Eiffel Tower

A Reading A–Z Level U Leveled Book
Word Count: 1,324

Connections

Writing

Imagine being one of the three hundred protesters trying to stop the construction of the Eiffel Tower. Write a persuasive essay to the committee of the World's Fair explaining why this structure should not be built.

Social Studies

Choose another famous world landmark. Create a Venn diagram comparing and contrasting this landmark with the Eiffel Tower.

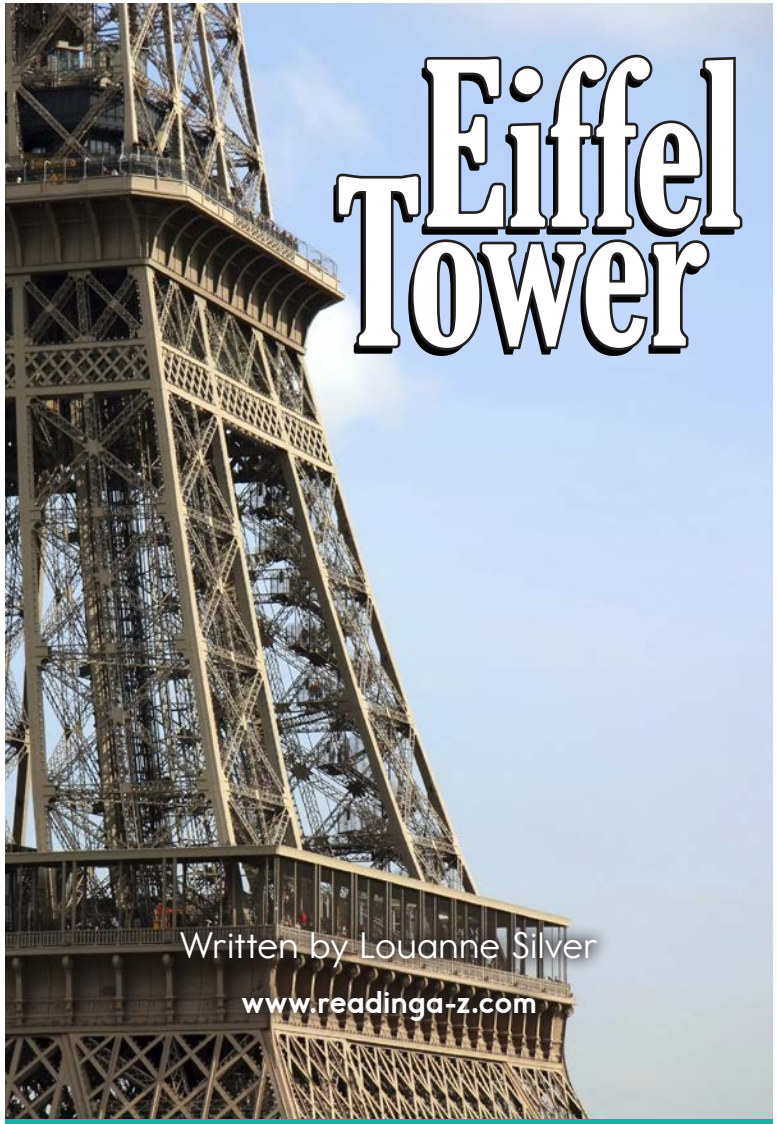
LEVELED BOOK • U

Eiffel Tower

WORLD LANDMARKS

Written by Louanne Silver

www.readinga-z.com



Focus Question

What makes the Eiffel Tower an appealing landmark to visit?

Words to Know

achievement	landmarks
angle	panoramic
architect	plunging
collapse	replicas
engineer	structure
installed	surpassed

Front and back cover: A view of the Eiffel Tower from the Champ de Mars

Title page: Restaurants and shops are located on the first and second levels of the Eiffel Tower.

Page 3: Nearly seven million visitors each year enjoy the Eiffel Tower's wonderful views.

