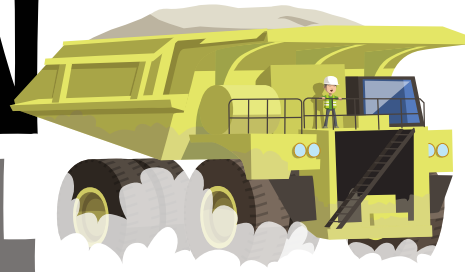


CONSTRUCTION UNDER CONTROL

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HI! I'M **LES-LY THE LION CUB**, AND I'VE BEEN HAVING A GOOD LOOK AROUND THE **GET KIDS INTO SURVEY DIGITAL CONSTRUCTION EXPLORATION POSTER**. I'VE SPOTTED SO MANY PIECES OF TECH THAT MY COMPANY, **LEVELLING EQUIPMENT SERVICES**, SELL TO SURVEYORS AND CONSTRUCTION WORKERS TO HELP THEM EXPLORE AND MAP AND BUILD! WITH YOUR HELP, I WANT TO GIVE THE WORKERS EVEN MORE, WITH THE MOST UP-TO-DATE TECH AND THE BEST BUILDING SOLUTIONS. I CAN'T WAIT TO GET MY BIG, SHINY TEETH INTO THIS TASK! IT'S GOING TO BE **ROAR-SOME!**



TASK 1: MONEY MATTERS

(COMPUTING OBJECTIVES - MAKING EFFECTIVE SEARCHES / MATHS OBJECTIVES - MONEY AND BUDGETING)

Our job at Levelling Equipment Services is to kit out GeoSurveyors so they can tackle any job, anywhere, at anytime of year! We stock everything from pipe lasers to precision locators, from reflective targets to reality capture software, and from tripods, to bipods, to survipods! Have a good look around the Digital Construction exploration poster, and you'll see tons of tech being used for all sorts of survey jobs. Many of these devices cost a lot of money, because they are so technical and complicated, and expensive to make! For example - can you see the



scanner on the yellow tripod in C,3? Total stations like those can cost tens of thousands of pounds! As such, GeoSurveyors have to be very careful with their budgets - and that's where you can help!

Can you use the Levelling Equipment Services website to complete the **Money Matters** challenge? Use the search bar to find all the items on the GeoSurveyor's shopping list, and note down the price for each specialised item. If the total comes in under budget, you can have a look around the website and find a few more useful products to add to the shopping list ... as long as you don't go over the spending limit!

TASK 2: SAFE AND SOUND

(PERFORMING ARTS OBJECTIVES - MAKING AND MANIPULATING SOUND / MATHS OBJECTIVES - LENGTH AND PROXIMITY)



When you were having a look around the Levelling Equipment Services website, you might have come across something called Machine Control. This technology is super important in keeping workers on busy construction sites safe. It works by measuring the proximity

(how close one thing is to another) between workers and things like excavators, dozers, and other heavy machinery. If a worker gets too close to one of these big vehicles (or a vehicle gets too close to a worker) the system will alert both the worker and the machine operator so that they can avoid any potential danger.

As you can see from this diagram of a Personal Aid system at work, if the worker goes into the green zone they will receive a visual (light) warning via a wearable tag. If they go into the amber zone, closer to the machine, they will receive another visual warning. If they stray into the red zone - where something extremely dangerous could potentially happen, they will receive an audio and a vibration warning, alongside another visual signal. Watch this video to learn more.

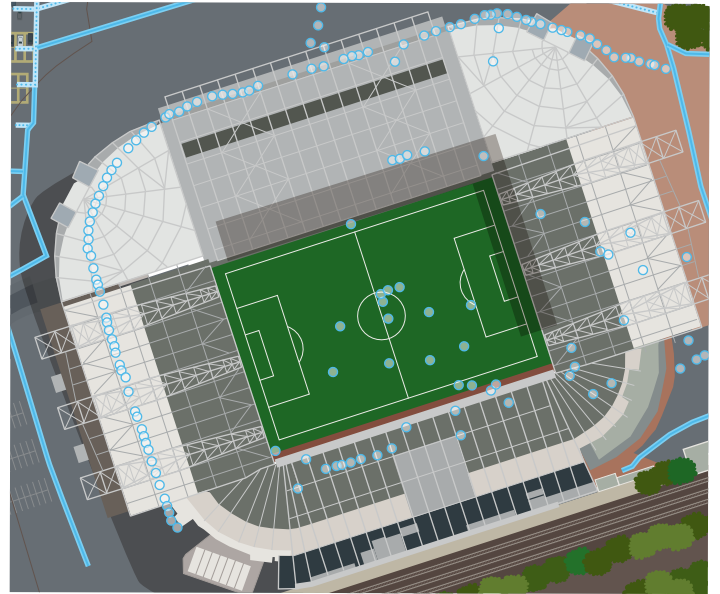
Your task is to record an appropriate audio warning for the machine operator and for the worker that would sound if the worker entered the red zone. What words would get across the message of danger quickly and clearly? How should the voice sound? Can you practise with a parent / friend / partner and see what they think? Give it your best and help those workers stay safe!



