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PASSAGE 18
Volts from the Sky
Lightning has caused awe and wonder since old times. Although Benjamin Franklin demonstrated lightning as enormous electrical discharge more than 200 years ago, many puzzles still surround this powerful phenomenon. Lightning is generated when electrical charges separate in rain clouds, though processes are still not fully understood. Typically, positive charges build at the cloud top, while the bottom becomes negatively charged. In most instances of cloud-to-ground lightning, the negatively charged lower portion of the cloud repels negatively charged particles on the ground's surfaces, making it become positively charged. The positive charge on the ground gathers at elevated points. A flow of electrons begins between the cloud and earth. When the voltage charge becomes large enough, it breaks through the insulating barrier of air, and electrons zigzag earthward. We see the discharge as lightning. Lightning can occur within a cloud, between clouds, or between clouds and the ground. The first variety, intra-cloud lightning, is the most frequent but is often hidden from our view. Cloud-to-ground lightning, making up about 20 percent of lightning discharges, is what we usually see. Lightning comes in several forms, including sheet, ribbon, and ball. Intra-cloud lightning can illuminate a cloud so it looks like a white sheet, hence its name. When cloud-to-ground lightning occurs during strong

winds , they can shift the lightning channel sideways , so it looks like a ribbon. The average lightning strike is more than 3 miles long and can travel at a tenth of the speed of light. Ball lightning , the rarest and most mysterious form , derives its name from the small luminous ball that appears near the impact point , moves horizontally , and lasts for several seconds. Thunder is generated by the tremendous heat released in a lightning discharge. Temperatures near the discharge can reach as high as 50 , 000 ° F within thousandths of a second. This sudden heating acts as an explosion , generating shock waves we hear as thunder. About 2 , 000 thunderstorms are occurring in the world at any time , generating about 100 lightning strikes every second , or 8 million daily. Within the United States , lightning strikes are estimated at 20 million a year , or about 22 , 000 per day. You have a 1-in-600 , 000 chance of being struck by lightning during your lifetime. Lightning can strike twice or more in the same spot. The Empire State Building in New York is struck by lightning about two dozen times annually. You can measure how far you are from a lightning strike by counting the seconds between viewing the flash and hearing the bang , and then dividing by five. This approximates the mileage.

练习 : 1-4题的要求是 , 从第一个方框的六个选项A、 B、 C、 D、 E、 F中选出四个选项为注明的段落各配一个合适的小标题。 5-8题的要求是 , 从第二个方框的六个选项A、 B、 C、 D、 E、 F中选出四个选项完成每个句子。

1. Paragraphs 2 and 3 2. Paragraph 4 3. Paragraph 5 4. Paragraph 6

A Cloud-to-ground lightning occurring in the U.S. B Types of lightning C Cause of lightning D Differences

between thunder and thunderstorm E Frequencies of thunderstorms occurring in the world and the U.S. F Shock waves as thunder 5. In most cases of cloud-to-ground lightning , the ground s surface ... 6. One form of lightning that ... is ball lightning ... 7. Cloud lightning looks like a ribbon when its lighting channel ... 8. Although not fully understanding processes of lightning , man ... A occurs most infrequently. B is shifted sideways by strong winds. C is often hidden from our view. D is equipped with a good knowledge of various forms of lightning . E is estimated at 20 millions a year. F is positively charged. KEYS : CBFE FABD 100Test 下载频道开通 , 各类考试题目直接下载。详细请访问 www.100test.com