

SKYSCRAPERS & SKYLINES IN EARLY 20TH CENTURY NEW YORK

“A skyscraper is a machine that makes the land pay.” —Cass Gilbert, Architect (1900)

The documents in this dossier illustrate a key theme—how to make money from urban land. Most skyscrapers are ‘speculative’ buildings, meaning that they are created to produce a profit for those who finance their construction.



In the early twentieth century in New York City and elsewhere, companies and individuals would purchase land located in commercial areas, then erect large buildings with copious amounts of office space. If businesses leased all of the available space, the rental income of the building generated a healthy profit for the building owners. As land prices rose, investors built taller buildings in order to maximize rental income. In Manhattan, speculation drove the explosive vertical growth of the Financial District in the early 20th century, the building boom of the late 1920s and early 1930s, and even the recent real estate boom that resulted in high-rise buildings such as the AOL Time-Warner Center at Columbus Circle.

Real estate investors must consider a number of **economic factors** before deciding that a skyscraper will be a worthwhile investment, including:

- land costs
- construction costs: materials, labor costs, permits, etc.
- zoning laws, which may restrict the height or use of buildings
- rental income to be generated by residential or commercial spaces in the building
- operational costs, such as insurance, security, and maintenance

In most cases, the height of a building—when not limited by zoning laws—is limited by its own costs. While it is theoretically possible to construct a building of any height, the documents in this dossier illustrate that it is not economically prudent to do so in most cases.

The documents in this dossier begin with the big picture of real estate development. By looking at the land values and skyline of Lower Manhattan, students will see how the cost of land drives buildings up in height. Then, by looking at schematics related to the expense and revenue of skyscraper construction, students will understand some of the economic factors investors must consider before engaging in speculation. Finally, through the examples of the Empire State Building and the Woolworth Building, students will examine concrete examples of these principles at work.

Please note, also, that some students may have a preconceived idea that the presence of bedrock is a major determining factor in the location of skyscrapers since many writers and TV programs have asserted that having bedrock close to street level is necessary for skyscraper foundations. This is not true: indeed Chicago in the 19th century and Shanghai today are major examples of skyscraper cities without bedrock conditions. Concerns about bedrock may distract students from the main idea presented by these documents: that the economics of building a skyscraper and renting out the space within are the primary factors in determining the height of a building. The documents here do not refer to bedrock or engineering concerns, but financial ones.

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This dossier supports teaching the following social studies skills and concepts:

SKILLS

- Locating, evaluating, and synthesizing information from a variety of sources

UNDERSTANDINGS

- Basic economic concepts such as investment, profit, and speculation influence skyscraper design
- Economic and industrial factors impact the growth of communities, especially cities
- Economic factors shape the physical features of a place
- Real estate growth in the early 20th century, especially the 1920s, was driven by speculation

< *student page***SKYSCRAPERS & SKYLINES IN EARLY 20TH CENTURY NEW YORK****HISTORICAL CONTEXT**

Before the late 19th century, few buildings had been taller than five or six stories. But the new technologies of elevators and steel as a construction material changed the equation for urban and architectural development. By the early 20th century, buildings commonly stretched to 20, 30—even 50—stories. New York City was foremost among American cities as a showcase for the possibilities of tall buildings. Some of this upward climb was caused by continued technological developments, but much of it was driven by financial motives. The financial aspect of the construction of tall buildings is what you will be examining in these documents.

TASK

Using at least four of the seven documents provided in this dossier, as well as your own knowledge of United States and New York City history, answer the questions that follow each document. Your answers to these questions will help you to write an essay, in which you:

- Discuss the upward growth in the New York City skyline in the early 20th century.
- Mention causes of real estate development, as well as the factors that help to determine the height and location of tall buildings, as part of your discussion.

GUIDELINES

Be sure to:

- Address all aspects of the TASK by accurately analyzing and interpreting at least four documents
- Incorporate information from the documents in the body of the essay
- Incorporate relevant outside information throughout the essay
- Richly support the theme with relevant facts, examples, and details
- Write a well-developed essay that consistently demonstrates a logical and clear plan of organization
- Introduce the theme by establishing a framework that is beyond a simple restatement of the TASK or HISTORICAL CONTEXT and conclude the essay with a summation of the theme

**DOCUMENT 1. HURD LAND VALUE MAP OF LOWER MANHATTAN (1903)**

from *Principles of City Land Values*, by Richard M. Hurd

WHAT IS IT?

This early 20th century street map of lower Manhattan shows the value of land at specific locations. The circled numbers indicate the price per square foot of land at that particular location. For example, land in the Financial District at the intersection of Broad and Wall Street has the highest value, \$400 per square foot in 1903. That means if an investor purchased a 1,000 square foot lot, it would cost \$400,000.

WHAT DOES IT SHOW?

The map illustrates the disparities in land value across lower Manhattan.

