UNIT 5

Cities Are Growing Up



In this unit, you will

- read about skyscrapers and what makes them possible.
- read about growing populations in cities.
- review cause and result.
- increase your understanding of target vocabulary words.

READING SKILL Identifying Examples

Self-Assessment

Think about how well you know each target word, and check (✓) the appropriate column. I have...

TARGET WORDS	never seen the word before	seen the word but am not sure what it means	seen the word and understand what it means	used the word, but am not sure if correctly	used the word confidently in *either* speaking *or* writing	used the word confidently in *both* speaking *and* writing
AWL area						
construct						
design						
height						
AWL major						
previous						
restrict						
AWL structure						
support						
vertical						

Outside the Reading What do you know about urban planning? Watch the video on the student website to find out more.

AWL Academic Word List
Oxford 3000™ keywords

LIVEWORKSHEETS

READING 1

Before You Read

In small groups or with the whole class, discuss the following questions.

1. What is the tallest building you have visited? Where was it?
2. Would you like to work in a very tall building? Why or why not?
3. What kinds of buildings are often very tall?

Read

Information in this article is from a popular online technology magazine.

مرجع زبان ایرانیان www.irLanguage.com

SKYSCRAPERS

About 2,800 years ago, the tallest **structure** in the world was the Great Pyramid of Giza in ancient Egypt. It was 146 meters (479 feet) tall. Today, the Burj Khalifa building in Dubai is nearly six times that **height**. It is 828 meters (2,717 feet) tall and has 163 stories.

The Burj Khalifa is one of many skyscrapers **constructed** in different **areas** of the world recently. Even though the Great Pyramid was very tall, it was not a skyscraper because people did not live or work inside. There is no exact definition of a skyscraper. It is simply a very tall building. Today, millions of people live and work in skyscrapers.

EARLY BUILDINGS

Until the end of the 19th century, few buildings were taller than ten stories. One reason was because people could not easily climb any higher on stairs. Also, the entire **structure** of an old building was **supported** by its four outside walls. These walls were made of **vertical** piles of bricks or stones. The piles had to be very thick or they would fall over. This **restricted** the **height** of the walls.

STEEL BEAMS

Two **major** inventions in the 19th century made the **construction** of taller buildings possible. One was a new process for making steel. This process was used to create strong beams (long, thin pieces) of steel. Tall **structures** could be built with these beams. These **structures** used a new **construction design**. The walls were not made of stone or brick. Instead, thin steel beams were used to build a strong **vertical** framework for the walls. Later, the **vertical**



The Burj Khalifa

LIVEWORKSHEETS

beams were covered with concrete to create attractive walls. The thin walls gave much more **area** inside a building.

SAFETY ELEVATORS

The safety elevator was the other **major** invention that made possible the **construction** of taller buildings. **Previously,** elevators had been used for lifting things on ships or in factories. But they were too dangerous to use to lift people. The ropes often broke and the lifts fell to the ground. The invention of an elevator safety brake prevented elevators from falling. This meant that people could safely ride up to high apartments and offices. And they could safely ride down.



Steel beams make taller structures possible.

However, elevators created certain building **design** problems. First, the **vertical structures** for elevators used valuable space inside a building. The engine room that provided power to the elevators also used valuable space. The **area** that could be used for offices or apartments was **restricted** by these necessary **structures**.

Skyscrapers have other **design** problems. For example, they need machinery to pump water up to high stories. They also need pipes to carry clean water up and waste water down. Tall buildings also have complex systems for bringing electricity, heating, and air conditioning to the whole building. Finally, the top part of a very tall building must be **designed** to be safe when strong winds blow high above the ground.

Is there a limit to the **height** of skyscrapers? We will probably learn the answer soon. ■

Reading Comprehension

Mark each statement *T* (True) or *F* (False) according to Reading 1.

___ 1. Millions of skyscrapers have been constructed in the area near Dubai in recent years.

___ 2. Two major inventions in a previous century made the construction of tall buildings possible.

___ 3. The tallest structures in the world are restricted to 146 meters in height.

___ 4. Today, strong steel beams form the vertical support of skyscrapers.

___ 5. The design of a skyscraper must include plans for a system to pump water to high stories.

___ 6. The vertical space where elevators travel increases the valuable space inside a building.

LIVEWORKSHEETS

READING SKILL Identifying Examples

LEARN

Writers often include examples in their articles. Examples help readers understand the writer's ideas. Several signals help readers identify examples. These include

for example or *for instance*

... is an example of ...

