



UPPER PRIMARY BIOLOGY



TALL TREES

Supporting





EDUCATOR'S GUIDE

SESSION 1 TALL TREES

In this My Science Club session children will use their maths skills to estimate and measure the height of trees.

EQUIPMENT

QUANTITY	ITEM	NOTES
1 per pair	Pencil	Sticks can be used too - children can find these outside
1 per pair	Trundle wheel or measuring tape	If you're using measuring tapes you will need to show children how to use them end over end to measure a long distance.
1 per child	Printable 1	
1 per child	Clipboard	If you don't have clip boards children can lean on a book outside.

SESSION GUIDANCE

Get thinking (5 minutes)

Using slide 2 of the slideshow and working in trios:

How would you measure the height of a tree?

Think of as many ways to do it as you can.



TOP TIP

Estimating is a really difficult skill - give children lots of practice on familiar objects estimating height and distance.

Main Activity (50 minutes)

Activity 1 Estimating

Head outside and ask children to estimate the height of different objects - buildings, cars, fences, telegraph poles etc. Slides 3 & 4 of the slideshow provide support if needed.

Where possible measure the height to help give them some reference points.

Ask them to estimate some distances too.

***Is it easier to estimate the height of something, or the distance to something?
What can you use to make estimating easier and your estimates more accurate?***

Find some trees nearby and get the children to work in pairs to estimate the height of at least 1 tree. Record this on Printable 1.

Activity 2 Measuring - Method 1

Demonstrate the first method of measuring the height of the first tree then let your science clubbers try it. Slides 5-9 of the slideshow show the steps for this method and are summarised here:

- Walk away from the tree until you are the distance that you think the tree would reach if it was lying down.
- Turn with your back to the tree, bend over and look through your legs.

Can you see the top of the tree through your legs?

- Adjust your distance from the tree until you can see the top of the tree through your legs.
- Using a trundle wheel, or tape measure, measure the distance from where you are standing to the centre of the tree trunk. Record it on Printable 1.

Activity 2 - Measuring - Method 2

Demonstrate the second method of measuring the height of a tree then let pairs go and try it. Slides 10-15 of the slideshow show this method in steps and are summarised here:

- One person stands by the same tree.
- Person 2 holds a pencil up at arms length and slowly backs away from the tree until the pencil is the same height as the tree.
- Turn the pencil sideways and instruct the person standing by the tree to walk away from the tree. Tell them to STOP when they reach the end of the pencil.
- Measure the distance from the tree to the person who has walked away and that will be the same as the height of the tree.

Which method did you find easier? Which do you think was most accurate.

Activity 3 - Tree Drawings

Use the box on Printable 1 to draw an accurate picture of your first tree - really focus on the detail, the shapes of the branches and the shape of the crown.

Activity 4 - Improving accuracy

Using both method 1 and 2 again, find another tree and repeat the measuring activity.

Record on printable 1 in the second row on the table.

Which method do you find easiest?

Compare with another pair, did you get similar measurements?

Is one method more reliable than the other?

The Science (5 minutes)

This section is written with the educator in mind, use as appropriate to support children's understanding of the science.

Method 1 of measuring the tree height relies on constructing a right angle triangle where the other 2 angles are both 45° . When you do this the two straight sides are equal in length. So measuring the horizontal distance is the same as the vertical height of the tree.

Method 2 relies on perspective. As you move away from the tree it appears to get smaller, whereas the pencil stays the same. There comes a point at which the pencil is the same height as the tree. Turning the pencil to the horizontal then gives a distance away from the base of the tree that is equal to the height of the tree. Again measuring the horizontal distance will give the vertical height of the tree.

AGE GROUP: Upper Primary
SCIENCE: Biology
THEME: Tall Trees
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