A New Skyline

A Reading A–Z Level W Leveled Book
Word Count: 1,444

Connections

Writing and Art

Write a newspaper article for students about the World Trade Center. Include the construction and destruction of the Twin Towers as well as future plans for that area.

Social Studies

Construct a map of New York City, including five major buildings that are part of the city's current skyline. Use information from the book and additional resources as needed.

LEVELED BOOK • W

A New Skyline

MULTI Level T•W•Z

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Written by Susan Lennox

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Glossary

architects *(n.)* people who design buildings (p. 6)

behemoth *(n.)* someone or something with immense size or power (p. 8)

complex *(n.)* a group of buildings close to one another used for a common purpose (p. 10)

dwarfed *(v.)* caused something to seem smaller or less important (p. 13)

iconic *(adj.)* of or relating to an important symbol; famous and recognizable (p. 4)

innovations *(n.)* new ideas, products, or ways of doing something (p. 10)

landmark *(n.)* an important historical building or site; an object on land that marks a place (p. 14)

panoramic *(adj.)* having a complete view in every direction (p. 9)

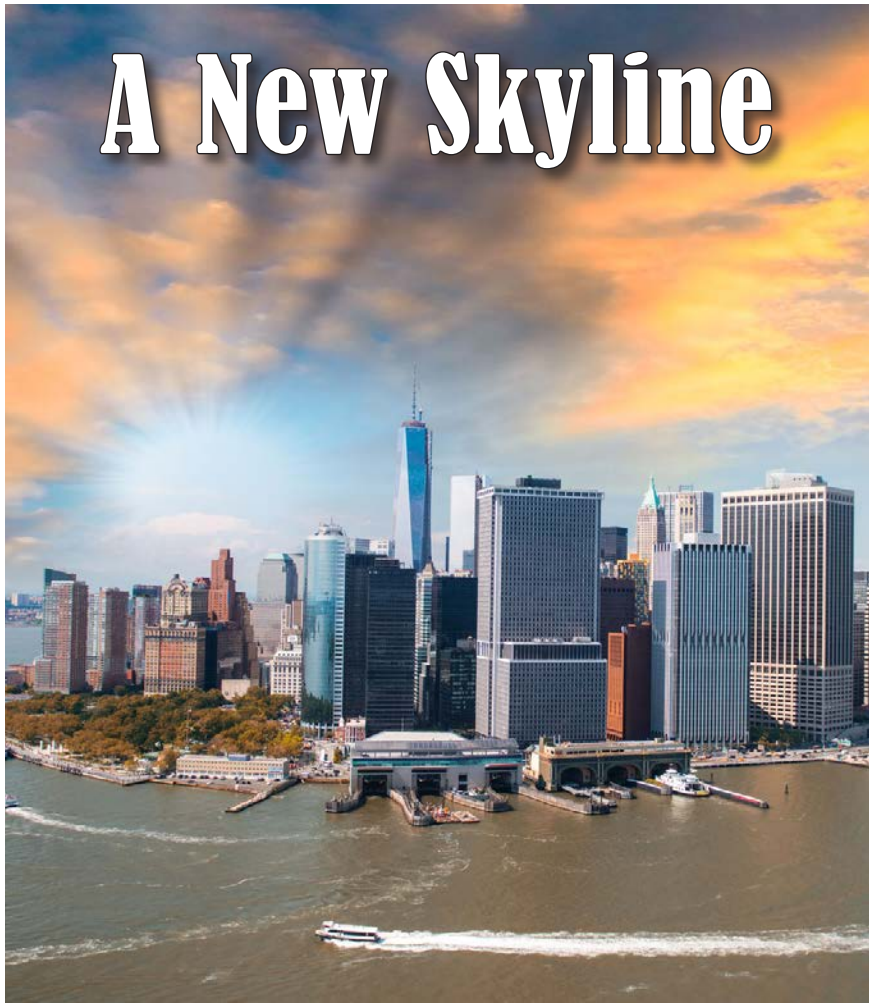
perimeter *(n.)* the measurement around the outside edge of an area or surface (p. 11)

prominent *(adj.)* easily seen, standing out, or important (p. 13)

skeleton *(n.)* a framework that supports a structure, such as a building (p. 6)

vertically *(adv.)* in a way that is straight up and down (p. 12)

A New Skyline



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Focus Question

How has New York City's skyline changed?