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Correlation

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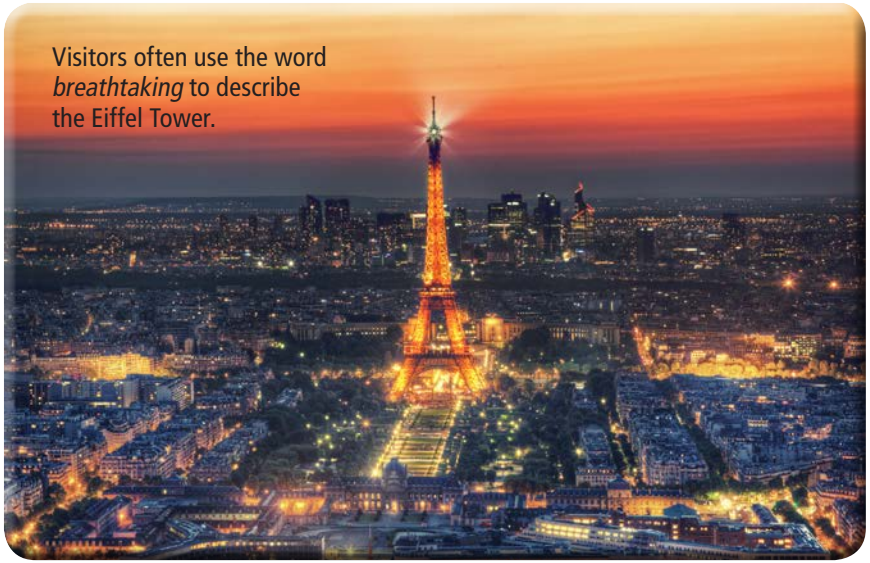


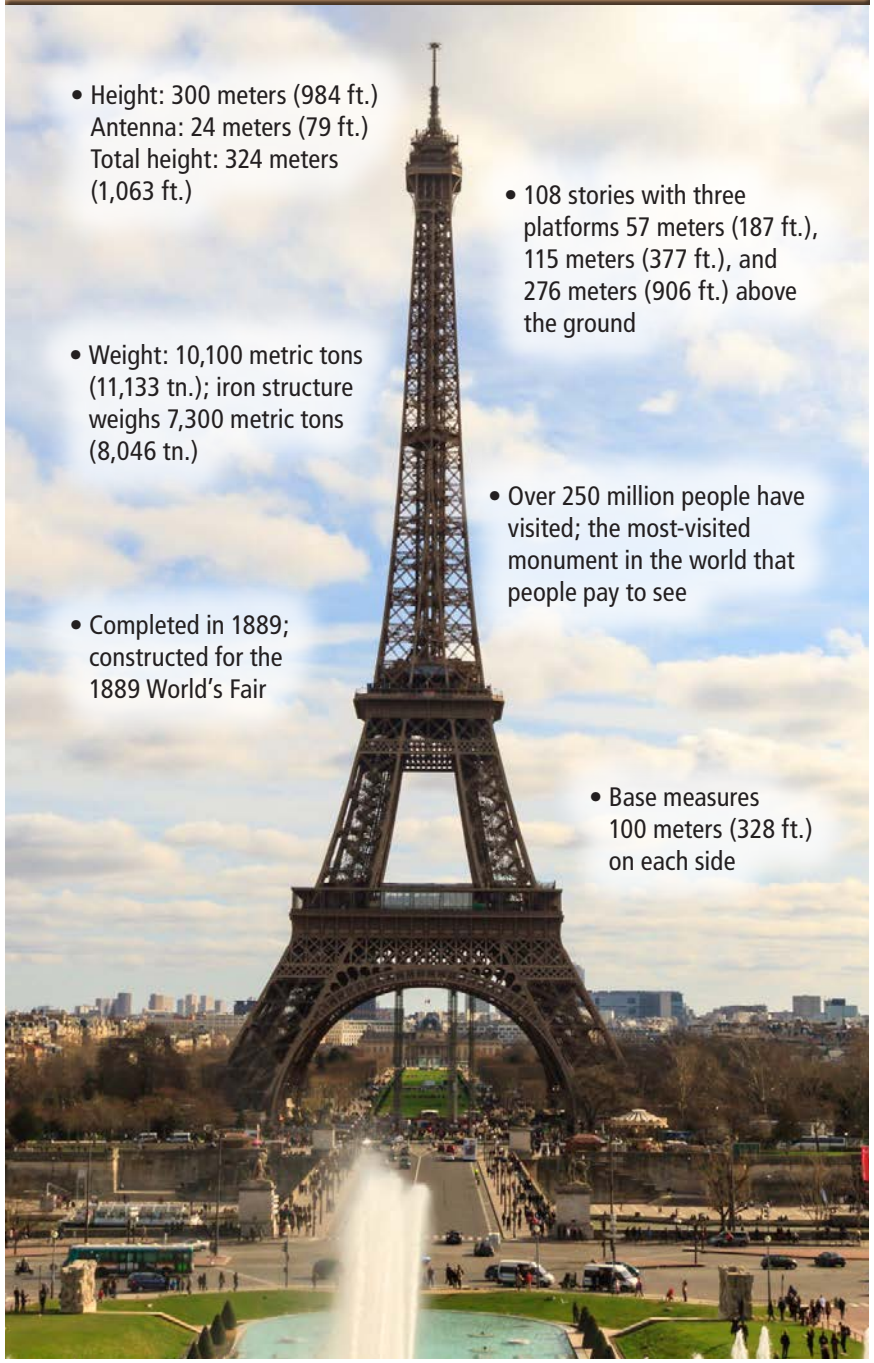
Visitors often use the word *breathtaking* to describe the Eiffel Tower.