Like... or *such as...*

There are many... One is... Another is... ...also....

APPLY

Work with a partner. Find these sentences in Reading 1. Follow the instructions given after each sentence.

1. Two major inventions in the 19th century made the construction of taller buildings possible.

   What signals are used to identify the first and the second examples?

   _____

   _____

2. Skyscrapers have other design problems.

   How many examples are in the paragraph that begins with the above sentence?

   Write the signals that are used to identify each one.

   _____ _____

   _____ _____

REVIEW A SKILL **Identifying Cause and Result** (See p. 52)

The sentences below are from Reading 1. Circle the sentence or sentences that state a cause. Underline the sentence or sentences that state a result.

Until the end of the 19th century, few buildings were taller than ten stories. One reason was because people could not easily climb higher on stairs. Also, the entire structure of an old building was supported by its four outside walls.

LIVEWORKSHEETS

Vocabulary Activities STEP I: Word Level

A *structure* is something complex that is built of many parts, such as a dam, a building, or a bridge.

The Great Pyramid is a tall ***structure****.*

The *structure* of something is concerned with the arrangement of its parts.

Our class studied the ***structure*** *of the Greek government.*

(See Oxford American Dictionary for learners of English, p. 724)

CORPUS

A. **Work with a partner. Match the specialist on the left with the kind of *structure* he or she might study. Look in a dictionary to find the meaning of words you do not know. The first one has been done for you. Take turns making sentences with the information.**

1. a conductor — 1 a. a symphony

A conductor might study the ***structure*** *of a symphony .*

2. botanist — ___ b. the solar system
3. geologist — ___ c. a thunderstorm
4. linguist — ___ d. a horse's heart
5. meteorologist — ___ e. a volcano
6. astronomer — ___ f. Korean
7. veterinarian — ___ g. a leaf

Something is *vertical* if its longest dimension is straight up and down. Something is *vertical* if it stands at an angle of 90° to the ground. (An object that is parallel to the ground is described as *horizontal*.) On a piece of paper, a *vertical* line goes from the bottom to the top (or top to bottom) on the page.

Be sure that you make your fence posts ***vertical****.*

Draw a ***vertical*** *line on the paper.*

(See Oxford American Dictionary for learners of English, p. 810)

CORPUS

B. **Work with partner. Circle the things below that are usually *vertical*. Then take turns making sentences with the circled words.**

Fence posts are ***vertical****.*

fence posts	chimneys	floors	walls
flagpoles	shelves	milk cartons	lampposts
tree trunks	railroad tracks	candles	airplane wings

Question: What time is it on a clock when both hands are vertical?

LIVEWORKSHEETS

Something *major* is something that is very large, very important, or very serious.

*There was a **major** earthquake in the mountains yesterday.*

*New Year's Day is a **major** holiday in many cultures.*

*We have a **major** problem.*

Major has a different meaning related to university study. A person's *major* is his field of study. It also identifies a person who is studying in that field.

*She is a business **major**. My **major** is chemistry.*

(See Oxford American Dictionary for learners of English, p. 432)

CORPUS

C. **Work with a partner. Imagine that you are planning a 13-hour airplane trip across the ocean to another country. Write M before the events that would be *major* problems. Take turns making sentences with the information.**

*Losing my luggage would be a **major** problem.*

M Losing my luggage
___ Sitting next to a window
___ Having a cup of coffee
___ Not being able to sleep
___ Watching a movie
___ Reading a magazine
___ Missing the airplane
___ Spilling a cup of coffee on my lap
___ Forgetting to pack a book to read
___ Sitting next to a crying baby

Vocabulary Activities STEP II: Sentence Level

To construct something means "to build something." The passive form of the verb is often used.

*Workers will **construct** a hotel near the river.*

*A hotel will be **constructed** near the river.*

The noun form is *construction*.

*The **construction** of the hotel will take seven months.*

(See Oxford American Dictionary for learners of English, p. 155)

CORPUS

LIVEWORKSHEETS

D. Use *construct, was constructed,* or *construction* to complete the sentences below.

1. The Panama Canal _____ to form a sea passage between the Atlantic Ocean and the Pacific Ocean. Many workers died of yellow fever during the _____ of the canal.
2. The emperor Shah Jahan wanted to _____ the Taj Mahal in Agra, India, to honor his wife. The building _____ of white marble.
3. _____ of the Tower of Pisa in Italy began in 1173. One side of the tower began to sink into soft mud after the first floor _____. To this day, the tower is not vertical. It is popularly known as the Leaning Tower of Pisa.

