THE SAHARA

The Sahara is the largest hot desert in the world, and the third largest desert behind Antarctica and the Arctic, which are both cold deserts. The Sahara is one of the harshest environments on Earth, covering 3.6 million square miles (9.4 million square kilometers), nearly a third of the African continent, about the size of the United States (including Alaska and Hawaii). The Sahara is bordered by the Atlantic Ocean on the west, the Red Sea on the east, the Mediterranean Sea on the north and the Sahel Savannah on the south. The enormous desert spans 11 countries: Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Western Sahara, Sudan and Tunisia.

The Sahara desert has a variety of terrains, but is most famous for the sand dune fields that are often depicted in movies. The dunes can reach almost 600 feet (183 meters) high but they cover only about 15 percent of the entire desert. Other topographical features include mountains, plateaus, sand- and gravel-covered plains, salt flats, basins and depressions. Mount Koussi, an extinct volcano in Chad, is the highest point in the Sahara at 11,204 feet (3,415 m), and the Qattara Depression in Egypt is the Saraha's deepest point, at 436 feet (133 m) below sea level.

Water is scarce across the entire region, yet the Sahara contains two permanent rivers (the Nile and the Niger), at least 20 seasonal lakes and huge aquifers, which are the primary sources of water in the more than 90 major desert oases. Water management authorities once feared the aquifers in the Sahara would soon dry up due to overuse, but a study published in the journal Geophysical Research Letters in 2013, discovered that the "fossil" (nonrenewable) aquifers were still being fed via rain and runoff.

Despite the harsh, arid conditions of the desert, several plants and animals call the region home. There are approximately 500 species of plants, 70 known mammalian species, 90 avian species and 100 reptilian species that live in the Sahara, plus several species of spiders, scorpions and other small arthropods, according to World Wildlife Fund. Camels are one of the most iconic animals of the Sahara. The large mammals are native to North America and eventually made their way across the Bering Isthmus between 3 and 5 million years ago, according to a study in the Research Journal of Agriculture and Environmental Management in 2015. Camels were domesticated about 3,000 years ago on the Southeast Arabian Peninsula, to be used for various purposes, one of which is transportation in the desert, according to the University of Veterinary Medicine, Vienna. Plant species in the Sahara have adapted to the arid conditions, with roots that reach deep underground to find buried water sources and leaves that are shaped into spines that minimize moisture loss. The most arid parts of the desert are completely void of plant life, but oasis areas, such as the Nile Valley, support a large variety of plants.

For the past 2,000 years or so, the climate of the Sahara has been fairly stable. The northeastern winds dry out the air over the desert and drive hot winds toward the equator. These winds can reach exceptional speeds and cause severe dust storms that can drop local visibility to zero. Dust from the Sahara travels on trade winds all the way

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to the opposite side of the globe. Precipitation in the Sahara ranges from zero to about 3 inches of rain per year, with some locations not seeing rain for several years at a time. Occasionally, snow falls at higher elevations. Daytime summer temperatures are often over 100 degrees Fahrenheit (38 degrees Celsius) and can drop to near-freezing temperatures at nighttime.

The Sahara alternates from being a dry, inhospitable desert to a lush, green oasis about every 20,000 years, according to a study published in the journal Science Advances in 2019. The study's authors examined marine sediments containing dust deposits from the Sahara from the past 240,000 years. The team found that the cycle between a dry and a green Sahara corresponded to the slight changes in the tilt of Earth's axis, which also drives monsoon activity. When the Earth's axis tilted the Northern Hemisphere just a single degree closer to the sun (about 24.5 degrees instead of today's 23.5 degrees), it received more sunlight, which increased the monsoon rains and therefore, supported a lush green landscape in the Sahara.

The area of the Sahara desert has grown nearly 10 percent since 1920, according to a 2018 study published in the Journal of Climate. While all deserts, including the Sahara, increase in area during the dry season and decrease during the wet season, human-caused climate change in conjunction with natural climate cycles, are causing the Sahara desert to grow more and shrink less. The study's authors estimated that approximately a third of the desert's expansion was due to human-made climate change.

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Questions 8-13

Do the following statements agree with the information given in the **Reading Passage 1**?

In boxes **8-13** in your answer sheet, write

TRUE	If the statement agrees with the information
FALSE	If the statement contradicts with the information
NOT GIVEN	If there is no information on this

8. The Sahara is larger than any other hot deserts across the globe.
9. Despite the scarcity of water in the Sahara, there are rivers and lakes that are filled with water all year round.
10. Spiders, scorpions and some arthropods in the Sahara are smaller than those in other places.
11. Ancient Arabian people are believed to have recently used camels for transportation.
12. Dust storms in the Sahara are so severe that people nearby can hardly see anything.
13. The earth is unlikely to tilt closer to the Sun in many thousand years to come.

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