Some areas to note:

- The Financial District, which centers around Wall Street and Lower Broadway, and includes the highest land values on the map
- The Civic Center, which is the area immediately surrounding City Hall, and its comparatively high land values
- The long wharves on the edge of the map, jutting into the Hudson and East Rivers. These are often called finger piers because of their long, narrow shape. These piers indicate that the city's waterfront was being used for shipping when this map was drawn (1903). At this time, New York was an important port and shipping was a crucial part of the local economy but, as the Land Value Map indicates, land values around the waterfront were much lower than land values near Wall Street.
- Developers and investors could make significantly more money building a centrally-located skyscraper filled with offices than they could from building a low-rise warehouse on waterfront property. Students may mistakenly believe that skyscrapers were built because land was scarce on Manhattan Island. This map illustrates that skyscrapers were built as a consequence of financial considerations, rather than land scarcity.

1**DOCUMENT 1. HURD LAND VALUE MAP OF LOWER MANHATTAN (1903)**

from *Principles of City Land Values*, by Richard M. Hurd

WHAT CAN WE LEARN FROM THIS DOCUMENT?

- **This map illustrates that the most highly valued real estate in 1903 was located at the intersection of Broad Street and Wall Street.** The area was in high demand and garnered great prestige because of its close proximity to banks, corporations, and the New York Stock Exchange. (Some of the important businesses located in the immediate vicinity at the time included US Steel located at 71 Broadway, the Standard Oil Company at 26 Broadway, and investment bankers JP Morgan at 23 Wall Street.) Proximity to other businesses and business districts was a crucial component of land value, especially at this time. Prime real estate in the Financial District ensured easier communication between businesses, and simplified the safe transference of valuable commodities—such as gold and stock certificates—among banks.
- **High land values also were commanded by properties near City Hall.**
- **Waterfront property in Manhattan was, at this time, inexpensive.** This property was a greater distance from main thoroughfares, and was associated with less savory elements of the society in that era, including sailors and flophouses. These elements lowered the desirability of the property.

Students should be able to draw the conclusion that, especially at a time when transportation and communication were less efficient, an important factor in the real estate market was proximity to money and power.

HOW CAN I SUPPORT STUDENTS WHO STRUGGLE TO UNDERSTAND THIS DOCUMENT?

Some students may not really understand how the circled numbers in the document represent buildings and their value. Have these students look at Documents 1 and 2 together. Help students to find the tallest buildings in Document 2, then look that the value of the corresponding intersection in Document 1. They can do the same with shorter buildings. This should help students see that the taller buildings are built on more highly valued land.

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1 NAME _____
DATE _____

PART A: SHORT ANSWER QUESTIONS

1 **DOCUMENT 1. HURD LAND VALUE MAP OF LOWER MANHATTAN (1903)**
from *Principles of City Land Values*, by Richard M. Hurd

This map illustrates value of land at various locations throughout Lower Manhattan. The circled numbers indicate the price per square foot of land at that particular location. The little rectangular shapes jutting out from Manhattan Island into the Hudson and East Rivers represent piers. This map was originally included in one of the first books to attempt to explain the theory of the structure of cities and to quantify the value of land within them.



Fig. 100. Land values in Lower Manhattan (1903). Dollars per square foot.

1. What do you observe about the pattern of land values in this image?
2. Some locations have significantly higher land values than others, despite their relative closeness. What might cause these differences?

example responses

I notice that the land values are higher in specific areas toward the center of the map. For example, the land values near Wall Street and City Hall are very high—between \$200 and \$400 per square foot. Just a few blocks from there, though, the land values drop drastically. The land that is furthest from these areas, close to the water, is cheapest, going for as little as \$4-7 per square foot.

The land by the water is clearly the cheapest land. I don't think this is true today, since waterfront property is usually very expensive. The piers and the date of the map indicate that the waterfront was used for industrial purposes, such as fishing and shipping, so it probably wasn't a very nice area. Likewise, since all of the expensive land seems to be really close together, proximity to important locations and businesses probably drove up prices.

2**DOCUMENT 2. ANNOTATED NEW YORK CITY SKYLINE (1924)**

The Skyscraper Museum Collection

WHAT IS IT?

This postcard provides an aerial view of Lower Manhattan, probably in 1924. The annotations, provided for this dossier specifically, provide specific information about the locations of buildings on the street grid of Lower Manhattan.

WHAT DOES IT SHOW?

Alone, this postcard reveals a stark contrast between the buildings along the shoreline of Manhattan and those in its center. Along the river, shipping piers reveal that New York was still a major port city at this time. Accordingly, most of the buildings along the river appear to be low-level warehouses and the like. By contrast, the city slopes up from its shores to a peak of the tallest buildings, clustered in the middle.

The annotations show exactly where the tallest buildings are located, and can be used in conjunction with the Hurd Land Value Map (Document 1) to see how the size of the building and the value of the land are correlated. The Banker's Trust building, for example, is located at the most valuable intersection on the Hurd Land Value map and is also one of the tallest buildings in the image. The dominant Woolworth building, the tallest building in the world at the time, was located near City Hall, and also commanded high prices.

WHAT CAN WE LEARN FROM THIS DOCUMENT?

This document can be seen as a 3-D view of the Hurd Land Value Map, and provides the benefit of a clear visual to illustrate that potentially confusing document. From this document, it becomes clearer why the land that was closer to the water was worth far less than land that was near Wall Street and City Hall. Students should synthesize this document with the Hurd Land Value map in order to truly learn from both of them.