To design something means "to make a drawing or a plan of how something will look or how something will work." The noun form is also *design.*

The architect wanted ***to design*** *the hotel so each room had a view of the city.*

Her ***design*** *was highly praised.*

To design something also means "to invent or plan something for a particular purpose." The noun form is also *design.*

This stadium was ***designed*** *for football games.*

The stadium ***design*** *provides seating for 58,000 people.*

A *design* can also be a pattern of lines, shapes, and colors that decorate something.

Tiles of blue and green formed a beautiful ***design*** *on the wall.*

(See Oxford American Dictionary for Learners of English, p. 197)

CORPUS

E. Imagine that you are the architect of a new hotel. You are writing a letter to the builder. Rewrite each sentence in your notebook to include a form of *design.*

1. I am sending you my drawings for the Skyscraper Hotel in your city.

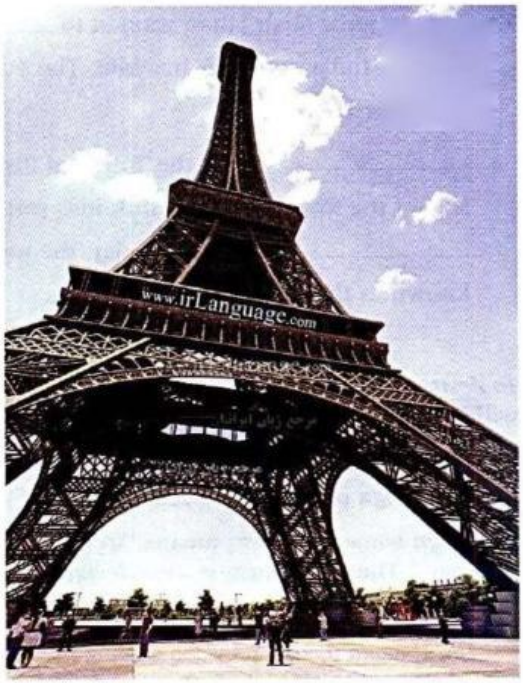
   I am sending you my ***designs*** *for the Skyscraper Hotel in your city.*
2. The hotel is planned for 1,000 rooms.
3. The plan for each floor is the same.
4. Each floor is planned to have ten rooms around a central hallway.
5. However, each floor will have a different pattern painted on the hallway walls.

LIVEWORKSHEETS

F. **Complete the paragraph below by putting these words into the blank spaces.**

area	designed	major	restricted	structures
construction	height	previous	support	vertical

The Eiffel Tower in Paris, France, is one of the most famous (1) _____ in the world. (2) _____ of the tower was completed in 1889 for the World's Fair. The (3) _____ year, the World's Fair had been held in Barcelona, Spain. The Eiffel Tower was named for the engineer who (4) _____ it, Gustave Eiffel. Eiffel did not trust the recent invention of steel beams. Instead he chose to construct the tower framework of pure iron. He believed that an iron framework could better (5) _____ the tall, (6) _____ tower he planned. The framework was made in a criss-cross design to increase the strength of the iron. At the time, the city (7) _____ buildings to seven stories. At 324 meters (1,063 feet) in (8) _____, the Eiffel Tower was far taller than seven stories. In fact, it was the tallest structure in the world until 1930. The tower also occupied a large (9) _____. The base of the tower measured about 100 meters by 100 meters. Elevators carried visitors up high to enjoy the view of the city. The tower was supposed to remain for just 20 years and then be torn down. But the tower became a (10) _____ attraction in Paris, so it still stands today.



The Eiffel Tower

LIVEWORKSHEETS

READING 2

Before You Read

In small groups or with the whole class, discuss the following questions.

1. What is the biggest city near your home? Do you ever visit this city?
2. What are some of the good things about visiting a big city?
3. What are some problems that people sometimes have if they live in a big city?

Read

Information in this article is from a city planning journal.

The Growth of Cities

The population of the world recently reached 7 billion. Over half of these 7 billion people live in cities. **Previously**, most people lived on farms or in small towns. But now cities are growing larger as people leave farms and towns. Today, nearly 30 cities in the world have populations of over 10 million people. Tokyo, the world's largest city, has a population of about 37 million people.