Words to Know

architects	landmark
behemoth	panoramic
complex	perimeter
dwarfed	prominent
iconic	skeleton
innovations	vertically

Front cover: The Brooklyn Bridge spans the East River from Brooklyn to Lower Manhattan Island.

Title page: A photo taken from a helicopter shows a spectacular bird's-eye view of Lower Manhattan Island.

Page 3: A construction worker perched on a beam (top) bolts the framework of the Empire State Building, 1930. A Port Authority policeman (bottom) monitors traffic from his electric patrol car in the Holland Tunnel, New York City.

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Correlation

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Nearby, a new 104-story tower has been constructed. Nicknamed the *Freedom Tower*, the structure rises an astonishing 1,776 feet (541 m). The building's height symbolizes the year of the United States' independence. The glass-paneled tower has a twisted octagon shape, and its huge reflective surface mirrors the changes in light all around it. At the top is a spire equipped with a light beam that is visible for miles.

One World Trade Center is over 400 feet (122 m) taller than either of the original Twin Towers.

Several other high-rises are being constructed at the site as well. By the year 2020, the new World Trade Center complex should be complete. New York's ever-changing skyline will reflect the spirit of a city that continues to adapt and grow.

A New Tower Rises from the Ashes

The World Trade Center tragedy devastated New York and the rest of the country. New Yorkers mourned the loss of their neighbors and their **landmark**. At the same time, they vowed to rebuild at the World Trade Center site.

Excavating the ruins of the old towers took time. Plans for the site took years to develop; there were many opinions on what should be done, and many designs were submitted with considerable controversy. Finally, the Port Authority unveiled the design for the new World Trade Center complex. One area was set aside as a memorial park for those who lost their lives that day. The sites where the original buildings stood are now reflecting pools with cascading waterfalls. A memorial museum contains items from the old towers.

One of the two reflecting pools at the World Trade Center Memorial. Both feature the largest human-made waterfalls in the United States.

Table of Contents

Introduction

What would Paris be without the Eiffel Tower, or London without its famous clock tower, Big Ben? **Iconic** structures such as these, along with surrounding buildings, create an outline against the sky, called a *skyline*. Skylines are unique identifiers of places, just as your fingerprints are one-of-a-kind identifiers of you. Unlike fingerprints, however, skylines don't stay the same forever. They grow and change, sometimes gradually and at other times quite suddenly.

New York City is a great example of a place whose skyline has experienced both slow and rapid change. In recent years, New York's skyline has been altered dramatically. Buildings and structures have risen, fallen, and risen again. New York's skyline has continuously evolved.

The Twin Towers were a striking addition to the city's skyline. Because they were built away from the city's other tall skyscrapers, they **dwarfed** the surrounding buildings and were the most **prominent** structures on Manhattan Island. For thirty years, the World Trade Center towers were the tallest buildings in New York. Then disaster struck.

On the morning of September 11, 2001, hijackers flew two passenger jets into the towers. Within an hour after the attack, the South Tower began to fall in on itself and crumble to the ground. The North Tower followed thirty minutes later. New Yorkers watched in stunned disbelief as these enormous structures were reduced to heaps of burning rubble. Nearly three thousand people died as a result of the attack.

On September 11, 2001, terrorists flew two planes into the Twin Towers.

Over 3,500 workers helped build the World Trade Center's twin towers during their peak of construction.

People could take an express elevator to a sky lobby on the forty-fourth floor that would bypass the first forty-three floors. Then they would transfer to a local elevator, which would stop at every floor, to get to their office on the forty-eighth floor. This system was a new, efficient way to transport people **vertically**, and it reduced the number of elevator shafts needed.