A Dream Come True

Over 125 years ago, four men had a wild idea. They wanted to build the tallest **structure** in the world—one that would measure 300 meters (984 ft.) in height. They planned to build it out of more than 18,000 pieces of metal and use 2.5 million metal pins, called *rivets*, to hold the pieces together. The four men claimed that their structure would be both attractive and strong enough to stay standing in high winds. Many people thought their dream was impossible, and others said that the structure would look ridiculous.

That structure was neither impossible nor ridiculous. Today, it's one of the best-known and most-loved **landmarks** in the world. It's the Eiffel Tower.

The Eiffel Tower

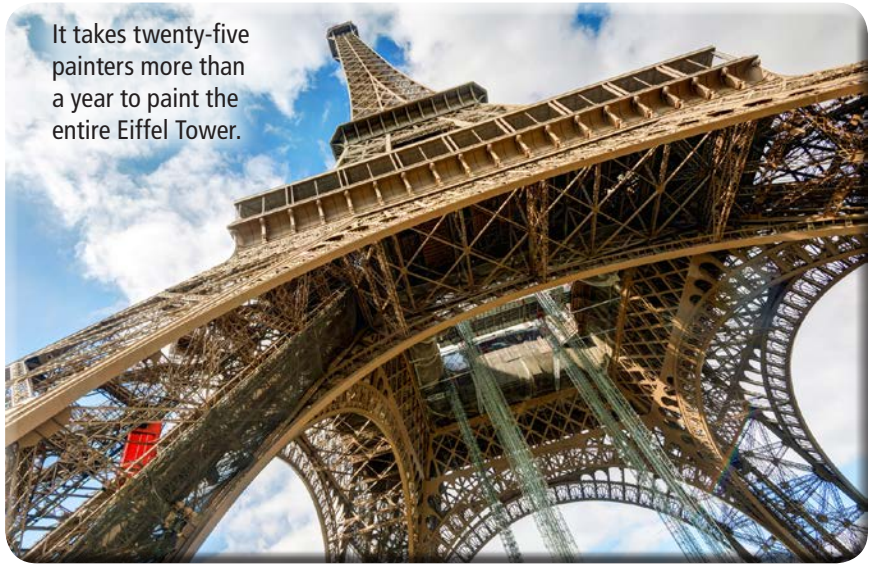


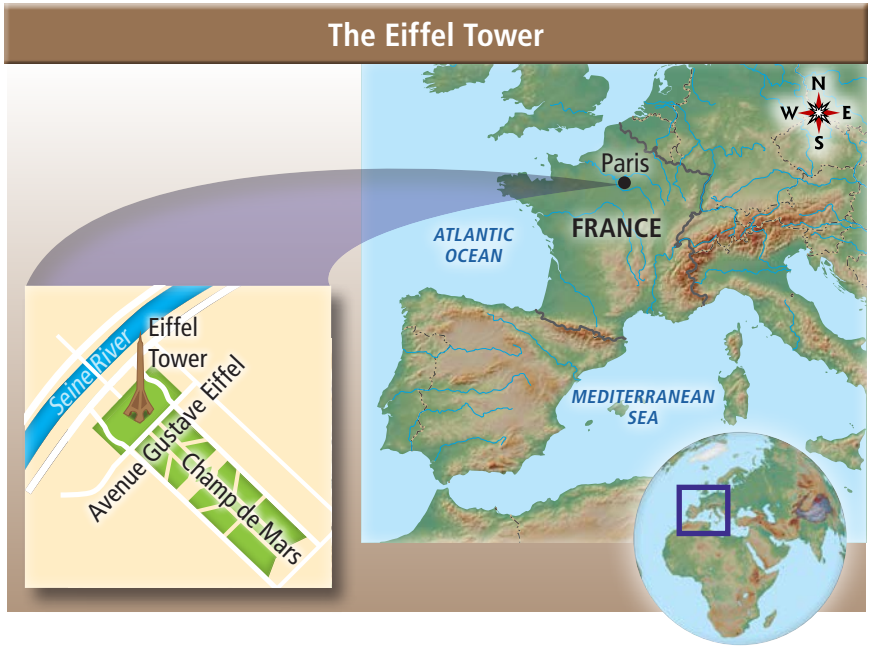
Standing Tall

When the Eiffel Tower was finished in 1889, it was the tallest structure ever built. That record stood until 1930, when New York's Chrysler Building **surpassed** it. Since then, a handful of other buildings have claimed that honor.

Even so, the Eiffel Tower is quite remarkable. Four gigantic support beams, which make up the legs, gently curve toward each other to form a single tower at the top. The metal is wrought iron, which is very strong yet easy to shape.

Workers paint the Eiffel Tower every seven years. The tower's color has changed from dark red to dark yellow to brown and most recently to bronze.


It takes twenty-five painters more than a year to paint the entire Eiffel Tower.



Towering Above Paris

The Eiffel Tower is in Paris, the capital of France. It was built for the 1889 World's Fair, which marked the hundredth anniversary of the French Revolution. The tower is on the south bank of the Seine (SEN) River at one end of a large park called the Champ de Mars (shahm duh MARS). People come from around the world to enjoy the huge landmark as well as many nearby attractions.