TASK 3: PICTURE THE SCENE

(GEOGRAPHY OBJECTIVES - LOCATIONAL KNOWLEDGE / COMPUTING OBJECTIVES - MAKING EFFECTIVE SEARCHES / DIGITAL IMAGERY)

The group of workers in D,3 are using a super-cool setup to harness **photogrammetry** techniques, allowing the group outside to explore the ruins via virtual reality using photographs taken inside - lots of which have been stitched together to form a digital model. This technique isn't just used for survey work, either - it's used for gaming, mapping, and visual effects. 360 degree cameras can also be used for reality capture, and they give us a way to explore the world without leaving our homes! For example, you can now access 3D environments via Google Maps Street View. Simply search for a landmark and turn on Street View, and each light blue circle that appears represents a 360 degree image. Your challenge is to use this function to take a virtual tour of some of the world's most famous landmarks - and use the **Picture the Scene** worksheet to solve questions that can only be answered from the **inside**!



TASK 4: STOP THE ROT

(GEOGRAPHY OBJECTIVES - LOCATIONAL KNOWLEDGE / SCIENCE OBJECTIVES - WATER AND CHANGE OF STATE)

Another nifty device that Levelling Equipment Services supplies to surveyors is the moisture meter. It measures moisture in things like concrete, plaster and wood. This is super important, as having moisture where it shouldn't be in a building (such as in the walls or the floors) can cause terrible, and sometimes catastrophic damage. Not to mention that the damp can lead to mould - which can affect your

lungs and be extremely dangerous for your health.

While GeoSurveyors use fancy tech to detect moisture below the surface, you can be your own moisture meter - and be on the lookout for moisture around your home that could cause damage and health problems! Can you use the **Stop the Rot** worksheet to complete a moisture survey of your house, and see if you can offer solutions to any problems that you find?

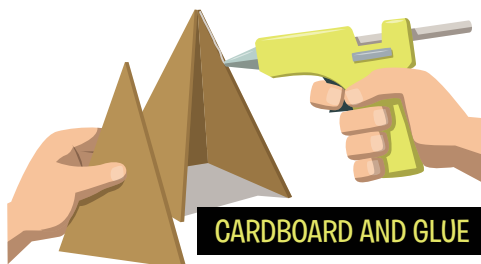
TASK 5: BUILD LIKE AN EGYPTIAN

(GEOGRAPHY OBJECTIVES - GEOGRAPHICAL AND LOCATIONAL KNOWLEDGE / DESIGN TECHNOLOGY OBJECTIVES - STRUCTURES)

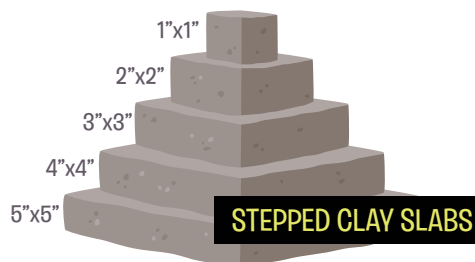
Take a look at the ambitious building project being unveiled in C,2. Pyramids are fascinating structures; the ancient pyramids in Egypt have long perplexed architects and historians. Just how were such massive structures made without the use of powered machinery? It is thought that 100,000 workers spent about 20 years building the Great Pyramid out of 2.3 million blocks of stone, all the way up to a height of

471 feet (143 meters). And each one of these blocks weighed about 2.5 tons!

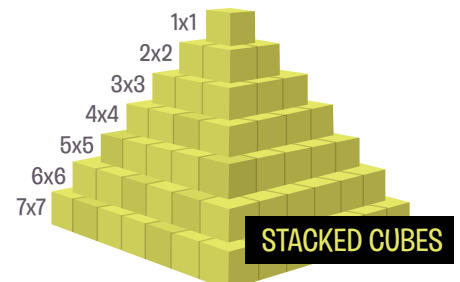
For your final challenge, you are going to take control of the construction of your own pyramid! But don't worry, you won't have to find a way to move two-and-a-half ton blocks around! In fact, it will be up to you what material you use to make your pyramid, and how big you want to make it. As a suggestion, you could try experimenting with the following methods:



CARDBOARD AND GLUE



STEPPED CLAY SLABS



STACKED CUBES

However you construct your pyramid, try testing it for rigidity and strength - how much can it be wobbled before it falls? Can you balance objects on its side? With your parent/guardian's help and

permission, email the results to XXXX@getkidsintosurvey.com and we'll share your efforts online!

TASK 1

MONEY MATTERS

CAN YOU USE *THE LEVELLING EQUIPMENT SERVICES* WEBSITE, WWW.LESIRL.IE, TO COMPLETE THE CHALLENGE? USE THE SEARCH BAR TO FIND ALL THE ITEMS ON THE GEOSURVEYOR'S SHOPPING LIST, AND NOTE DOWN THE PRICE FOR EACH SPECIALISED ITEM. IF THE TOTAL IS UNDER BUDGET, YOU CAN HAVE A LOOK AROUND THE WEBSITE AND FIND A FEW MORE USEFUL PRODUCTS TO ADD TO THE SHOPPING LIST ... AS LONG AS YOU DON'T GO OVER THE SPENDING LIMIT!



