

LEVELED BOOK • V

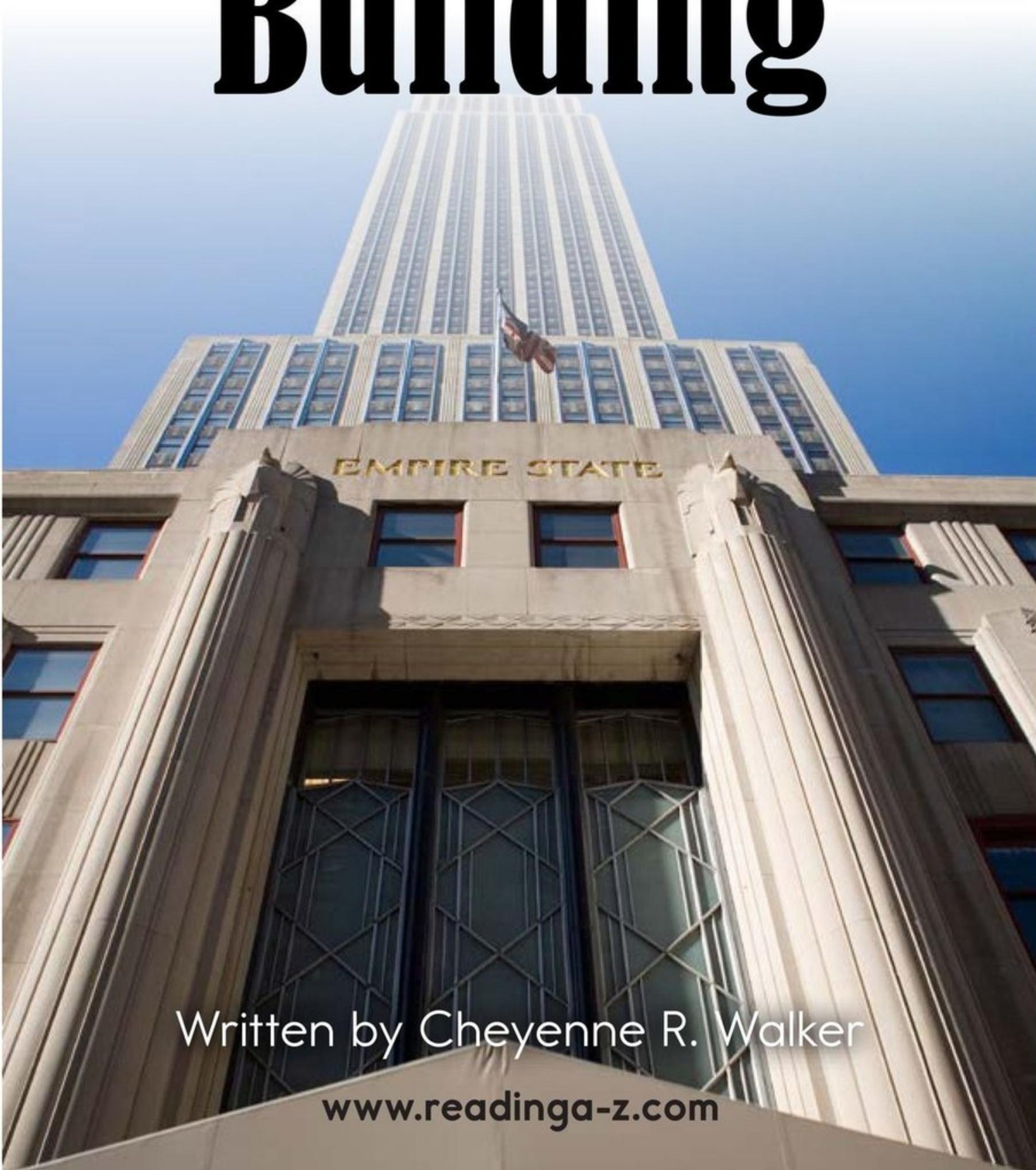
Empire State Building



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Focus Question

What makes the Empire State Building
an important building?

