3** | You need to scan the pipes below a concrete street for damage.<br>You would use a _____ scanner mounted to _____ |
| **Scenario 4** | You need to map a cave system where there is a danger of a cave in.<br>You would use a _____ scanner mounted to _____ |

# MOVING THE MASSES

IT'S YOUR TURN TO COME UP WITH A NEW WAY TO HELP PEOPLE GET AROUND QUICKLY, SAFELY, CHEAPLY AND CLEANLY! WILL YOU TRANSPORT PEOPLE THROUGH AIR, WATER, OR OVER LAND -- OR A COMBINATION! WILL YOUR SYSTEM RUN ON WHEELS, OR TRACKS, OR WINGS, OR SOMETHING ELSE ALTOGETHER? AND HOW WILL YOU POWER IT -- CAN YOU USE GREEN ENERGY? USE THE SPACE BELOW FOR YOUR DESIGN, AND FILL IN THE FACT FILE TO EXPLAIN ITS FEATURES!


| | | | |
|---|---|---|---|
| Name: | Passenger capacity: | Land / Water / Air: | Additional information: |
| Fuel source: | Top speed: | Cost: | |