HOW CAN I SUPPORT STUDENTS WHO STRUGGLE TO UNDERSTAND THIS DOCUMENT?

Some students may struggle to visualize how the buildings in this image correspond to the Map in Document 1. help these students make direct correlations between the two images by having them color features that are easily found on both maps. First, have them color in the piers on Document 2; then have them use the same color to shade the piers on Document 1. Next, have them color in Battery Park on both documents. Students should then color in the Banker's Trust Building on Document 2, followed by coloring in the appropriate intersection (Wall and Broad Streets) on Document 1. If students are still struggling to make the connection between the two representations of Manhattan, have them repeat this process with the Woolworth Building.

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1 NAME _____
DATE _____

2 DOCUMENT 2. ANNOTATED NEW YORK CITY SKYLINE (1924)
The Skyscraper Museum Collection

This postcard shows the Manhattan skyline. Manhattan was a popular tourist destination, unusual among cities for its dense population of skyscrapers. Only the image and caption below the image are part of the original postcard. The notes given directly on the picture were added to help you see where the buildings are located in relation to specific streets and neighborhoods.



1. Notice the buildings and other structures along the river. How might you characterize these buildings? What activity appears to be going on along the river?
2. Where do the tallest buildings seem to be grouped together? What might account for the dramatic differences between the buildings in the center of the Island, and those along the river?

example responses

The buildings along the river are short and squat. Given the massive piers jutting out into the water, which themselves seem to be largely covered in warehouses, it looks like this space is an active shipping area.

The tallest buildings are crowded together in the center of the skyline. Looking back at Document 1, it looks like the tall buildings are in locations with high land values. The short buildings along the river are on much less expensive land. The taller buildings are probably built on more expensive land because it is a better investment than building a short building on expensive land. Likewise, tall buildings are probably too expensive to be worth building on cheap land.

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DOCUMENT 3. STUDY OF ECONOMIC HEIGHT FOR OFFICE BUILDINGS AND SUMMARY OF INVESTMENT FOR VARIOUS SKYSCRAPER HEIGHTS (1930)

From *The Skyscraper: A Study in the Economic Height of Modern Office Buildings*, by W.C. Clark and J. L. Kingston

WHAT IS IT?

This document was originally included in a book on the economy of skyscrapers, written in 1930. The book was the first of its kind, and sought to explore the phenomenon of the skyscraper from a factual, economic perspective rather than an aesthetic, architectural one. The drawing, Study of Economic Height for Office Buildings, compares skyscrapers of various sizes. The table, Summary of Investment for Various Skyscraper Heights, provides the costs and income associated with various skyscraper heights, and then calculates the return on investment.

WHAT DOES IT SHOW?

- Skyscraper height is not necessarily determined by aesthetics. Within the single form shown in the drawing, multiple heights were possible. It is a common misconception that skyscrapers—their height, design, and exterior façade—are the creation of an architect's artistic vision. As the drawing illustrates, this is rarely the case. Instead, the ultimate height of a skyscraper can vary without changing the overall shape of the structure, meaning that something other than aesthetics or engineering will likely determine the height of an office building.
- The table outlines quite clearly the amount of investment money (in 1930 dollars) required to construct skyscrapers of various heights, including the cost of the land, the construction costs, taxes, and insurance. It also shows the cost of operating and maintaining the building, as well as the building's depreciation, or loss in value over time due to age. Then, by subtracting these real costs from the overall (gross) income of the building—income generated by rental tenants—the table also gives the net income (profit) of each building heights. This amount is used to calculate a percentage return on investment.
- The table illustrates the counterintuitive notion that the tallest height for a building is not necessarily the most profitable. While it is true that additional stories supply more square feet, which yields greater rental income, the cost of the stories can cost more than will be repaid by rent. Ultimately, this fact is the most important reason why skylines aren't taller, and why there aren't more buildings that stand as tall as the Empire State Building.

3

DOCUMENT 3. STUDY OF ECONOMIC HEIGHT FOR OFFICE BUILDINGS AND SUMMARY OF INVESTMENT FOR VARIOUS SKYSCRAPER HEIGHTS (1930)

From *The Skyscraper: A Study in the Economic Height of Modern Office Buildings*, by W.C. Clark and J. L. Kingston

WHAT CAN WE LEARN FROM THIS DOCUMENT?

- **This drawing illustrates that the height of an office building is, on paper, rather easy to change.**
- **The table powerfully illustrates the calculations that must be made by a wise investor in speculative real estate.** The amount of investment money may determine whether a building can be built to its most profitable height. If investment money is limited, the height of the building may be limited—which will reduce the overall amount of rentable space in the structure and limit its profitability.

DID YOU KNOW?

Students may be curious about the distinctive style of the skyscraper shown in the drawing. The building used in the drawing reflects the setback style of skyscraper architecture that was popular at the time, partly due to zoning regulations in New York City. Other popular skyscrapers that did not utilize this type of architecture—such as the World Trade Center towers—were all built after this period. You can learn more about the setback style of architecture on The Skyscraper Museum Website, where there are video discussions of this historical form.

http://www.skyscraper.org/PROGRAMS/NYMODERN/nym_intro.php

http://www.skyscraper.org/PROGRAMS/NYMODERN/nym_ferriss.php

Consider using a portion of the video to engage students, to further push advanced students, or to enrich your own understanding of New York’s rich architectural history.