Words to Know

architect

art deco

barges

bedrock

cafeterias

construct

demolish

invest

rivets

skyscraper

spire

steel

Front and back cover: The lights on the Empire State Building change colors nearly every day.

Title page: The Fifth Avenue entrance to the Empire State Building is a perfect example of art deco design.

Page 3: Many people go to the observation floor to view beautiful sunsets.

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World Landmarks
Level V Leveled Book
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The Empire State Building is near the middle of Manhattan Island—at 350 Fifth Avenue in New York City.

A Landmark Scraps the Sky

Where can you go stargazing in the afternoon? You can go to the top of the Empire State Building in New York City!

Tourists, New Yorkers, and, yes, stars—famous recording artists and television and movie actors—go there to delight in the awesome view from the observatory.

Since the Empire State Building was built in 1930 and 1931, it has been an internationally famous landmark. It was the tallest building in the world for forty-one years—for more years than any other **skyscraper**—and today it still stands tall in Manhattan’s skyline.

The Empire State Building's skyscraping height makes for some weird science as well as breathtaking views.

One summer, a scientist filmed and counted forty-eight lightning strikes on the building, proving that the building is a towering lightning rod!

The building is so tall that sunrise occurs about a half hour earlier at the top than at street level.

Computer-driven LED lights shine using sixteen million different colors at the top of the building, and because of its height, people can see

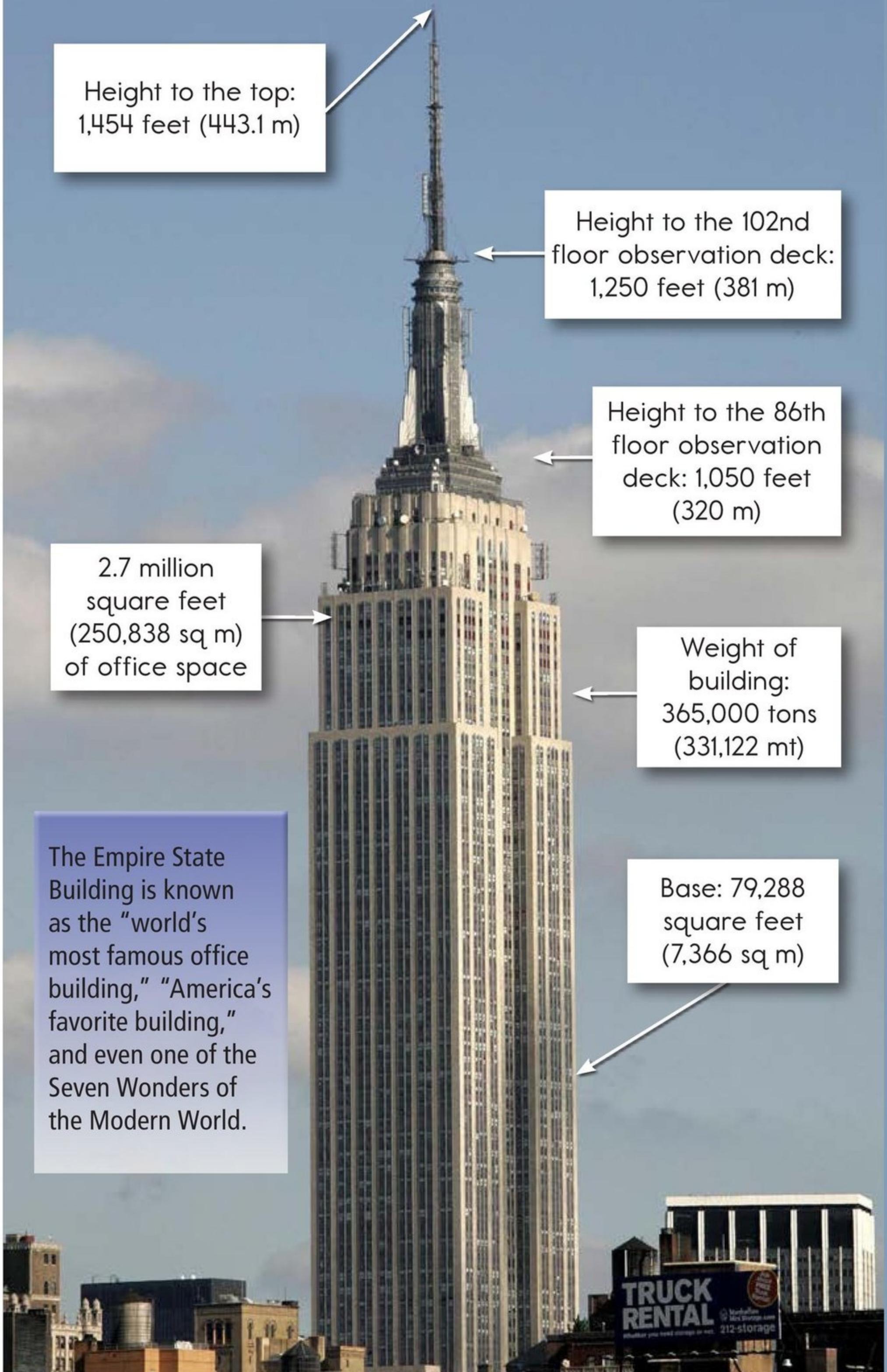
and enjoy the nighttime light shows for many miles around.