Art and culture surround the Eiffel Tower. That part of Paris has museums, gardens, fountains, ponds, palaces, monuments, and cultural centers. Upscale hotels, restaurants, and stores are also found in the area. Old and new blend together, and the Eiffel Tower rises above it all.

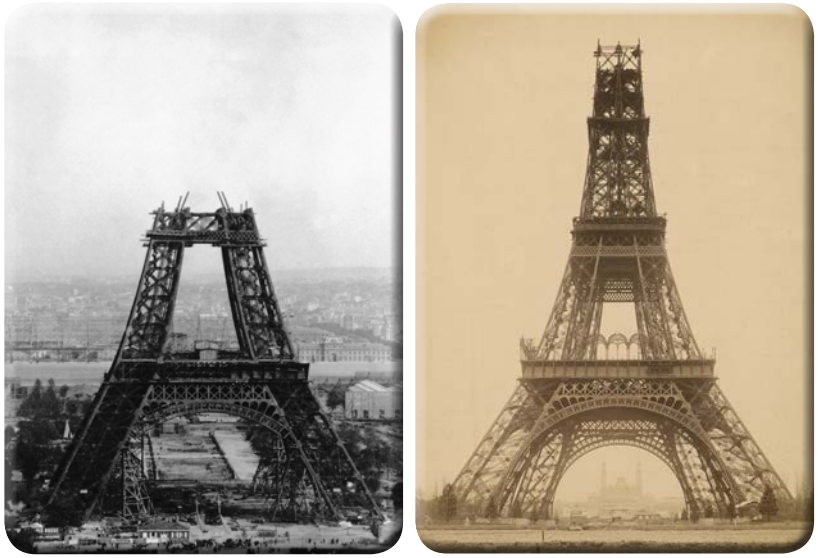
Before building the Eiffel Tower, Gustave Eiffel (1832–1923) designed hundreds of metal structures around the world, including a railway station, an observatory, and many bridges.

A Bold Dream

The Eiffel Tower was named for Gustave Eiffel (eh-FEL in French), a French civil **engineer** who had worked on the Statue of Liberty. However, the original drawings for the tower were the work of Maurice Koechlin (mor-EES kay-KLAHN) and Emile Nouguier (ay-MEEL NOO-gee-ay), the chief engineers for Eiffel's company. They entered the tower's design in a contest for a decorative structure for the 1889 World's Fair. They designed a very tall tower made of four slightly curved iron beams constructed of crossed metal strips called *latticework*. Horizontal metal beams would join the four main beams along the four sides of the structure. Eiffel's company already knew how to build tall bridges. However, building a structure 300 meters (984 ft.) tall would be a daring **achievement**. They brought in a French **architect** named Stephen Sauvestre (stay-FAHN soh-VES-truh) to make sure the tower would be attractive as well as structurally solid.

Their design was chosen over 106 other projects, and construction soon began. Ground was broken on January 26, 1887, and the huge structure was completed just over two years later, on March 31, 1889.