HOW CAN I SUPPORT STUDENTS WHO STRUGGLE TO UNDERSTAND THIS DOCUMENT?

If the student is visually-oriented or struggles to read tables, help the student to write the net income (from 3B) by the corresponding floor in 3A. Otherwise, encourage students to only focus on the aspects of the documents required by the questions. The questions focus on 3B.

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3 **DOCUMENT 3. STUDY OF ECONOMIC HEIGHT FOR OFFICE BUILDINGS AND SUMMARY OF INVESTMENT FOR VARIOUS SKYSCRAPER HEIGHTS (1930)**
From *The Skyscraper: A Study in the Economic Height of Modern Office Buildings*, by W.C. Clark and J. L. Kingston

Both of these images were taken from a book on the economy of skyscrapers, written in 1930. The book was the first of its kind, seeking to explore the phenomenon of the skyscraper from a factual, economic perspective rather than an aesthetic, architectural one.

3A



The drawing, "Study for Economic Height for Office Buildings," compares skyscrapers of various sizes. The building used in the drawing reflects the setback style of skyscraper architecture that was popular at the time, partly due to zoning regulations in New York City. Zoning regulations are laws that can determine the height, shape, or use of buildings, but you do not need zoning information to understand this or any other document in this dossier.

3B

TABLE No. 1
SUMMARY OF INVESTMENT COST, GROSS AND NET INCOME AND RETURN UPON INVESTMENT
(Assuming land value at \$200 per square foot)

	100 ft	125 ft	150 ft	175 ft	200 ft	225 ft	250 ft	275 ft	300 ft
INVESTMENT									
a. Land (25,000 sq. ft. @ \$200)	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
b. Construction	1,000	1,250	1,500	1,750	2,000	2,250	2,500	2,750	3,000
c. Interest on Construction	100	125	150	175	200	225	250	275	300
d. Total Construction	1,100	1,375	1,650	1,925	2,200	2,475	2,750	3,025	3,300
e. Total Investment	\$6,100	\$6,375	\$6,650	\$6,925	\$7,200	\$7,475	\$7,750	\$8,025	\$8,300
INCOME									
f. Gross Income	1,500	1,750	2,000	2,250	2,500	2,750	3,000	3,250	3,500
g. Net Income	400	375	350	325	300	275	250	225	200
NET RETURN									
h. Net Return on Total Investment	6.56%	5.88%	5.26%	4.70%	4.17%	3.68%	3.23%	2.81%	2.41%
i. Net Return on Construction	36.4%	27.4%	21.2%	16.9%	13.6%	11.1%	9.1%	7.5%	6.1%
j. Net Return on Land Investment	8.0%	7.5%	7.0%	6.5%	6.0%	5.6%	5.2%	4.8%	4.4%

The building heights in the table, Summary of Investment for Various Skyscraper Heights, correspond with those in the Economic Height drawing. The table provides the costs and income associated with various skyscraper heights, and then calculates the return on investment for each. Return on investment is an economic term for the amount of income a

particular investment is estimated to make for the investor. At the very least, the Return on Investment needs to equal the amount of the investment itself, so that the investor does not lose money.

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3 DOCUMENT 3. STUDY OF ECONOMIC HEIGHT FOR OFFICE BUILDINGS AND SUMMARY OF INVESTMENT FOR VARIOUS SKYSCRAPER HEIGHTS (1930)
From *The Skyscraper: A Study in the Economic Height of Modern Office Buildings*, by W.C. Clark and J. L. Kingston

1. What is the net income for structures at each of the following heights?

37 STORIES _____	\$1,795
50 STORIES _____	\$2,047
63 STORIES _____	\$2,590
75 STORIES _____	\$2,292

2. Based on the information in this document, what do you think would be the ideal height for a skyscraper? Why?

3. For the tallest structure shown here, how does the return on investment compare to the 63-story height? What might explain this?

example responses

Based strictly on the financial information provided in the table, the best height for a skyscraper is 63 stories, because it provides the highest net return on total investment. However, looking at the drawing, a 63-story skyscraper doesn't seem very exciting or distinctive, since the Woolworth, Chrysler, and Bank of New York buildings are all taller.

It looks like the Net Return on Total Investment for the 75 story building is 10.06%, which is slightly less than the 10.25% garnered by the 63 story building. A lower net return is not good, though the other numbers in the table are comparable or even favorable to the 75 story building, which means it wouldn't be a terrible investment. The disparity might be caused by the expense of constructing the taller stories.

4 DOCUMENT 4. RASKOB LETTER (1929)

Hagley Museum Library—Wilmington, Delaware

WHAT IS IT?

This correspondence, consisting of a two-page letter and table, was sent from John Raskob to his business partners and reveals some of the earliest planning for what would ultimately become the Empire State Building.

WHAT DOES IT SHOW?