Amazingly, on a clear day you can see parts of five different states—New York, New Jersey, Connecticut, Massachusetts, and Pennsylvania—just by walking around the observation deck and looking out at the horizon.



From the top of the Empire State Building, you can see five states.

The Empire State Building





Alfred E. Smith (left) and John J. Raskob (right) came from poor families. They achieved great things in their lives.

A Winning Team

Two friends, Alfred E. Smith and John J. Raskob, decided to **construct** the world's tallest building. Because they both came from poor New York families, the pair had a lot in common. As young men, both dropped out of school to find jobs and support their families.

By 1929, however, Raskob was rich and had many wealthy friends who were willing to **invest** in the skyscraper. Smith was famous after he ran for president of the United States and lost. He was a great talker, though, and supplied the press with exciting stories about the building. Together they were a winning team.

Raskob and Smith knew the site they wanted for their skyscraper, but they had one rather large problem. The famous Waldorf-Astoria Hotel was already at that location, so the team bought the hotel.



When it opened in 1893, the Waldorf-Astoria was the biggest, most luxurious hotel in all of New York.

From Hotel to Hole

Tearing down the grand hotel was difficult because it was large and built to last for many years. Some six hundred men worked day and night to **demolish** it. Then they dug an enormous hole to reach solid **bedrock**. This is what the massive skyscraper would sit on. The workers had to dig and blast their way down to 40 feet (12.2 m) below street level. As they worked, a fleet of dump trucks hauled 28,529 loads of earth, stone, and the remains of the once-proud hotel to **barges** on the East River. Tugboats pushed the barges out to the ocean and dumped it all. After five months, all that remained was a gaping hole.



Huge cranes were used to move giant beams into place.

The Best Show in Town

Construction began on April 7, 1930. At the bottom, where the weight of a skyscraper is greatest, 210 columns weighing 44 tons (39 mt) each were set vertically. Then horizontal beams arrived and were connected to the columns to form a strong **steel** grid.

As the grid began to reach for the sky, people stopped and crowded the sidewalks below. They were all looking up at the steelworkers balancing on the narrow beams. Newspaper reporters said the workers were the best show in town and called them “sky boys.” Their work was so dangerous that if one member of a four-man crew got sick, the other three also went home. Crew members had to know and trust each other completely, as having someone new step in could create an unsafe situation.

Their job was to fasten the steel beams together with **rivets**. The “heater” got a rivet red hot in his bucket of fiery coals and then tossed it through the air. The “catcher” placed it in its hole in the beam. Then the “bucker-up” pushed on one end of the hot rivet with a metal bar as the “riveter” smashed the other end with an air hammer, tightly bonding the enormous beams.

