

# ACT Science Passage

The ACT has English, Math, Reading, Science, and Writing sections. The Science section is designed to test your ability to read and interpret charts and graphs, as well as draw conclusions about data.

Bottom line—you should know that you don't need to be a science guru in school in order to earn a strong score on the ACT Science test.

Naturally occurring antigens on the membranes of red blood cells are responsible for many of the chemical differences among blood types. The ABO blood group is the most widely known of the inherited immune systems. The antigen content and the immune response of a blood cell is identified by its blood group name. A number of studies have been conducted to determine the frequency of specific antigens in various populations. The data from one of these studies is presented below.

DISTRIBUTION BY BLOOD GROUP (%)				
POPULATION	A	B	AB	O
Western European (Spain)	44.1	8.2	3.4	44.3
South American (Peru)	4.0	1.6	0.0	94.4
Native American (Hopi)	30.1	0.7	0.0	69.2
European American	38.7	11.6	4.4	45.3
Eurasian (Ukraine)	34.1	24.3	7.1	34.5
Asian (Okinawa)	36.4	20.4	8.7	34.5
African American	27.5	19.1	4.8	48.6
African (Congo)	26.0	18.7	4.2	51.1

**Table 1**

11. According to the chart, which of the following populations shows the greatest degree of uniformity regarding its blood group?
- A. Eurasian (Ukraine)
  - B. Western European (Spain)
  - C. South American (Peru)
  - D. European American
12. Based on information in the chart, the Asian (Okinawa) population has a blood group frequency most similar to which of the following populations?
- F. Native American (Hopi)
  - G. South American (Peru)
  - H. Western Europe (Spain)
  - J. Eurasian (Ukraine)
13. A researcher wishes to test her hypothesis that the incidence of AB-type blood is lower in the Americas than in other parts of the world. Which of the following approaches would be most effective in testing her theory?
- A. Resampling the groups listed in Table 1 to eliminate measurement errors.
  - B. Sampling blood from first generation immigrants to the Americas.
  - C. Sampling blood from as many people and regions as is possible and noting data on national or regional origin.
  - D. Studying the effects of ethnic migrations on national health systems.
14. Which of the following statements best characterizes the relationships among the blood types according to Table 1?
- F. AB is present only when the incidence of O is less than 66.6% and the incidence of A is at least 25%.
  - G. AB is present only when the incidence of O is less than 50% and the incidence of B is at least 5%.
  - H. AB is not present when the incidence of B is less than 10%.
  - J. AB is not present outside of Peruvian and Hopi populations.
15. When comparing the frequency of group A to that of group O, group A occurs:
- A. always less frequently.
  - B. as frequently.
  - C. more frequently.
  - D. less frequently except in Asian (Okinawa) populations.