

What is Blood Composition?

Worksheet

Blood is about 55% plasma (water, proteins, salts) and 45% formed elements: red blood cells (oxygen transport), white blood cells (immunity) and platelets (clotting).

Questions

1. What percentage of whole blood is typically plasma?
A) 25%
B) 45%
C) 55%
D) 90%
2. Which blood cell type carries oxygen?
A) White blood cells
B) Platelets
C) Red blood cells
D) Plasma proteins
3. Which formed element is responsible for immune defense?
A) Red blood cells
B) White blood cells
C) Platelets
D) Plasma
4. What is the main function of platelets?
A) Carrying oxygen
B) Fighting infection
C) Blood clotting
D) Transporting hormones
5. A blood sample is centrifuged. If it contains 55% plasma, what percentage is formed elements?
6. A healthy adult has about 5,000,000 red blood cells per microliter (L) of blood. If a 5-liter blood volume is assumed, roughly how many RBCs are there in total?
7. A patient's white blood cell count is 12,000 cells/L. The normal range is 4,500-11,000 cells/L. What does this suggest?
8. Define: What are the two main components of blood?
9. Define: What is the main job of red blood cells (erythrocytes)?
10. Define: What do white blood cells (leukocytes) do?

Answer Key

1. C) 55% - Plasma makes up about 55% of whole blood volume; formed elements make up about 45%.
2. C) Red blood cells - Red blood cells (erythrocytes) contain hemoglobin, which binds and transports oxygen.
3. B) White blood cells - White blood cells (leukocytes) identify and fight pathogens as part of the immune system.
4. C) Blood clotting - Platelets clump together and trigger clotting factors to stop bleeding at an injury site.
5. Whole blood = plasma + formed elements = 100% Formed elements = 100% 55% = 45% So 45% is red blood cells, white blood cells and platelets.
6. 5 liters = 5,000,000 L RBCs per L 5,000,000 Total RBCs 5,000,000 5,000,000 = 2.5 10 cells This matches the commonly cited figure of ~25 trillion red blood cells in an adult.
7. Compare 12,000 to the normal range 4,500-11,000 12,000 > 11,000, so the count is above normal This condition is called leukocytosis and often signals infection or inflammation.
8. Plasma (the liquid part, ~55%) and formed elements (blood cells and platelets, ~45%).
9. They carry oxygen from the lungs to tissues using hemoglobin, and help return carbon dioxide.
10. They defend the body against infection and disease as part of the immune system.

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