The best crews were from the Mohawk Nation—Native Americans from New York State who could set a rivet every minute.

Water boys, some as young as sixteen years old, walked the high beams, too, carrying buckets of cool drinking water to the crews. Some thought it was fun working on the beams, but they quickly learned to focus only on the end of the beam they were on and not to look down.



Riveters worked far above the ground floor. The Chrysler Building is in the background.



By summer, the steel grid reached the 40th floor, and the outside wall was catching up.

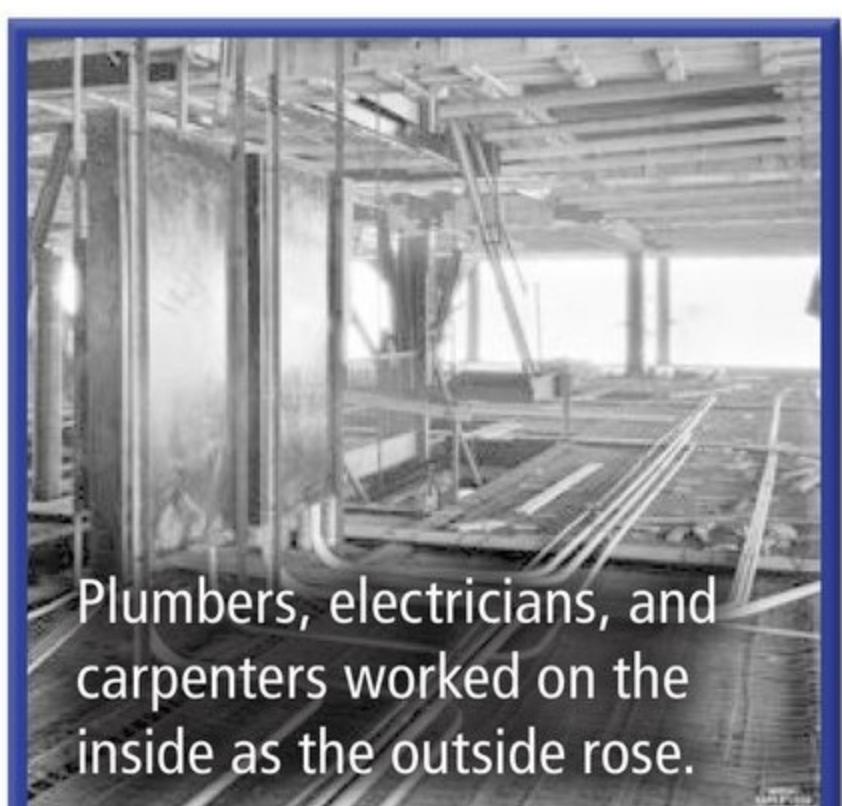
because it was a popular modern look that often used machine-made and ready-to-use supplies. For example, the steel beams arrived with rivet holes predrilled, so the building went up at the incredible rate of four-and-a-half floors each week.

The outside wall was perfectly designed for rapid construction, too. Columns of windows and metal plates rose next to columns of stone, all of which arrived ready to use. On the upper tower, workers finished the outside at a rate of one floor per day.

Zoom to the Top

Smith and Raskob were in a big hurry to get their skyscraper finished. Their investors couldn't make money until the building was rented, so everything was planned for speed—even the design of the building.