ITEM	COST inc. VAT
TRI-MAX UNIVERSAL ELEVATOR TRIPOD	
MOISTURE METER ME5 - MOISTURE ENCOUNTER	
LEICA PIPER 100G PIPE LASER	
MINI STAKEOUT POLE - RED	
LEICA GPH1P PRECISION PRISM	
GDF322 TRIBRACH PRO WITH OPICAL PLUMMET	
TOTAL COST:	
BUDGET: £10,000	
EXTRA ITEMS	COST inc. VAT
TOTAL COST:	



TASK 3

PICTURE THE SCENE

YOUR CHALLENGE IS TO USE THE 360 DEGREE PICTURE FUNCTION ON THE **STREET VIEW** LAYER OF GOOGLE MAPS TO TAKE A VIRTUAL TOUR OF SOME OF THE WORLD'S MOST FAMOUS LANDMARKS -- AND SOLVE QUESTIONS THAT CAN ONLY BE ANSWERED FROM THE **INSIDE!**



1	Which basketball team's logo is on the jumbotron inside the Madison Square Garden arena?	
2	What motto is written on the stands in the Spotify Camp Nou ?	
3	What colour are the seats inside the Sydney Opera House ?	
4	What skeleton will you find in the entrance hall of the Natural History Museum in London?	
5	What are the four colours of the seats inside the San Siro Stadium ?	

TASK 4

STOP THE ROT

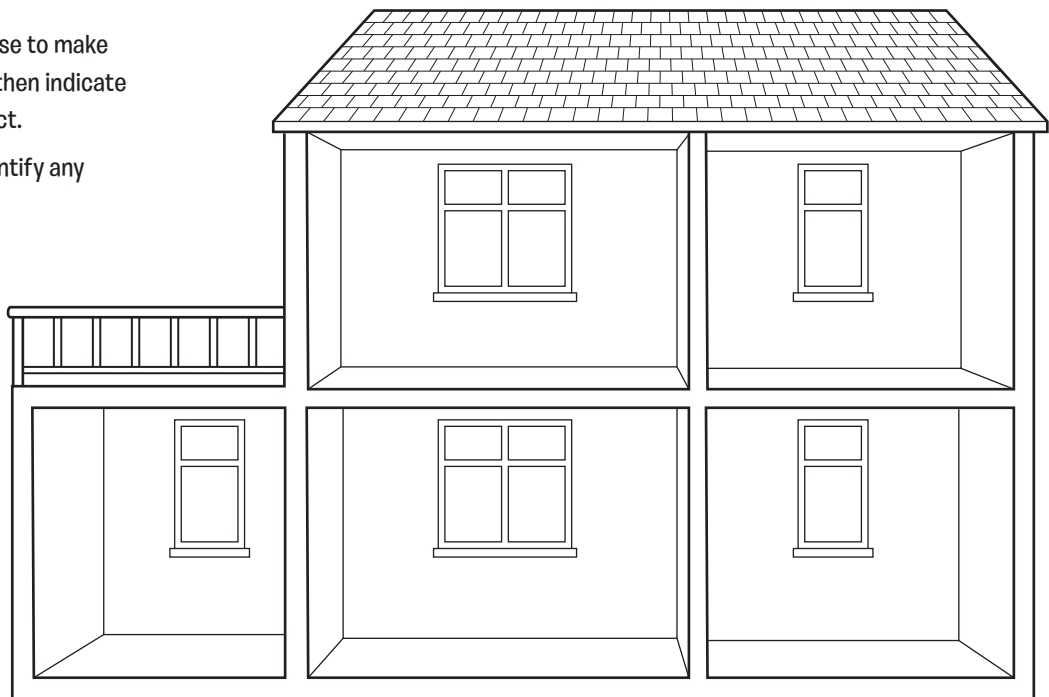
WHILE GEOSURVEYORS USE FANCY TECH TO DETECT MOISTURE BELOW THE SURFACE, YOU CAN BE YOUR OWN MOISTURE METER -- AND BE ON THE LOOKOUT FOR MOISTURE AROUND YOUR HOME THAT COULD CAUSE DAMAGE AND HEALTH PROBLEMS! CAN YOU USE THIS WORKSHEET TO COMPLETE A MOISTURE SURVEY OF YOUR HOUSE, AND SEE IF YOU CAN OFFER SOLUTIONS TO ANY PROBLEMS THAT YOU FIND?



Add furniture and details from your house to make this diagram look more like your home, then indicate all the places that moisture might collect.

Complete the survey table below to identify any problems and suggest solutions.

One example has been done for you.



AREA	MOISTURE ISSUE	SOLUTION
BATHROOM	CONDENSATION FROM THE SHOWER ON THE MIRROR AND THE CEILING	OPEN WINDOWS AND USE AN EXTRACTOR FAN