- In the paragraph immediately following the five-point list on the first page, Raskob estimates the cost of the building to be \$1.00 per cubic foot, including the demolition of the old hotel, architect's fees, and the like. According to Raskob, the final building would contain 34,000,000 cubic feet which, combined with the cost of taking over the existing mortgages (see "Did You Know?" below), would bring the total cost of the new skyscraper to \$50,000,000 (approximately \$626,263,000, adjusted to 2010 dollars)*. From this paragraph, students should gain insight into the less obvious factors that contribute to the cost of a skyscraper, as well as its considerable total cost.
- The table, which follows the text of the letter, compares the expense and income for 55 and 80 "storey" building heights. Students should note that the financial calculations for the 80 story building are cited by Raskob in the text of the letter, and that the 80 story building is the one of the two that "breaks even." The table shows that the taller tower is a better investment because it promises a greater gross return of 12.6%, while the 55 story building only yields an 11.4% gross return.
- The table illustrates some of the factors investors weigh to decide the height of a building, including construction and maintenance costs and the amount to the amount of income they expect to receive from renting out space in the building. As a building grows in height, expense grows correspondingly. Taller buildings require larger foundations, additional wind bracing, and more mechanical systems. The increased amount of office space causes logistical complications as well, as moving more people and freight via elevator slows vertical movement, driving down rental income in price per square foot. Investors carefully weigh all of these factors in order to maximize the return on their investment.
- The letter is dated August 28, 1929, almost two months before Black Thursday, which indicates that Raskob and his fellow investors had little idea of what was to come. Students may wonder why

*By comparison, the recently opened Burj Khalifa was projected to cost \$800 million to build, and the World Trade Center ultimately cost the Port Authority approximately \$900 million

4 DOCUMENT 4. RASKOB LETTER (1929)

Hagley Museum Library—Wilmington, Delaware

the building was finished at all, given the circumstances. Though that is a larger topic than can be addressed here, the letter shows that large sums of money had to be invested to even begin the project. Students can infer that, when the Depression finally set in during 1930, investors had already put up too much money to turn back. For them, despite the failing economy, it made more sense to finish the project and attempt to recoup some of their investment.

WHAT CAN WE LEARN FROM THIS DOCUMENT?

- **The Raskob letter demonstrates how economic considerations influenced the height of office buildings.** Since the Empire State Building was a speculative venture, one way investors determined the height of the building was by comparing its estimated cost to its anticipated rental income. One can surmise from Raskob's careful financial planning that if the 55 story configuration had been more profitable, the Empire State Building would never have become the tallest skyscraper in the world.

DID YOU KNOW?

As background, it may be useful to note that the land on which the Empire State Building was constructed was, at this time, the site of the Waldorf-Astoria Hotel (which itself had an interesting history). The hotel had been purchased for \$14 million by the Bethlehem Engineering Corporation in 1928, a transaction that was highly publicized for a number of reasons. First, the amount of money involved was huge, making the sale of the hotel one of the most lucrative real estate transactions to date and certainly the largest of the year. The amount of land involved was also huge, a 197 x 425 foot lot. Finally, the president of Bethlehem Steel, Floyd Brown, had ambitious plans to erect a 50-story skyscraper on the site. Brown intended for the publicity surrounding the sale of the hotel and the construction of the skyscraper to generate additional business partners for the enterprise. It didn't. Bethlehem Engineering defaulted on the mortgage, and that's when this letter comes into the story.

Louis G. Kaufman, to whom this letter is addressed, was the banker on the original sale of the Waldorf-Astoria property. When Brown defaulted, Kaufman turned to wealthy friends John Jacob Raskob, president of General Motors, and Pierre S. du Pont as possible business partners in taking over Brown's failed skyscraper project. This letter, from Raskob to Kaufman, outlines the basic agreement by which the investors would take over the Bethlehem Engineering mortgages and build a profitable skyscraper.

In the first paragraph on the second page of the letter, Raskob mentions that the business partners will

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DOCUMENT 4. RASKOB LETTER (1929)

Hagley Museum Library—Wilmington, Delaware

“secure the services of a man as President” to manage the project for their newly formed corporation, Empire State, Inc. The man who would assume that role was former New York governor Al Smith.

Ultimately, Raskob and his partners decided to build an eighty-five story building. Though contractors reported that seventy-five stories would bring the greatest gross return, the final plan was for a 1,250 foot tall structure that would be the world’s tallest building. The publicity and prestige this designation would garner were thought to generate enough income to justify the extra floors. This plan failed to work, however, and for a number of reasons, the Empire State Building did not begin to turn a profit until the 1950s.

HOW CAN I SUPPORT STUDENTS WHO STRUGGLE TO UNDERSTAND THIS DOCUMENT?

Struggling readers, students who do not prioritize information well, and those who are slow or meticulous may benefit from having the letter text eliminated from this document. The table alone illustrates the value of 80 stories over 55 stories, though this point was also made in a table in Document 4. If you choose to eliminate the letter, consider using the following questions instead:

1. Which of the two buildings (the 55- or 80-storey) costs more to build? How much more does it cost?

The 80-storey building costs more to build. It costs \$5,000,000 more than the 55 storey building.