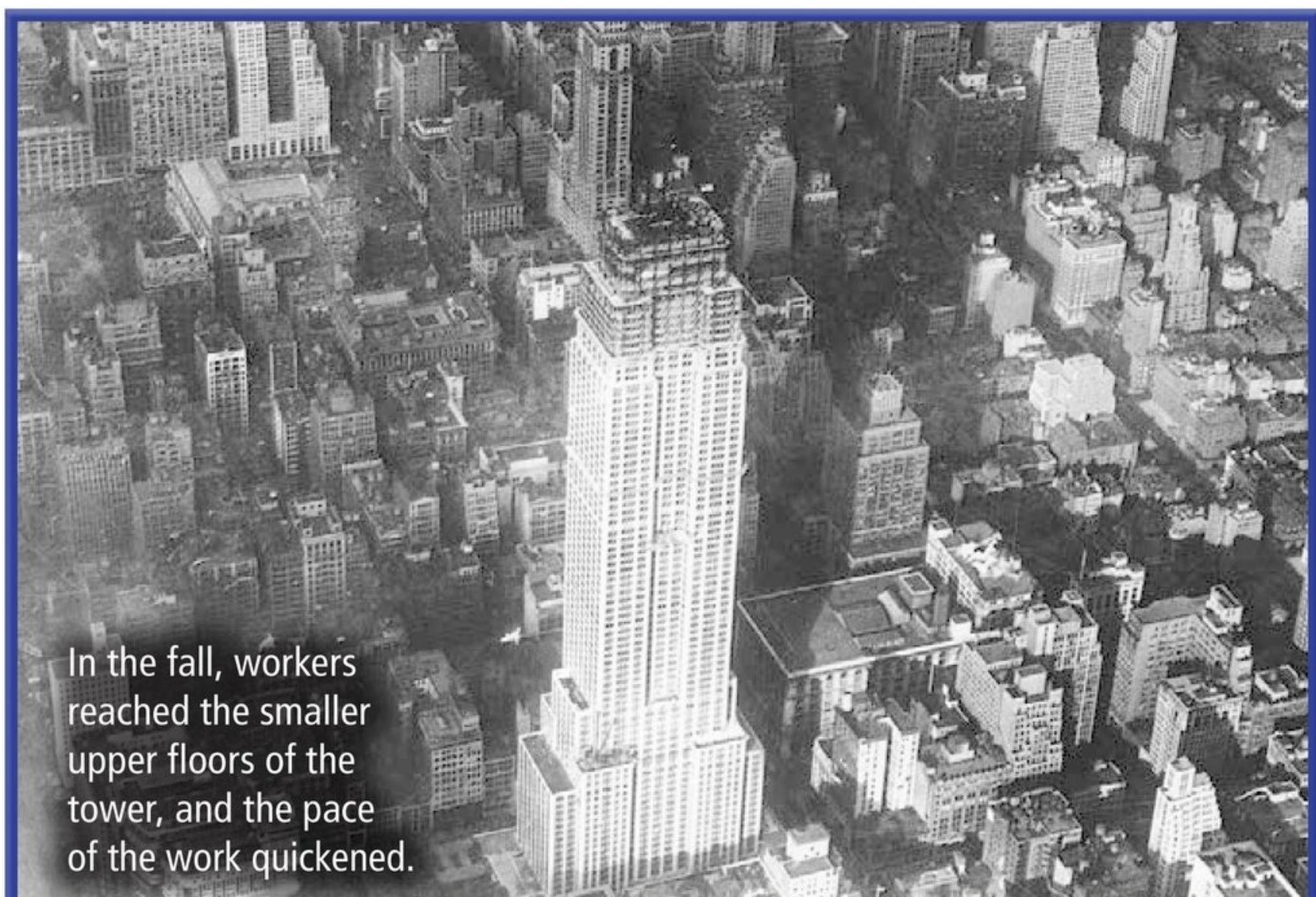
The architect, William F. Lamb, chose the **art deco** style for the building



Plumbers, electricians, and carpenters worked on the inside as the outside rose.