The tower is made up of 18,038 pieces of wrought iron weighing 7,300 metric tons (8,046 tn.). Eiffel used latticework wrought iron because he wanted to prove that metal, which weighs less than stone, could be just as strong. Sections of the tower were assembled with bolts by over one hundred workers at Eiffel's factory. Then the sections, which measured about 5 meters (16 ft.) in length, were taken to the construction site.



In July 1888, the second horizontal section of the tower was in place (left). By late November, the tower was nearing completion (right).

At the site, workers replaced the bolts with special rivets that were heated up before being **installed**. The rivets shrank after cooling, which made for a very tight fit. A total of 2.5 million rivets were used, each one installed by a team of four workers. Up to three hundred men worked at the site while the tower was being constructed.

The foundation, or base, on which the tower sits is made of stone and cement, and rests on a layer of gravel. It was set at an exact **angle** to make sure it would stay in place in case of strong winds. Workers took special care to make each level flat before building on top of it. They used temporary wooden platforms called *scaffolds* and small steam cranes to assemble the tower. For the technology of the time, the methods and speed of construction made the Eiffel Tower an amazing example of engineering.

Wowser!

- On hot days, the part of the Eiffel Tower in sunlight expands more than the shaded part. As a result, the tower leans up to 18 centimeters (7 in.).
- A single elevator in the Eiffel Tower travels about 103,000 kilometers (64,000 mi.) each year. That distance is equal to two and a half trips around the equator.

The World's Fair, a celebration of French achievements, was held from May 6 to October 31, 1889. Over eighty structures on the Champ de Mars held exhibits from Europe, as well as North and South America.

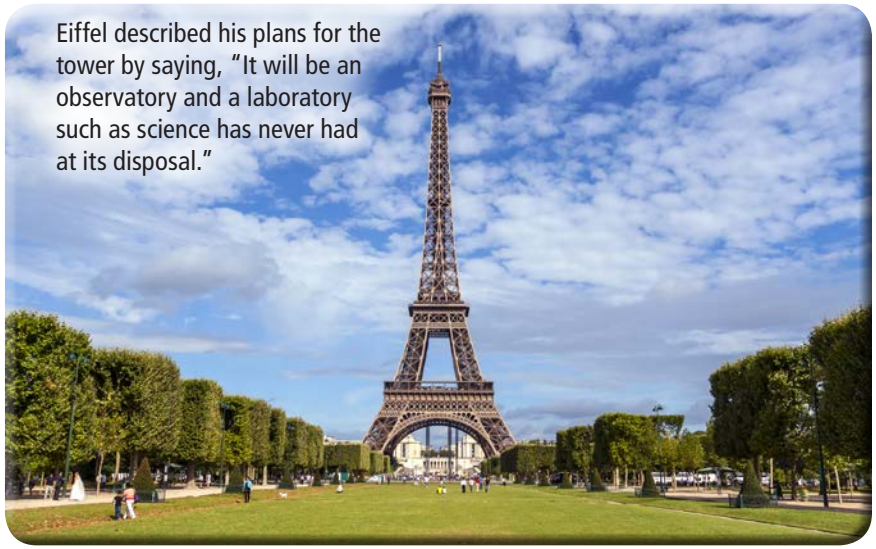
Objections

Gustave Eiffel and his team were convinced that their design would work, but not everyone agreed. Some people thought that a tower that tall would not handle the wind well. One math professor said that strong winds would cause even a shorter tower to **collapse**.

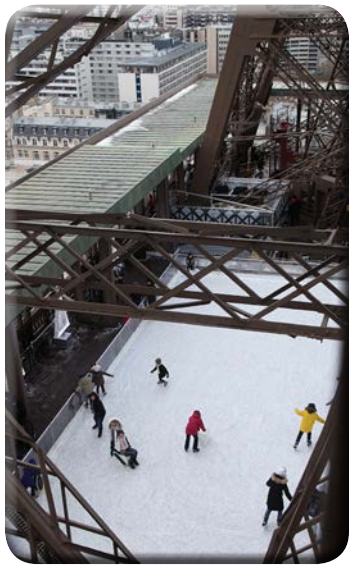
Other people had a different concern. After construction began, a group of three hundred artists, writers, and architects tried to have the project stopped. They thought the tower would look ridiculous and would harm the Paris skyline in the same way that a huge black smokestack would. Fortunately, the people in charge of the World's Fair didn't pay attention to the objections. The tower was finished just over a month before the event began.

