Activity 1 – Use maths to plant trees

Design and plan an area of tree planting, using maths to calculate the correct spacing of the trees. Go on to calculate how many will need to be thinned over time using percentages.

Use this maths activity to fulfil the **Plant trees with your school** challenge. Order a free tree pack and send us a photo of your trees being planted, along with details of the event.

www.woodlandtrust.org.uk/support-us/act/your-school/plant-trees-with-your-school/

If you're not able to plant trees at school, you can plan a virtual tree planting instead using our interactive planning tools. Just send us your plans and evidence.

Worth two points on the award.

You can also use this activity to fulfil the **Visit a wood** challenge, also worth two points on the award.

www.woodlandtrust.org.uk/support-us/act/your-school/green-tree-schools-award/visit-a-wood/

Curriculum requirements KS3

Students should have the opportunity to:

- solve problems: select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems

- define percentages, interpret percentages as a fraction or a decimal, express one quantity as a percentage of another

- round numbers and measures to an appropriate degree of accuracy, use approximation through rounding to estimate answers

- use a calculator to calculate results accurately.

Maths - KS3

Learning outcomes

After completing this activity, students will:

- understand how percentages and round numbers are used when planning tree planting projects and how new forests can be created using maths.

Preparation and resources

The following materials will help you deliver this activity successfully.

Outdoors – in a local woodland, park or your school grounds

- risk assessments
- health and safety equipment
- outdoor clothing and footwear suitable for all weathers

In the classroom

- AV equipment to show the film 'The Big Climate Fightback: Young People's Forest at Mead, Derbyshire'
- **woodlandtrust.org.uk/visiting-woods/woods/young-peoples-forest-at-mead/**

Location

Different parts of this activity can be carried out in different places.

On a woodland visit

If possible, go to a local woodland before the lesson so students can observe and measure the distance between trees growing in a natural woodland.

In your school grounds or local park

Alternatively, go into your school grounds or local park with trees before or as part of your lesson. Allow students to observe and measure the distance between trees and how they grow.

In the classroom

All parts of this activity can all be completed in class.

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Starter activity (10 minutes)

Watch our video: 'The Big Climate Fightback: Young People's Forest at Mead, Derbyshire'

In the UK we need to plant more trees to create more woods. Watch the film to demonstrate the importance of trees.

Main activity (40 minutes)

After watching the Big Climate Fightback video, students should imagine they are at the Mead site in Derbyshire and the Woodland Trust has asked them to help design the spacing needed to plant trees here.

Task 1: Tree planting design

Students are told by the site manager in charge that all young trees (saplings) need to be planted with two-metre spaces between each one to allow them enough space to grow. Spacing is very important for trees to grow well, and as they get bigger the number of trees needs to be reduced (thinned) over time.

The students' task is to divide the field into plots (squares) which are 10 metres x 10 metres in size. Ask students to take a piece of graph paper and create two plots. Each cm is equivalent to one metre.

If two-metre spacing is needed between each tree, and the plots are 10m x 10m in size, ask students – how many trees can the young people plant per plot?

Students should mark the trees in their plot with a dot using a pencil.

(Answer: 25)

Task 2: Tree survival

The site manager tells students that on average 10% of young trees planted might die in their first year due to pests, disease or extreme weather.

Ask students – of the 25 trees in each plot, how many will survive the first year? Tell them to round their answer up. Students should use an eraser to rub out the number of dots (trees) that don't survive in their plot.

(Answer: 22.5. Round this up to 23, rub out two dots)

Task 3: Tree aftercare – thinning

As the trees grow, they need to be thinned. This means cutting some down to allow more space for the branches and roots of the remaining trees to grow.

In a plot of 25 trees the site manager says: At five years, 15% of the trees will need to be thinned – how many will be removed? Students should use an eraser to rub out the right number of dots in their plot. Tell them to round their answer down.

(Answer: 15% of 23 = 3.45. Round this down to three, rub out three dots.)

At 15 years, a further 15% of the trees will be thinned – how many will be removed? Students should use an eraser to rub out the right number of dots in their plot.

(Answer: 15% of 20 = 3. Rub out three dots)

At 20 years, another 15% of the trees will be thinned – how many will be removed? Students should use an eraser to rub out the right number of dots in their plot. Tell them to round their answer up.

(Answer: 15% of 17 = 2.55. Round this up to three, rub out three dots)

At 50 years, another 15% of the trees will be thinned. Students should use an eraser to rub out the right number of dots in their plot. Tell them to round their answer down.

(Answer: 15% of 14 = 2.1. Round this down to two, rub out two dots)

(Overall answer: out of 25 trees, 13 are thinned and 12 remain after 50 years.)

Plenary/evaluation (10 minutes)

To end the lesson, ask students to think of suitable locations where you can plant trees. They should use their maths knowledge to estimate how many trees they could plant in each location.

You can also ask students to look at our Tree Tools for Schools website. They can find out how to order free trees for your school and use our interactive planning tools to create a planting plan **treetoolsforschools.org.uk**

Extension

Students can further develop their maths skills by using a map of the local area to identify areas which need more trees. For example, fields, areas alongside roads or disused airfields.

Students could go on to use the knowledge they've gained in this activity to calculate how many trees could be planted there.