

Science lesson – blood

(Approximately one hour)



Learning outcomes

- **All students will:** understand what a blood transfusion is, and that transfusions save lives every day; appreciate that many people require blood transfusions at some point in their lives; understand that medical advances mean the demand for blood transfusions is constant; be able to give active thought to becoming blood donors themselves.
- **Most students will:** know the functions of the parts of the blood; know that these are used for different purposes in different situations and give reasons for needing a blood transfusion; know that blood group is an inherited feature and that only certain groups are compatible with one another; understand the need for regular blood donation to meet demand.
- **Some students will:** understand the nature of some diseases that need blood transfusions; be able to explain why donors are needed from all ethnic backgrounds.

Starter activity (15 Min)



Take students through the [blood true and false quiz](#) on the website. This quiz recaps what students already know about blood, to address misconceptions, and to get them thinking about why someone might need a blood transfusion.

Whole class activity (15 Min)



Cue up the [blood PowerPoint presentation](#) from the website. Explain parts of the blood and their functions: red and white blood cells, plasma and platelets (see slides 1–5).



Explain blood donation and blood groups (see slides 6–8). The last slide (slide 9) is provided for a detailed explanation of blood types and antigens. You may wish to use the *blood type calculator* on www.blood.co.uk/pages/blood_type_calculator.html, although you should be sensitive to the issues it may throw up in relation to biological parents.

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(Continued)

Answers (sheet 2b):

1. All through the session, start to finish.
2. 23,000.
3. In case there is new information that might mean you can't give blood.
4. To check you can give informed consent and to make sure your blood will be safe.
5. You might have picked up an infection.
6. Pulse.
7. It's a legal requirement.
8. Carries oxygen from the lungs to the rest of the body.
9. For safety, to prevent any chance of infection passing between donors.
10. British Bone Marrow Registry.
11. About 10 minutes.
12. Stops blood from clotting.
13. Red cells, platelets, white cells and plasma.
14. Three times a year.
15. Road accidents or operations.
16. The liquid in which blood cells are suspended.



Whole class activity (15 Min)

By working through this exercise, students apply their scientific knowledge and understanding to an unfamiliar situation (a blood donation session). Through this, the process of giving blood is demystified and demonstrated to be safe and routine.

Issue **Activity sheet 2** (pages 14–15). There are two versions of this Activity sheet available for differing ability levels; sheet 2a is suitable for low-mid ability or younger students, sheet 2b is for more able students.

In pairs, using either the whiteboard or networked computer stations, students go through the **Virtual Blood Donation Session** step-by-step.

Pairs swap answers. Work through them as a class, marking as you go.

Plenary (10 Min)

Recap of main points:

- What is the most interesting new thing you've learned in this lesson?
- What are the four parts of blood?
- Name some situations when you would need a blood transfusion. Why are more blood donors needed, and why are regular donors especially valuable?
- Who thinks they will become donors when they're 17?
- Explain the **Pledge** on the website.
- How can you register as a blood donor?



Extension/homework activities

You can use these extension activities as the basis for a follow up lesson, or as a homework task to consolidate learning.

- **Blood money:** Should people be paid for their blood? List the pros and cons. What do you think? (suits all abilities).
- **Frontiers of science:** Research synthetic blood. What would be the advantages? What success has there been? Why is it such a difficult issue? (suits higher ability).

To reinforce learning about blood groups, work through the **blood extension Activity sheet** which can be downloaded from the website. **Tip:** There is a number of possible solutions to this activity. Type O patients can only receive donations of Type O blood, so these people should be matched first. Sickle cell anaemia needs red blood cells and haemophilia needs platelets.