People were amazed and delighted when they visited the tower at the World's Fair and afterward. Since the tower was built for a special event, it was supposed to be torn down after twenty years, but Eiffel wanted to make sure that didn't happen. He made the tower valuable to scientists so it would continue to have a purpose. The day after the tower was first open to the public, Eiffel installed a weather laboratory with barometers, wind gauges, and other instruments. He invited scientists to use the lab, and he also used it for his own experiments.

The tower began to be used for radio signals in 1909 and for early experiments in television in 1925. The Eiffel Tower now has 120 radio and television antennas.



Eiffel described his plans for the tower by saying, "It will be an observatory and a laboratory such as science has never had at its disposal."



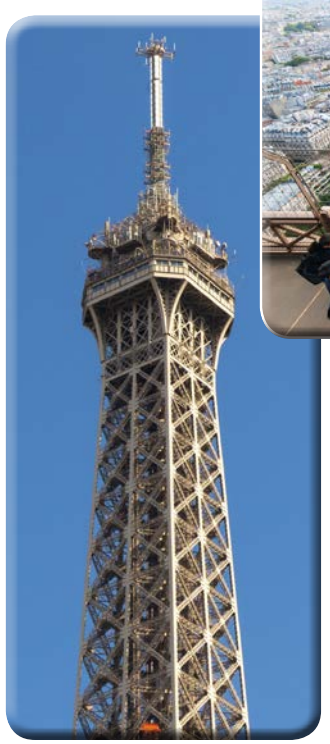
The first and second floors offer many attractions, including souvenir shopping, dining, and an ice-skating rink 57 meters (187 ft.) above Paris.

Touring the Tower

Each floor of the Eiffel Tower has its own attractions. The first floor—57 meters (187 ft.) above the ground—has a glass floor that makes it seem as though visitors are walking on air. That floor also has interactive displays about the tower and shows with views of the city projected onto three walls. In addition, it has restaurants and shops as well as a piece of the original spiral staircase to Eiffel's office. Since 2004, the first floor has also featured an ice-skating rink every winter.

The second floor—115 meters (377 ft.) high—has souvenir shops, restaurants, and "story windows" that describe the tower's construction. A glass window offers a **plunging** view down to ground level.

Visitors can enjoy great views of the Eiffel Tower from many different angles by riding in a glass elevator. At the top—276 meters (906 ft.) above the ground—is a stunning view of Paris. Two levels, one covered and the other uncovered, allow people to enjoy the view day or night in any weather. Gustave Eiffel's restored office is also on the top floor, as well as **panoramic** maps with directions and distances to other big cities. All three floors of the tower offer many opportunities for outstanding photos.



At the top of the Eiffel Tower, visitors enjoy a grand view of Paris. They can also see Eiffel's restored office with wax figures of Gustave Eiffel (right) in conversation with Thomas Edison (left).

The "Countdown to the Year 2000" event at the Eiffel Tower was televised around the world.

A Gift to the World

If Gustave Eiffel and his team were alive today, they would no doubt be pleased that their engineering wonder has brought so much joy to people around the world. Almost seven million people visit the Eiffel Tower each year. It's been an important part of the plot in dozens of novels and movies, and it has inspired over thirty **replicas**. The tower is also the site of dazzling light and fireworks shows, including an amazing one to celebrate the beginning of the year 2000.

If you're lucky enough to travel to Paris, you can't possibly miss seeing this famous landmark, which is visible from nearly every part of the city. It continues to soar over Paris, just as Mr. Eiffel intended.

Glossary

achievement *(n.)* an accomplishment reached as a result of effort (p. 8)

angle *(n.)* two lines that meet at a point (p. 10)

architect *(n.)* a person who designs buildings (p. 8)

collapse *(v.)* to fall apart or fall down (p. 11)

engineer *(n.)* a person who designs, builds, or repairs machines, buildings, bridges, or other structures (p. 8)

installed *(v.)* added a piece of equipment or software so it was ready to use (p. 10)

landmarks *(n.)* important historical buildings or sites; objects on land that mark places (p. 4)

panoramic *(adj.)* having a complete view in every direction (p. 14)

plunging *(adj.)* relating to a rapid fall or a steep slope (p. 13)

replicas *(n.)* copies or reproductions of something (p. 15)

structure *(n.)* something built from a collection of parts, such as a building or bridge (p. 4)

surpassed *(v.)* went beyond, exceeded, or became better or stronger than someone or something else (p. 6)