A New Skyline

A Reading A–Z Level T Leveled Book
Word Count: 1,196

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 • T

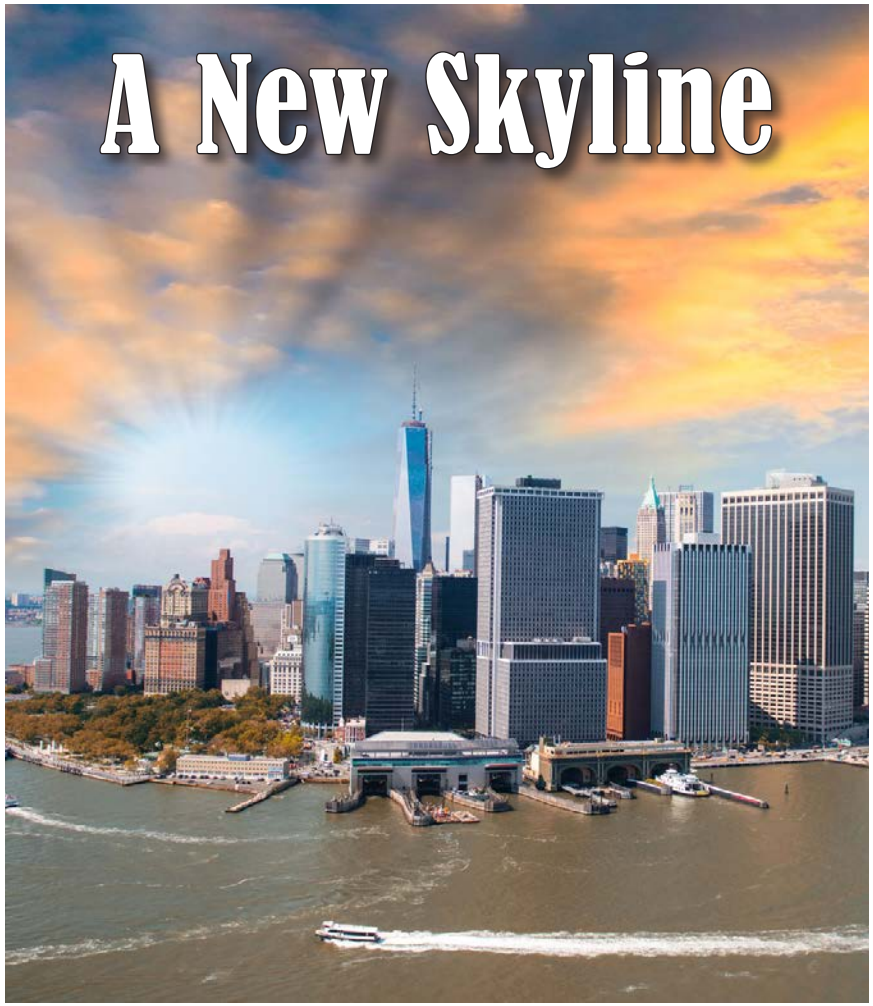
A New Skyline

MULTI Level T•W•Z

Written by Susan Lennox

www.readinga-z.com

A New Skyline



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Focus Question

How has New York City's skyline changed?

Words to Know

architects	landmark
commerce	populated
complex	skeleton
efficient	spire
excavating	unveiled
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

LEVEL T	
Fountas & Pinnell	P
Reading Recovery	38
DRA	38

Table of Contents

Introduction

What would Paris be without the Eiffel Tower, or London without its clock tower, Big Ben? Famous structures such as these, along with surrounding buildings, create an outline against the sky, called a *skyline*. Skylines identify places, just as your fingerprints identify you. Unlike fingerprints, however, skylines don't stay the same forever. They change, sometimes slowly and sometimes suddenly.

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

An 1884 illustration of Lower Manhattan Island shows how little of the city's skyline had grown at that time.

Growing the Big Apple

New York City was first settled in the seventeenth century. During the nineteenth century, its population exploded. The end of the Civil War brought 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.

People needed places to live, work, and shop. The city grew northward as more stores, factories, and homes were built. However, Manhattan Island is only about 23 square miles (59.6 sq km) in area. Soon there was nowhere left to build. The only place to grow was up.

To do that, different building methods had to be used. Old methods had always used walls to support a building's weight. The walls on the ground floor had to be strong enough to support the floors and roof above them. This requirement limited a building's height. There was no practical way to make walls thick and strong enough to support a building with many floors.

A new method involved using a steel frame instead of walls to support the structure. Huge steel beams were connected to form the building's **skeleton**. Then the walls were hung from the beams and attached at the bottom to the floor. The walls of the building's upper floors did not weigh heavily on the lower floors' walls. The steel frame beams held them up.