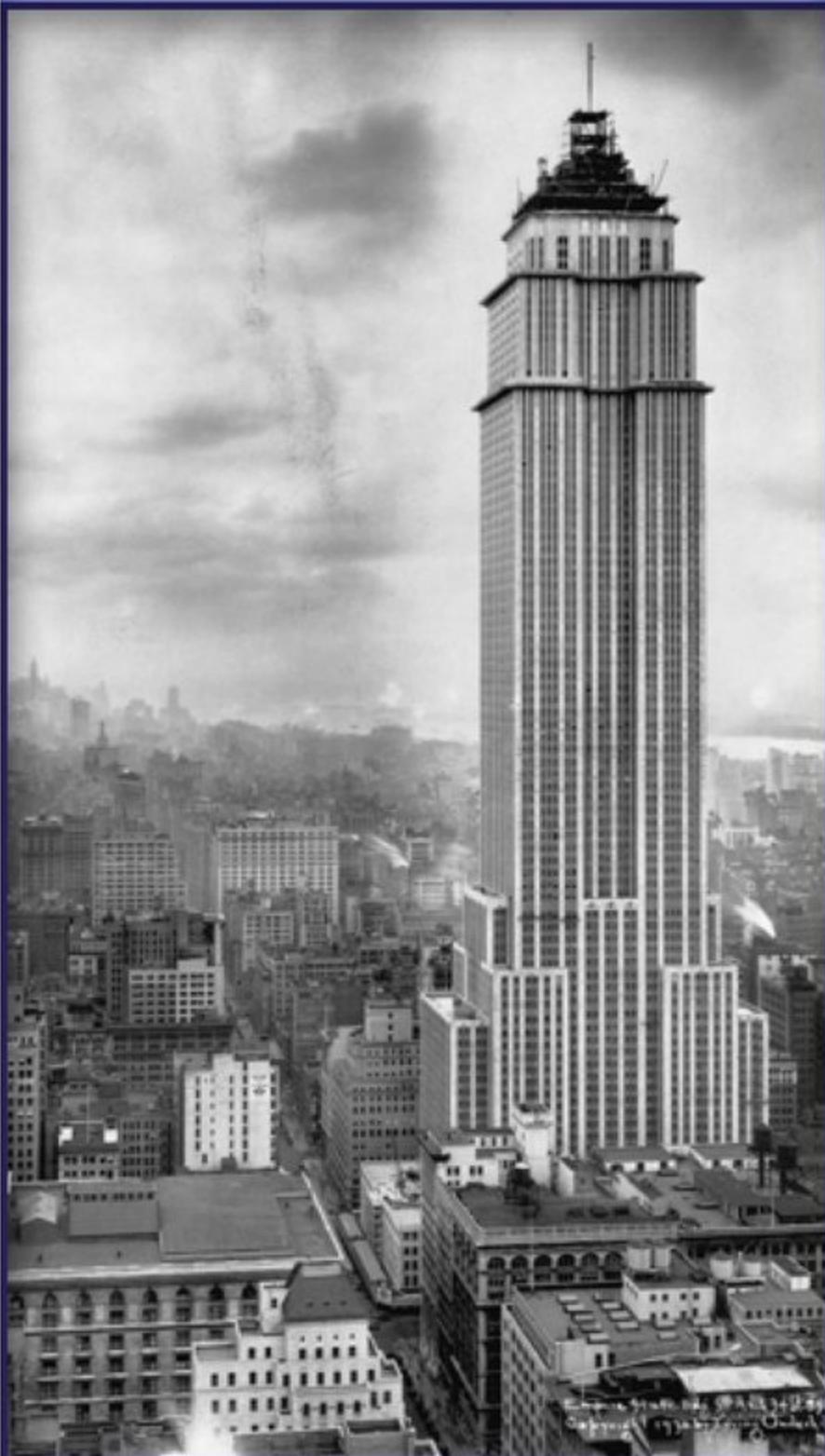
By August, the workforce swelled to more than 3,500 workers on the site in a single day. There were more than 60 different kinds of workers on the job. The plumbers needed pipe. The bricklayers needed bricks. Every worker needed supplies. In those days, supplies were moved by wheelbarrow, but in such a large building, this method was too slow. Instead, the builders laid tracks around each floor and even in the elevators. As supplies were delivered, they were loaded straight into big carts. Then workers pushed the carts along the tracks into elevators and around the floors quickly.