2. Which of the two buildings yields more income? How much more income?

The 80-storey building yields more income. It yields \$7,000,000, which is \$1,310,000 more than the 55-storey building.

3. Assuming that you would own the building and rent it out for 10 years, would your investment of \$5,000,000 be a worthwhile one? Explain.

Yes, it would be a worthwhile investment. In ten years, the building would make over \$10,000,000 more in rental income than the 55-storey building, which is more than twice as much as the initial \$5,000,000 investment.

example responses

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4 **DOCUMENT 4. RASKOB LETTER (1929)**
Hagley Museum Library—Wilmington, Delaware

This letter, from John Raskob to his business partner, Louis G. Kaufman, summarizes the key understandings by which the two men, along with select other investors, would enter into a business partnership to construct an office building. This building would ultimately become the Empire State Building. The letter consists of two pages of Raskob's typed letter, as well as a table.



1. What is Raskob's main concern in this letter?

2. As he was writing this letter, how many stories (spelled "storeys" in this document) did Raskob intend for the completed building to contain? How do you think he and his business partners arrived at this decision?

The financing of the building is Raskob's main concern. He writes, "...under no circumstances will we go ahead with the erection of the building until and unless the financial [arrangements] are completed to insure the money necessary to pay therefor[e] as the work progresses."

He doesn't say so explicitly, but it looks like he thought the building would be 80 stories rather than 55, since the text of the letter uses the numbers given in the table for the 80 story building. The letter also doesn't say how he made that decision, but it appears from the table that the 80 story building would generate more income and provide a better return on investment.

5 DOCUMENT 5. WOOLWORTH BUILDING FLOOR PLAN

from building rental brochure (1912-13)

WHAT IS IT?

This floor plan was published in a brochure used to advertise office space for rent in the Woolworth Building, one of several floor plans that displayed different office configurations to potential tenants. The brochure was released even before construction on the building had been completed, so prospective tenants could better visualize future occupancy in the building. As such, the floor plan underscores the fact that the building was intended for multiple tenants, not just for Woolworth employees. In other words, the building was speculative, or intended to generate profit from the rental income of tenants.

****This DBQ document is also included in The Skyscraper Museum Tower Tube as document #6.*

WHAT DOES IT SHOW?

The floor plan of the Woolworth Building illustrates a design that was common in its day, a U-shaped base with a tower. By arranging offices in a U-shape around an inner courtyard, almost every rental space could have a window that would permit sunlight to illuminate its interior. Though the Woolworth, and most other buildings at the time, were equipped with electricity, incandescent bulbs—the only technology then available—were less efficient and far more expensive than sunlight. Office spaces that provided ample sunlight, then and now, were more highly desired and therefore garnered higher rents.

This floor plan also illustrates the location of the elevators at the center, or core, of the building. This was done to ensure that the maximum number of offices could be located along the building's exterior walls, where they would receive more sunlight and fresh air, and therefore command higher rents.

WHAT CAN WE LEARN FROM THIS DOCUMENT?

- **Students should be able to see the number and size of the offices on a typical floor of the Woolworth Building.** In the base section of the building (shown on this floor plan), which extended from the 2nd through the 25th floor, there were 85 office units per floor. Each unit generated rental income.
- **Students should be able to conclude that windows—which provided light and air—were vital to the desirability of the rental space.** The U-shaped structure maximizes the amount of sunlight afforded to each office space, and ensures that the unit can be rented for the highest possible rate.
- **The floor plan illustrates the symbiosis between design and profit that has existed as long as the idea of the skyscraper itself.** Students should infer that the floor plan maximizes the amount of rental income afforded by the space constraints.

**DOCUMENT 5. WOOLWORTH BUILDING FLOOR PLAN**

from building rental brochure (1912-13)

DID YOU KNOW?

The Woolworth Building was first conceived of in 1910, when Frank Woolworth commissioned acclaimed architect Cass Gilbert to design the building. Financed in cash, the building was completed in 1913 and was the tallest building in the world until 1929.

The 55-story Woolworth building was serviced by 24 elevators, as students may notice. They may also note the centralized arrangement—including the number of toilets and sinks—of the men’s and women’s restrooms on the floor. The disparity between the two facilities reflects something about the gender diversity of the workforce at the time.

This quote from the 1959 text *Offices in the Sky*, by Earle Schultz and Walter Simmons is pertinent.

Of course the boss had to have his private office next to the window with the light coming in over his shoulder. In some cases his secretary worked in the office, too, but usually she and other clerical help used the reception room space between the private office and corridor wall. To get maximum [sun] light into the reception room, the partition dividing it from the private office was glass.

HOW CAN I SUPPORT STUDENTS WHO STRUGGLE TO UNDERSTAND THIS DOCUMENT?

