



### Investigate tree colours

Discover why trees change colour in autumn and use your knowledge of light and physics to explore why leaves appear green.

Take your class on a trip to your local woods or park to see autumn colours. This will fulfil the **Visit a wood** challenge.

[www.woodlandtrust.org.uk/support-us/act/your-school/green-tree-schools-award/visit-a-wood/](http://www.woodlandtrust.org.uk/support-us/act/your-school/green-tree-schools-award/visit-a-wood/)

Worth two points on the award.



### Curriculum requirements KS3

#### Light waves

- Colours and the different frequencies of light, white light, and prisms; differential colour effects in absorption and diffuse reflection.

#### Learning outcomes

After completing this activity, students will:

- understand why tree leaves change colour in autumn
- be able to explain why we see tree leaf colours using physics.

#### 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 'Why do leaves change colour?'  
[www.woodlandtrust.org.uk/blog/2020/10/why-autumn-leaves-change-colour/](http://www.woodlandtrust.org.uk/blog/2020/10/why-autumn-leaves-change-colour/)



## 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 to observe tree colours – this is best done in autumn.



### In your school grounds or a local park

Alternatively, go into your school grounds or a local park as part of your lesson to observe tree colours.



### In the classroom

All parts of this activity can be done in class.

## Starter activity (10 minutes)

### Watch our video: Why do leaves change colour?

Discuss the following questions with your class:

- What is autumn tinting?
- When does colour change start happening?
- What causes colour change in leaves?
- Why do the leaves change yellow?
- What causes red leaf colour?



### Main activity (40 minutes)

Using their knowledge of light and physics, ask pupils to draw the visible portion of the electromagnetic spectrum ('ROYGBIV' – red, orange, yellow, green, blue, indigo, violet) showing the colours from lowest frequency to highest frequency.

Discuss why tree leaves appear green. (Leaves absorb more light from the red end of the visible spectrum. They reflect green light which makes them appear green.)

Ask students to draw a diagram showing a leaf and the light's angle of incidence and angle of reflection.

Explain why some tree leaves change colour in the autumn and why we see colours like red, orange and yellow.

### Plenary/evaluation (10 minutes)

Ask the class if they know of any other countries that have colourful leaves in the autumn? (For example, the USA, Canada and other temperate countries.)

Discuss why some countries do not have colourful leaves on trees in the autumn? (Answer: the tropics and polar regions do not have seasons like temperate countries.)

### Extension

Conduct a chromatography experiment using leaves.

Collect real leaves from different trees in your school grounds or local wood.

Crush them in water and set up a chromatography experiment for students to observe and note the different pigments in the leaves.

For full instructions and equipment, visit the Royal Chemistry Society website: [edu.rsc.org/experiments/leaf-chromatography/389](http://edu.rsc.org/experiments/leaf-chromatography/389).

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