Blood is the link between every cell in your body. Working together with the heart, lungs, muscles, brain, and digestive system, blood transports oxygen and nutrients everywhere they are needed. Blood also shuttles the waste products produced by cells to places in the body where the waste can be eliminated.

Blood is part of your body’s circulatory system. This system includes the heart, which pumps blood throughout the body, and the blood vessels, such as the arteries and veins. Blood leaves your heart through the arteries. Tiny vessels called capillaries (KAP-ih-LAIR-eez) allow blood to reach each cell and connect the arteries to the veins, which return blood to the heart.

A. Judging by the direction that the blood is flowing in the diagram, label the artery, capillary, and vein.

B. Name the two main functions of blood.

1. 

2. 
Weekly Question

How do people give blood without running out of it?

Blood is a liquid connective tissue made of cells suspended in a watery fluid called plasma. Plasma brings dissolved nutrients to cells and carries the cells’ waste products away.

Blood contains three types of cells. Red blood cells, which give blood its color, account for 99% of all blood cells. Red blood cells transport oxygen to all body cells. White blood cells, on the other hand, are far fewer in number but have the important job of attacking infection. Platelets, which are the third type of blood cell, are not really cells at all but are fragments of larger blood cells. These small, irregularly shaped bodies collect at the site of an injury and help blood to clot, or form a scab.

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Vocabulary

plasma
PLAZ-muh
fluid containing dissolved nutrients and waste

platelets
PLAYT-lits
particles in blood that help make blood clot

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Answer the questions.

1. Which part of your blood transports nutrients?

2. Which cells help you get over a cold?

3. Which cells help heal a cut?

4. Why is blood red?

5. What would happen to someone without platelets?
Weekly Question

How do people give blood without running out of it?

Blood is essential for life. So what happens when we lose blood? Our bodies actually lose blood all the time—not just from cuts and injuries, but also because blood cells in the body live only for a few days or, at most, a few months. Because of this, our bodies are continuously producing new blood.

Blood cells start out as stem cells located in your bone marrow. Bone marrow is a spongy, gel-like material inside certain bones, such as your leg and hip bones. Bone-marrow stem cells become the red blood cells, white blood cells, and blood platelets you need to stay healthy. More than 100 billion new blood cells are created in the bone marrow every day.

A. Write true or false.

1. Plasma starts out as stem cells. _______________________

2. Bone marrow is contained in all the bones of the body. _______________________

3. Blood cells can die after a few days. _______________________

B. If the body makes 100 billion new blood cells each day, approximately how many blood cells can it make each hour? _______________________

C. Use words from the passage to complete the sentence.

Bone ________ contains _________ cells, which become _________ cells.
**Weekly Question**

**Day 4**

**How do people give blood without running out of it?**

Even though blood is constantly replenished in the body, losing too much blood suddenly can endanger a person’s life. That’s why people donate blood, which can be stored and used for such emergencies.

The human body contains about 5 quarts of blood. Blood donors typically give 1 unit, which is about 1 pint, or 10% of the blood they have. Their body is able to replace the blood fairly quickly. Liquid plasma is fully restored within a day or two. The blood cells take a few weeks to regenerate in the bone marrow and return to normal levels.

Donating blood gives the gift of health. For some people, it is the gift of life.

Use the chart to answer the questions about how donated blood is used.

<table>
<thead>
<tr>
<th>Reason for Needing Blood</th>
<th>Red blood cells</th>
<th>Platelets</th>
<th>Plasma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident</td>
<td>4–100 units</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Liver transplant</td>
<td>10–40 units</td>
<td>10–30 units</td>
<td>20–25 units</td>
</tr>
<tr>
<td>Open-heart surgery</td>
<td>2–6 units</td>
<td>1–10 units</td>
<td>2–4 units</td>
</tr>
<tr>
<td>Cancer treatment</td>
<td>10–20 units</td>
<td>10–15 units</td>
<td>none</td>
</tr>
</tbody>
</table>

1. Which part of donated blood is most frequently used? __________

2. Which medical event can require the most units of blood? __________

3. How many total units of blood parts does a liver transplant require? __________

4. What is the minimum number of blood parts needed for open-heart surgery? __________