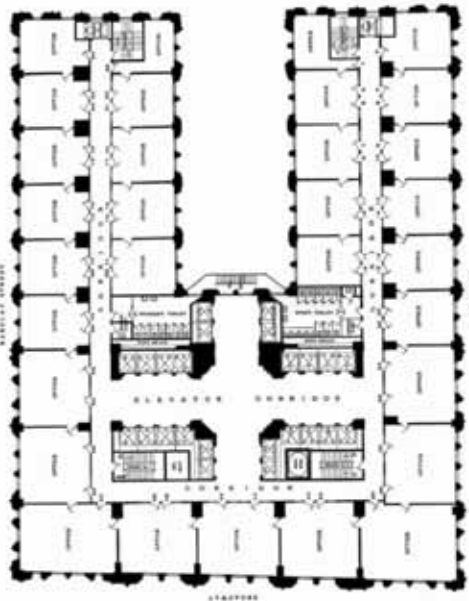
Students may be unfamiliar with a floor plan and how to interpret one. You may want to scaffold student understanding of this document by having students draw a floor plan of their classroom or apartment. Floor plans also provide a common math activity for teaching area and perimeter, so you may want to consult with the math teacher and refer to an example from a math textbook or student work as a point of reference.

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5 DOCUMENT 5. WOOLWORTH BUILDING FLOOR PLAN
from building rental brochure (1912-13)

This floor plan was published in a brochure used to advertise office space for rent in the Woolworth Building, one of several floor plans that displayed different office configurations to potential tenants. This floor plan helped tenants see how many offices would be on a floor, which offices had windows, where the offices were in relation to the elevators, the size of the offices, and other important information. The brochure was released even before construction on the building had been completed, in order to secure tenants and collect initial rent money. Investors wanted buildings to have tenants ready to move in when a building opened, to ensure that they would be able to collect rent money immediately and begin generating a good Return on Investment.



1. Note two characteristics of this floor plan, ex: its overall layout or shape, placement of windows, placement of elevators, etc.
2. In 1913, when this building was designed, many modern technologies did not exist: fluorescent lighting, modern air conditioning and heating. What are two ways that this influenced the design of this building.

example responses

I notice that the offices are all located around the edges of the building. The middle of the floor plan has elevators, bathrooms, stairs, and closets.

It looks to me like the U-shaped layout means that all of the offices have windows. Windows would allow sunlight and fresh air to enter the offices more easily. Though you could still put all of the offices around the edge of the building with a regular, rectangular shape, the U-shape probably ensures that more space is closer to the windows, which would help with light and ventilation.

6

DOCUMENT 6. WOOLWORTH BUILDING SECTION DRAWING

from building rental brochure (1912-13)

WHAT IS IT?

This section drawing was published in a rental brochure used to advertise office space in the Woolworth Building. The brochure was released even before construction on the building had been completed, which indicates that the building was speculative, since tenants were needed to generate revenue.

The section drawing illustrated to potential renters the overall height of the building, the size of the floors, and where a given floor would be located in relation to others.

****This DBQ document is also included in The Skyscraper Museum Tower Tube as document #5.*

WHAT DOES IT SHOW?

- The section drawing shows that only the base of the Woolworth Building utilized the U-shaped design illustrated in the floor plan (Document 5). The tower atop the base utilized a different layout.
- The section drawing illustrates how many floors are in each of these two parts of the building, with the base extending from the 1st to the 25th floor, and the tower reaching from the 26th through the 55th floor.
- The section drawing provided a semblance of what the exterior of the building would look like.

WHAT CAN WE LEARN FROM THIS DOCUMENT?

- **Students will infer that the tower offices could command higher rents than offices in the building's base.** The smaller floors in the building's tower offered premium views, light, and air.



DOCUMENT 6. WOOLWORTH BUILDING SECTION DRAWING

from building rental brochure (1912-13)

DID YOU KNOW?

The tower made the Woolworth Building famous: at 792 feet, it was the world's tallest building. The distinction of that title added value to the address and prestige to the Woolworth Company.

Though some students may inquire about the role that zoning laws may have played in the overall height and design choices, New York City did not pass comprehensive zoning laws until 1916, three years after the Woolworth Building's construction.

HOW CAN I SUPPORT STUDENTS WHO STRUGGLE TO UNDERSTAND THIS DOCUMENT?

Students who are not visually-oriented may struggle to make sense of the section drawing, which is why a photograph of the building is provided as well. Help students figure out what they are looking at by having them draw arrows from the base of the section drawing to the base of the building in the image, and also with the tower.

Refer them back to Document 5 and ask them if the U-shaped floor plan comes from the tower or the base (A: base). More pictures of the Woolworth Building are available free at www.skyscraper.org, and multiple perspectives may help students make sense of the building as a whole.

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6 DOCUMENT 6. WOOLWORTH BUILDING SECTION DRAWING
from building rental brochure (1912-13)

This section drawing was published in a brochure used to advertise office space for rent in the Woolworth Building. The section drawing illustrated to potential renters the overall height of the building, the size of the floors, and where a given floor would be located in relation to others. It also provided a context for the sample floor plans provided in the brochure, showing the height of the U-shaped base structure as well as the tower above it.



1. What is one reason tenants might be willing to pay more for an office on an upper floor, in the tower?
2. What might be some of the financial reasons for this design, from the perspective of the investor or building owner?

example responses

The base section is definitely bigger than the tower, in terms of overall space. This means that fewer businesses and people would be occupying the tower floors, which might be good for renters, since there would be less foot traffic. The height is also a consideration. The light and the view provided by the windows in the tower might be far better than in the base of the building. This could also drive up rents—something that is good for investors.