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

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

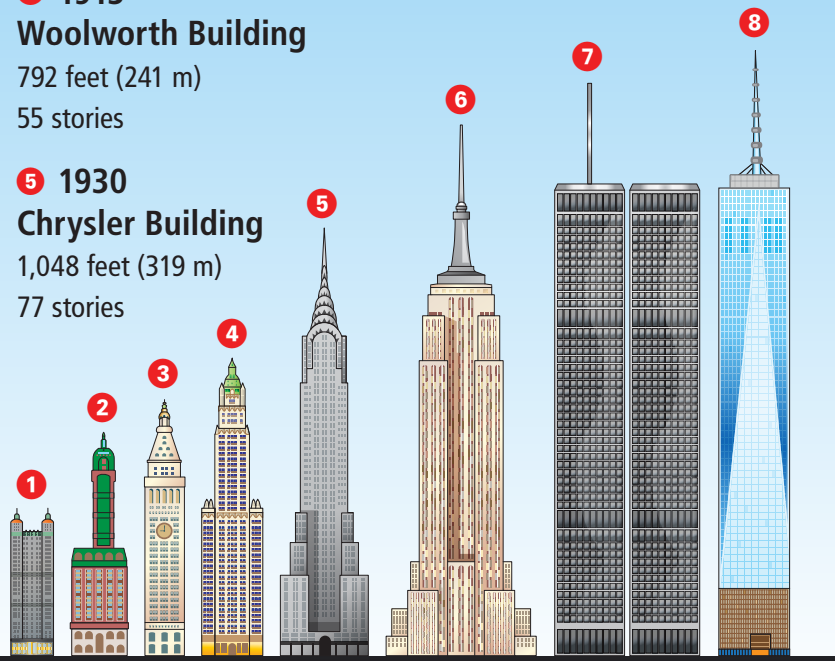
4 1913
Woolworth Building
792 feet (241 m)
55 stories

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

In 1928, the builder of the seventy-seven-story Chrysler Building wanted to make it the world's tallest. The builder attached a tall **spire** onto the top of his structure. In 1930, the Chrysler Building became the world's tallest structure. It also became the only building to stand taller than 1,000 feet (305 m).

The Chrysler Building's reign would not last. Just blocks away, a giant was rising. The Empire State Building was soon the world's tallest, and would also become a famous New York City **landmark**.

The Chrysler Building was funded by businessman Walter Chrysler.

Workers began construction on the Empire State Building in January 1930. More than 3,000 workers finished construction just 410 days later. The steel and granite building had 103 floors and stood over 1,400 feet (427 m) tall.

The building had 64 working elevators. It took less than one minute to get to the 80th floor. People could visit an outside observation deck on the 86th floor or an inside deck on the 102nd floor.

The Empire State Building was a symbol of New York City and was featured in many books and movies. It was the world's tallest building for nearly forty years, until twin giants rose from Lower Manhattan.

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

Twin Giants Rise, Then Fall

After the Empire State Building was completed, skyscraper construction slowed down. Giant structures cost a lot to build, and the American economy was not doing well. It was not until 1970 that the city's skyline would grow even higher.

In the 1960s, city officials decided to build a center for international **commerce** in Lower Manhattan. The Port Authority of New York and New Jersey was in charge of this new "world trade center." Architect Minoru Yamasaki designed the buildings. He proposed twin towers as part of a multibuilding **complex**.

The Port Authority

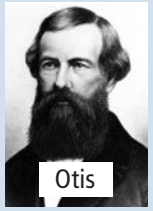
The Port Authority of New York and New Jersey is an organization formed in 1921. Its purpose was to develop and operate trade and transportation facilities in both New Jersey and New York City. The Port Authority still owns and manages much of the 16-acre (64,750 sq m) World Trade Center complex.

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

The 110-story towers would include some structural **innovations**. One was the use of tube-frame construction. Each tower was similar to a hollow square pipe. Along the outside walls of the building were columns spaced close together. This reduced the need for inside support columns and created more usable floor space inside.

Another innovation was the use of sky lobbies. Skyscrapers need many elevators. Yamasaki proposed an elevator system modeled after the city's subway system. The towers had both express and local elevators, just as the subway had express and local trains.

Who Was Elisha Otis?


Otis

How were people supposed to reach 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 fixed. 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, there's a good chance you'll see the name "Otis" somewhere inside!

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

People could take an express elevator straight to a sky lobby on the forty-fourth floor. Then they'd transfer to a local elevator that would stop at every floor above to get to their offices. This system was an **efficient** way to transport people **vertically**. It reduced the number of elevator shafts needed.

Construction began in 1966 and took four years. The North Tower was completed in December 1970. It stood 1,727 feet (526 m) tall at the tip of its spire. A restaurant atop the building called Windows on the World offered diners a breathtaking view. The South Tower, reaching 1,362 feet (415 m) high, was finished seven months later. Beneath both buildings was a parking garage; below that were railroad and subway stations.

The Twin Towers were a striking addition to the city's skyline. 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 and crumble to the ground. The North Tower soon followed. New Yorkers watched in 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.

A New Tower Rises from the Ashes

The World Trade Center tragedy was devastating. New Yorkers mourned the loss of their neighbors and their landmark. They vowed to rebuild the World Trade Center.

Excavating the ruins of the old towers took time. Plans for the site took years to develop. There were many construction ideas and strong opinions about what should be built on the site. 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 had lost their lives that day. The sites of the original buildings are now 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.

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. At the top is a lighted spire that is visible for miles.

Several other high-rise buildings 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.

One World Trade Center, completed in 2014, is over 400 feet (122 m) taller than the original Twin Towers.

Glossary

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

commerce *(n.)* the buying and selling of goods; business or trade (p. 10)

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

efficient *(adj.)* making good use of time or resources (p. 12)

excavating *(v.)* uncovering or digging out (p. 14)

innovations *(n.)* new ideas, products, or ways of doing something (p. 11)

landmark *(n.)* an important historical building or site; an object on land that marks a place (p. 8)

populated *(adj.)* inhabited by living things (p. 5)

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

spire *(n.)* the pointed top of a tower or other building (p. 8)

unveiled *(v.)* uncovered or revealed (p. 14)

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