With so many workers, there were plenty of injuries, so the builders opened their own hospital right in the building.



In the fall, workers reached the smaller upper floors of the tower, and the pace of the work quickened.

Do You Know?



Some of the smaller upper floors went up at a rate of one floor per day.

It took 7 million hours of labor to:

- set and rivet 57,000 tons (51,709 mt) of steel
- place 6,400 windows and 200,000 cubic feet (5,663 cubic meters) of limestone
- lay 10 million bricks
- apply 10,000 tons (9,072 mt) of plaster
- install 6,700 radiators, 2,500 sinks and toilets, and 51 miles (82 km) of pipe
- install 67 elevators in 7 miles (11 km) of shafts
- build a 365,000-ton (331,122 mt) building

The large number of workers even made lunch a problem. With so many workers trying to get food at once, many started coming back late. Lateness was something the builders couldn't tolerate because it slowed work down. Their solution was to build **cafeterias** right on the site. The first ones were on the 3rd, 9th, and 24th floors. As the building grew taller, two more were added, one on the 47th floor and the other on the 64th floor.

The builders, or contractors, were supposed to stick to the schedule—and they did. They not only planned everything, but they also kept track of everything—such as how many bricks were laid and how much plaster was applied. With so much careful planning, you might think everything went well. It didn't. One plan was a huge failure.

Al Smith wanted the **spire** that rose above the 86th floor to be a stopping spot for airships. These airships, or *dirigibles*, were the modern way to travel back then. Smith said passengers could simply walk down a plank from a dirigible to the 102nd floor. Then they could take the elevator down and be on Fifth Avenue in minutes. It all sounded great, but when the first airship got close to the mast, the winds were too strong. The winds around the skyscraper are always too strong, so the plan was dropped.



From the street, thousands of people watched the dirigible *Columbia* fail in its attempt to pick up mail from the top of the Empire State Building in 1931.



On special holidays, the building uses its new LED lighting system, with sixteen million colors, to put on light shows.

Al Smith Was Right!

The Empire State Building opened on May 1, 1931, a little over a year after the first steel columns were set in place. The speed with which the tallest building in the world was constructed set a record that has not been broken to this day.

Just after the building's fiftieth birthday, it was declared a landmark, which means that by law it must be preserved to appear just as it always has.

Today the world's most famous office building is still a prominent feature of New York City's skyline. Al Smith was absolutely right when he declared that the building had been built for generations to come.

Glossary

| | |
|---------------------------------|---|
| architect (<i>n.</i>) | a person who designs buildings (p. 11) |
| art deco (<i>n.</i>) | a bold style of decorative art, design, and architecture from the 1920s and 1930s that features strong lines and geometric shapes (p. 11) |
| barges (<i>n.</i>) | boats with flat bottoms that carry freight, usually on a canal or river (p. 8) |
| bedrock (<i>n.</i>) | a layer of solid rock underneath the ground's surface (p. 8) |
| cafeterias (<i>n.</i>) | dining rooms where people are served at a counter (p. 13) |
| construct (<i>v.</i>) | to make or build something (p. 7) |
| demolish (<i>v.</i>) | to destroy completely, usually a building or other large object (p. 8) |
| invest (<i>v.</i>) | to put money into a business opportunity that offers the possibility of future profit (p. 7) |
| rivets (<i>n.</i>) | bits of metal that hold something together (p. 10) |
| skyscraper (<i>n.</i>) | a very tall building (p. 4) |
| spire (<i>n.</i>) | the pointed top of a tower or other building (p. 14) |
| steel (<i>n.</i>) | a kind of strong metal made of iron and carbon (p. 9) |