Construction of the towers began in 1966. The North Tower was completed in December 1970, topping out at 1,727 feet (526 m) at the top of its spire. A restaurant called Windows on the World offered diners a breathtaking view from the top of the North Tower. The South Tower, reaching 1,362 feet (415 m) in height, was finished seven months later. Beneath both buildings was a parking garage that could accommodate up to two thousand vehicles. Railroad and subway stations were situated underneath the parking garage.

An 1884 illustration of Lower Manhattan Island shows how little of the city's structure and skyline was developed at the time.

Growing the Big Apple

During the nineteenth century, New York City's famous skyline, along with its diverse population, began to grow rapidly. With the end of the Civil War came freed slaves from the South in search of work. Later, waves of Europeans immigrated to the United States through the port of New York. Many of them stayed on New York's Manhattan Island. By the late 1800s, New York was the most densely populated city in the country; by 1925, it was the most densely populated city in the world.

All the city's new residents needed places to live, work, and shop. Gradually, the city expanded northward as more stores, factories, and homes were built. However, Manhattan Island is only about 23 square miles (59.6 sq km) in area. There was no more room for the city to expand outward; the only place to grow was up.

To do that, new building methods had to be employed. Up until that time, walls had been used to support a building's weight. The walls on a building's ground floor had to be strong enough to bear the weight of all the floors and the roof above them. This type of construction limited a building's height. There was no practical way to make walls thick and strong enough to support a building with dozens of floors.

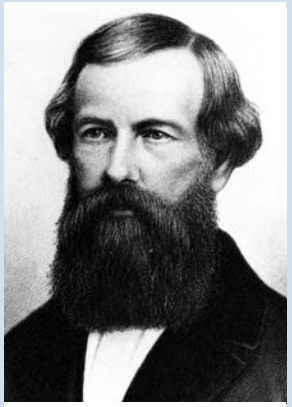
A new way of building involved using a steel frame instead of walls to support the structure. Gigantic steel beams were connected to form the building's **skeleton**. Then the walls were hung from the beams, much like curtains from a rod, and attached at the bottom to the floor. With the use of steel frame construction, the walls of the building's upper floors were not weighing heavily on the lower floors' walls. The weight of the walls was distributed along the steel beams holding them up.

Steel frame construction made it possible for buildings to reach new heights. By the turn of the twentieth century, New York City housed a number of huge structures that came to be called *skyscrapers*. Soon skyscrapers were going up one after another as builders and **architects** competed to make the world's tallest building.

One innovation was the use of tube-frame construction instead of steel-frame construction. Each tower was similar to a hollow square pipe. The outside **perimeter** of the building had columns that were spaced close together. Surrounding the edge of the building with main support columns created more usable floor space inside.

Another innovation was the use of sky lobbies. The taller a building is, the more elevators it needs. Yamasaki proposed an elevator system modeled after the city's subway system. The towers had both express and local elevators.

Who Was Elisha Otis?


Elisha Graves Otis

How were people supposed to get to the top floors of a skyscraper? Climbing hundreds of stairs wasn't a good option—elevators were needed. Early elevators, however, weren't as safe as they should have been.

Thanks to Elisha Otis, this problem was resolved. Otis designed the first safety elevator in 1854. The elevator's platform would fall only a few inches if the cable holding it broke. He also designed engines to power the elevator.

Without a doubt, Otis's invention was necessary to the development of tall buildings. The next time you're in an elevator, look around. There's a good chance you'll see the name "Otis" somewhere inside!

Twin Giants Rise, Then Fall

After the Empire State Building was completed, skyscraper construction slowed down. Mammoth structures were costly to build, and the American economy was struggling. It was not until 1970 that the city's skyline would grow even higher.

In the 1960s, city officials considered building a "world trade center"—a hub for international commerce—in Lower Manhattan. The Port Authority of New York and New Jersey was in charge of the project. Architect Minoru Yamasaki designed the buildings. He proposed twin towers as part of the multibuilding **complex** of offices and storefronts. The 110-story towers would include some structural **innovations**.

The Port Authority

The Port Authority of New York and New Jersey is an organization formed in 1921. Its purpose was to develop, modernize, and operate trade and transportation facilities in both New Jersey and New York City. The Port Authority still owns and manages much of the 16-acre (64,750 sq m) World Trade Center complex.