The large base of the building is important for an investor, because it contains more rentable spaces. The tower offices may command higher rents than the base offices, though, which is a good reason to include a tower.

7

DOCUMENT 7. WOOLWORTH BUILDING TENANT LIST

The Skyscraper Museum Collection

WHAT IS IT?

This image shows just one page in a longer tenant list. The entire list names 600 individuals and businesses that rented offices in the Woolworth Building during its first year of business.

WHAT DOES IT SHOW?

The page lists Woolworth Building tenants alphabetically, along with their office numbers. There are also two handwritten tenants at the bottom of the list; presumably these were late additions in the world before personal computers.

WHAT CAN WE LEARN FROM THIS DOCUMENT?

- **The Woolworth Building provided office space to hundreds of tenants operating a diverse range of businesses.** Many people naturally assume that the Woolworth Building provided offices for the workers of the Woolworth Company. In fact, most offices were occupied by small businesses, as the tenant list indicates.
- **The Woolworth Company occupied less than two stories (the 23rd and part of the 24th Floors) of the 55-story building.** From this, students can infer that the Woolworth Company did not use the building as its main headquarters. Instead, the building was designed to provide high quality office space that would command high rents because of its prestige and prime location—across from City Hall park, in the heart of a major commercial center, and within easy walking distance of Wall Street.
- **The Document should be used with the other Woolworth Building documents to glean new information.** For example, students can use this document to note how many offices a typical tenant may have rented, and compare that with the floor plan document to get a better sense of the amount of space rented by a various companies and the number of businesses operating on each floor.

HOW CAN I SUPPORT STUDENTS WHO STRUGGLE TO UNDERSTAND THIS DOCUMENT?

Some students are likely to be confused by the fact that this is just one page of a larger tenant list. They are likely to be focused on facts and details (the total number of tenants or the names of the tenants) instead of the idea: The Woolworth Building was constructed speculatively, with the intention that it would be rented out to a huge variety of tenants. Ask these students to name (or have them research) all of the tenants in the Empire State Building or One Liberty Plaza. They will quickly realize that there are too many to be worth counting in school. The same was true 100 years ago, at the Woolworth Building.

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7 DOCUMENT 7. WOOLWORTH BUILDING TENANT LIST
The Skyscraper Museum Collection

This excerpt from the Woolworth Building tenant list shows just a few of the 600 individuals and businesses on the complete list of tenants. The tenant names are on the left, and the numbers of the office(s) they rented are shown on the right. The office number begins with the floor number and is followed by the number of the unit. For example, unit 814 (Arthur Werther) is the 14th unit on the 8th floor and Unit 940 (H. Warrendorf) is the 40th unit on the 9th floor. Many companies, such as Richard E. Weldon, leased more than one unit. Weldon, who is listed in units 1501-11, would have occupied a total of 11 units on the 15th floor (1501, 1502, 1503, etc.).

The Woolworth Company was a large organization, with hundreds of employees who required office space. A small fraction of these employees actually worked in the Woolworth Building.

Wolff David S.	2709-11
Wolman Realty Co.	240-20
Wright Richard A.	214
Werther Arthur	928-30
Wood Matthew W.	1798-8
Walt John C.	1702-4
Winter Charles A.	1706-4
Walker S. T.	1118-18
Weldon Richard E.	1801-11
Westberg & Williams	1778-24
Williams Ed. T.	1778-24
Wright Guy T.	2801-12
Wolf S. B.	911-15
Wechsler Ralph T.	2140-24
Wechsler Sigmond	2140-24
Wright Boardman	1378-8
Warrenhof H.	940
Wright Harold A.	902-4
Wright Babcock & Morse	1872-24
White William Wallace	2079-25
Wood S. H.	24th floor
Woolworth F. W. Co. Executive office	23rd floor
Woolworth F. W. Co. Manhattan office	24th floor
Williams W.	24th floor
Woolworth F. W.	24th floor
Woolworth F. W.	24th floor
Wollenstein Harry S.	1769-22
Wolman Fire Proof Window Co.	2178-24
Wolman Solar Window Co.	2178-24
Watts Frank A.	1228-24
Ward, Margaret C.	1447-71
Ward & Hillman	24th

1. The Woolworth Building was not the headquarters of the Woolworth Company, but it did house some of its offices. Which offices were located in the Woolworth Building? On what floors were those offices?
2. Why would Frank Woolworth, founder of Woolworth's, invest in a building that would bear his name and hold the title of the tallest in the world, but choose not place the majority of his employees there? List some possible reasons.

END OF DBQ DOSSIER 1 DOCUMENTS

example responses

The 24th floor was the location of the Executive Offices. The 23rd floor was the location of the Manhattan office. It appears that other companies also had offices on the 24th floor.

Depending on where most of Woolworth's employees actually worked, it is possible that the rent was cheaper there than in the Woolworth Building. It would seem that, since Woolworth owned the building, rent there would be free. However, if office space in the Woolworth Building could be rented for more than an office in an older building in a poor location, it would make sense for Woolworth to move his non-essential operations to a cheaper office and keep the additional revenue.