Empire State Building

A Reading A-Z Level V Leveled Book

Word Count: 1,333

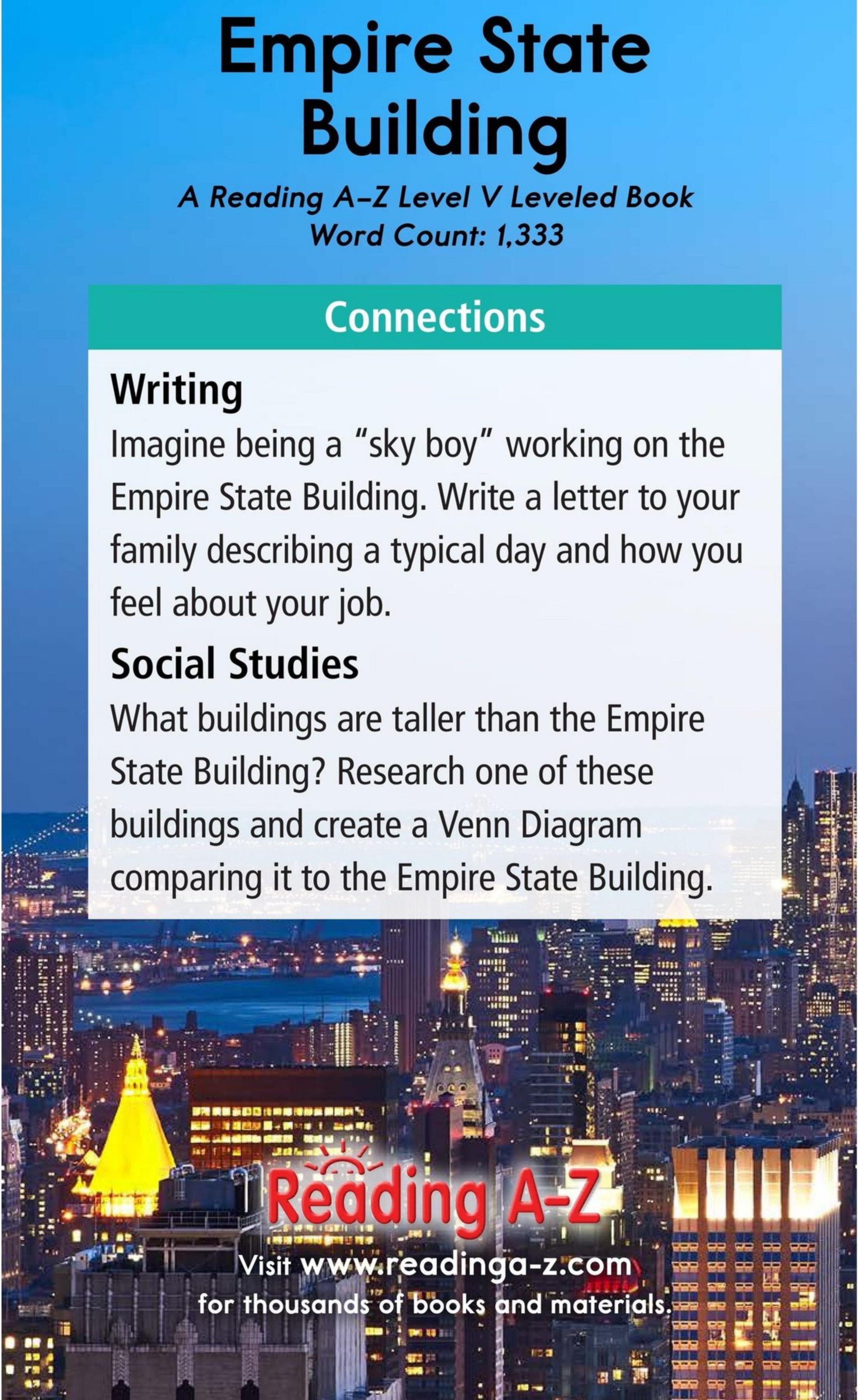
Connections

Writing

Imagine being a “sky boy” working on the Empire State Building. Write a letter to your family describing a typical day and how you feel about your job.

Social Studies

What buildings are taller than the Empire State Building? Research one of these buildings and create a Venn Diagram comparing it to the Empire State Building.



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