The Port Authority was in charge of building the George Washington Bridge, which connects Manhattan and New Jersey.

Buildings of the New York City Skyline

1 1899
Park Row Building
391 feet (119 m)
29 stories

2 1908
Singer Building
612 feet (186.5 m)
37 stories

3 1909
Met Life Tower
700 feet (213 m)
50 stories

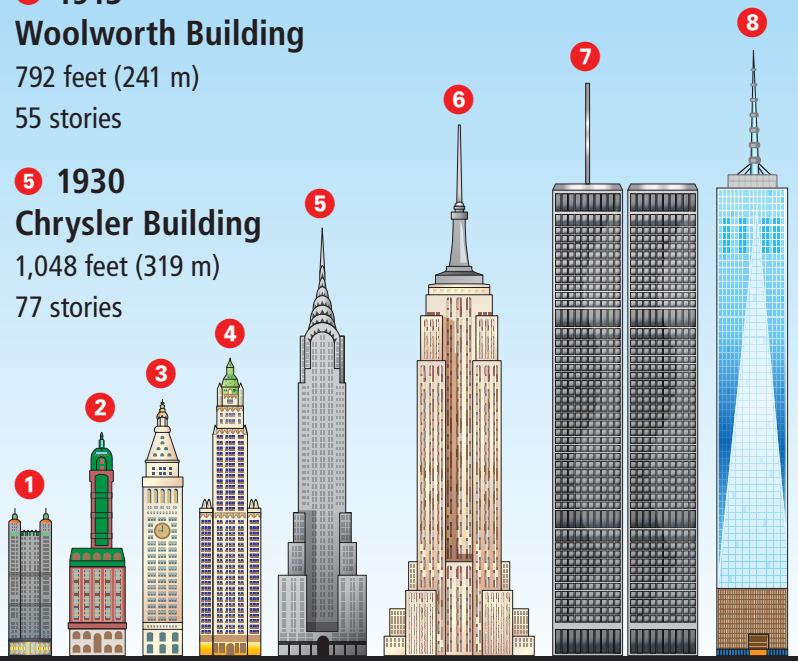
4 1913
Woolworth Building
792 feet (241 m)
55 stories

5 1930
Chrysler Building
1,048 feet (319 m)
77 stories

6 1931
Empire State Building
1,454 feet (443 m)
103 stories

7 1970
World Trade Center
1,727 feet (526 m)
(North Tower)
110 stories

8 2014
One World Trade Center
1,776 feet (541 m)
104 stories



Building an Empire

The Chrysler Building was funded by businessman Walter Chrysler.

By the late 1920s, New York City's skyline had risen to new heights. It was during this time that two of the city's best-known structures were built.

In 1928, the builder of the seventy-seven-story Chrysler Building wanted to make it the world's tallest. So fierce was the competition for this title that the Chrysler builder smuggled a tall spire onto the top of his structure. The secret plan worked: in 1930, the Chrysler Building became not only the world's tallest structure but also the only one to stand taller than 1,000 feet (305 m).

The Chrysler Building's reign would not last. Just blocks away, a steel-framed **behemoth** was rising. Not only would the Empire State Building take the crown for world's tallest, but it would also come to define the city it called home.

Workers broke ground on the Empire State Building in January 1930. Amazingly, it was completed just 410 days later. The steel and granite building had 103 floors and stood over 1,400 feet (427 m) tall. More than 3,000 workers contributed skills and labor to finish the building.

The completed building had 64 working elevators that took less than one minute to get to the 80th floor. An outside observation deck on the 86th floor and an inside deck on the 102nd floor provided **panoramic** views of the city.

The Empire State Building symbolized New York City. It was named one of the Seven Wonders of the Modern World and was featured in many books and movies. It wore the crown of world's tallest building for nearly forty years until deposed by twin giants rising in the lower part of Manhattan.

The Empire State Building during construction (above) and completed (below). Four-and-a-half stories were added per week.