Tree Project (50 minutes)

Ideal Industry Participant:
A professional who has had experience working with trees, ideally in a consultancy/planning capacity. Professionals in careers related to design will also be able to inform students on how trees are considered during construction projects.

Example Job Titles:

Arboricultural Consultant

Tree Officer

Description

This session aims to get students thinking about how their maths learning around circles can relate to their future careers. This will be done by exploring careers that will most likely be unfamiliar to students – those related to trees during construction projects. More specifically, students will be presented with a site template and some rules, which they will use to create loci and constructions, sketching out the site's usable area. They will also learn about the very important role that trees often have within building projects.

What Year Group or Key Stage is the session targeting?

This session should be delivered to KS4 students (Years 10-11).

Maximum number of students?

This session would be ideal for 30 students.

What is the goal of the session?

For students to discover built environment careers that they probably knew little about – those involved with working with trees during construction projects, and to see how their maths learning relates to their potential future careers.

Role of the Industry Participant(s)

Outline the role and responsibilities of the Industry Participant(s)

The industry participant will deliver the session and manage activities, as well as provide guidance and feedback during the site planning activity.

The industry participant will deliver a presentation (template provided) on their route into the industry and day-to-day responsibilities.

Resource Checklist

USB
Hard copy of PowerPoint
Electronic copy of PowerPoint

Resource 1 – Tree Project data handout
Resource 2 – Tree Project site plan handout
Resource 3 – Tree Project PowerPoint (please note PowerPoint is uploaded in two parts
due to document size. Please combine the two parts for session delivery)
Compass x 15 (one for each pair)

Facilities Required from School

Computer and projection facilities to show PowerPoint presentation.

Learning Objectives:

Learners will be able to...

1. Understand how trees are considered during construction projects.
2. Feel more comfortable working with circles and making calculations using Pi.

Gatsby Benchmarks	National Curriculum Links
Gatsby Benchmark 2: Learning from career and labour market information Gatsby Benchmark 4: Linking curriculum learning to careers. Gatsby Benchmark 5: Encounters with employers and industry employees.	GCSE Mathematics: • Apply the four operations to integers and decimals, • Use standard units of measurement using decimal quantities, • Round numbers and measures,

Teaching Strategies

Real Life Links: Students will listen to industry participants speak about the built
environment sector.

Visual: Students will have the opportunity to view a PowerPoint as part of the session.

Auditory: Students will be provided with verbal instructions and feedback throughout the
session,

Risk Assessment

DBS-checked individual (ideally a teacher) required to supervise at all times – industry
participant may not be DBS checked.

Duration	Tutor/Industry Participant Activity	Learner Activity	Resources
5 minutes	Slides 1-7: Industry participant to deliver Overview of Construction presentation. This is to provide students with an insight into the industry and	Students to listen	Resource 3 – Tree Project PowerPoint

	information on the range of careers that are available.

Edit Slide 3: All About Me

After this slide, insert a new slide with images of projects that you and your company have worked on so students can find out more about your work.

Slide 8: Introduce the lesson – tell the students that this lesson will involve discussing trees and a site planning activity. | | |
| 5 minutes | Slide 9: Industry participant to introduce the topic of trees and the built environment using the notes provided. | Listen actively and respond to prompts from industry participant. | Resource 3 – Tree Project PowerPoint |
| 3 minutes | Slide 10: Industry participant to run through Think, Pair and Share task. | Listen actively and respond to prompts from industry participant. | Resource 3 – Tree Project PowerPoint |
| 4 minutes | Slide 11: Industry participant to run through Gap Fill exercise. | Listen actively and respond to prompts from industry participant.

Students to complete the word fill. | Resource 3 – Tree Project PowerPoint |
| 3 minutes | Slide 12: Industry participant or industry participant to run through role of 'Tree Expert' within construction and the built environment. | Listen actively and respond to prompts from industry participant. | Resource 3 – Tree Project PowerPoint |
| 3 minutes | Slides 13-14: Industry participant to run through 'Correct the False / Improve the True' activity.

Explain to students that they will be shown three statements | Listen actively and respond to prompts from industry participant. | Resource 3 – Tree Project PowerPoint |

	about trees, and for each one they will have to decide whether it is true or false. If they decide that a statement is true, they must come up with a way to elaborate on it and improve it. If they decide that a statement is false, they must then correct it.		
3 minutes	Slide 15: Industry participant to explain the importance of a tree's roots and how we can protect them.	Listen actively and respond to prompts from industry participant.	Resource 3 – Tree Project PowerPoint
3 minutes	Slide 16: As the students will be working with circles during the session, the industry participant now runs through Slide 16, which reminds students of terminology such as 'radius', 'diameter' and 'circumference'.	Listen actively and respond to prompts from industry participant.	Resource 3 – Tree Project PowerPoint
2 minutes	Slide 17: Industry participant to run through slide 17, which discusses how the Root Protection Area of a tree can be calculated.	Listen actively and respond to prompts from industry participant.	Resource 3 – Tree Project PowerPoint
2 minutes	Slides 18-19: Industry participant to cover an example of finding a tree's RPA using its diameter.	Listen actively and respond to prompts from industry participant.	Resource 3 – Tree Project PowerPoint
3 minutes	Slide 20: Task Industry participant to inform the students that they will be working from a site plan and mark out some trees' RPAs themselves. Explain that the students' goal is to work out the area of the site plan which is 'developable' i.e. where things can be built – the area that is taken up by the trees' roots (i.e. their RPAs) will	Listen actively and respond to prompts from industry participant.	Resource 3 – Tree Project PowerPoint

4 minutes	At this point, the site plans will be handed out. Industry participant to explain what each aspect of the site plan means – road and trees. Student worksheets will also now be handed out (the blank table of measurements). Industry participant to explain that the students are roleplaying as arboriculturalists who have gone out to the site (as depicted on the plan) and measured the circumferences of all the trees – hence the reason the 'circumference' column is already completed on the worksheet. Students will work in pairs. Their next job is to work out the diameters of the trees from there, and then the radiuses of the trees' RPAs from there. They then use the radiuses of the trees' RPAs to draw circles around each tree on site, which represent each one's RPA. Instructions for this are on slide 21. Slide 22: Answers	Listen actively and respond to prompts from industry participant. Make calculations in handout and mark up their proposed development site.	Hand out compasses to each pair Resource 3 – Tree Project PowerPoint Resource 2 – Tree Project site plan handout Resource 1 – Tree Project data handout
5 minutes	Slide 23: Once students have finished drawing up their site plans, show them slide 23, which shows what they could now plan to build within their developable areas. If there is time at the end of the lesson, the students can make choices	Mark up their proposed development site.	Resource 2 – Tree Project site plan handout Resource 3 – Tree Project PowerPoint

	and draw their chosen components in – whatever they can fit in they are allowed.		
5 minutes	Slides 24-26: Plenary – run-through of slides which discuss potential routes into arboriculture and general questions.	Listen actively and respond to prompts from industry participant.	Resource 3 – Tree Project PowerPoint

To-Do List	
Before Session: • Request that the session take place in a good sized classroom • Go over the session plan • Print all resources before you arrive to the school • Make sure the relevant files are on a USB/sent to the school contact	After Session: • Collect in resources at the end of the session

Hints & Tips

• Here is the type of question that you may get asked:
  ○ What do you do on a daily basis?
  ○ How did you get into your career?
  ○ How many CVs do you get for jobs?

Delivery Management
• The session could be delivered by one industry participant • The teacher will handle behaviour management • Refer to 'How To Contextualise Curriculum' for more guidance on how to deliver this session.