There are several reasons why cities are growing. One reason is that big cities are **major** business centers. Many factories, offices, and stores are located in big cities. These businesses need workers. People are moving to cities so they can find good jobs. They want jobs that pay enough money to **support** themselves and their families. Many big cities are also **major** ocean ports. Port cities have grown because international trade has been increasing. Ships bring materials into the city. Workers are needed to unload the materials and deliver them to factories and stores. Big cities are also **major** transportation centers. They have airports, train stations, and bus terminals. Convenient transportation enables visitors to come to the cities to live or for shopping, business, or vacations. Finally, big cities are likely to have large universities and technical schools that attract students to study there.

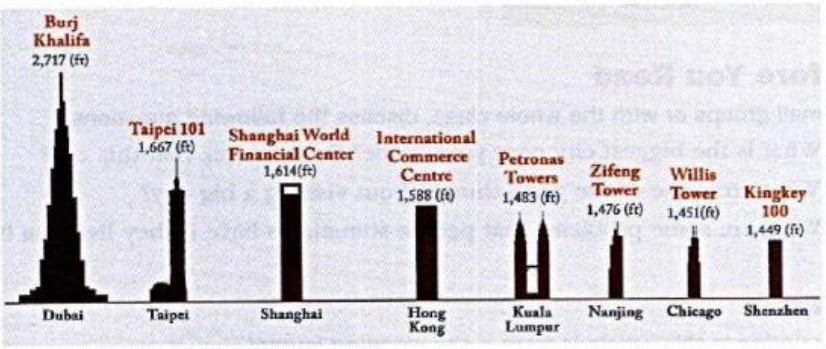
As cities grow, they face several problems when large numbers of people live in a limited **area**. For example, new buildings must be **constructed** for families to live in. Growing businesses need new buildings, too. However, there is usually very little empty space within the **area** of a large city.



A busy train station in London, U.K.

LIVEWORKSHEETS

As a result, even a small plot of land is expensive. For this reason, builders are removing small, one-story buildings that were **constructed** in **previous** times. They are replacing them with tall, **vertical** buildings. As an example, a one-story apartment building might provide living space for 25 people. A ten-story building occupying the same land **area** could provide living space for 250 people. Many big cities have made efficient use of their land by going **vertical**. Hong Kong, for example, has nearly 8,000 **structures** that are 12 or more stories in **height**. New York City and São Paulo have nearly 6,000. Singapore and Moscow each have about 4,000.

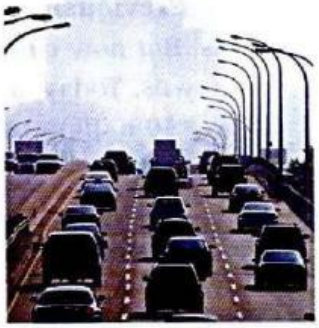


Heights of some famous skyscrapers

Another problem cities face is **designing** and installing complex systems to provide services such as water and electricity to new homes and businesses. An efficient system must also be **designed** for collecting tons of trash and disposing of it in a safe way.

Finally, a growing population means more cars, trucks, and buses in the streets. Narrow streets in old cities are often unable to handle today's increased traffic. In addition, smoke from vehicles causes serious air pollution in some cities. To reduce traffic and pollution, some cities have passed laws that **restrict** the use of automobiles in certain **areas**.

As our world population continues to grow, cities will be growing, too. A growing city will have to solve many **major** problems. These problems result when millions of people live and work in a crowded city. ■


Traffic can cause air pollution called smog.

Reading Comprehension

Mark each statement *T* (True) or *F* (False) according to Reading 2.

___1. Many people who previously lived in cities are moving to farms and in small towns.

___2. A city offers many jobs that can help people support themselves and their families.

___3. Construction of tall, vertical buildings is a major problem in cities.

___4. Problems result when large numbers of people live in a limited area.

___5. Narrow streets in old cities were not designed for today's increasing traffic.

___6. Singapore has twelve structures that are nearly a thousand feet in height.

___7. Some cities have restricted the use of water and electricity to businesses.

LIVEWORKSHEETS

READING SKILL Identifying Examples

APPLY

Paragraph 2 begins "There are several reasons why cities are growing." Write the signal words that identify each example.

1. _____ 2. _____

3. _____ 4. _____

Paragraph 3 includes an example that compares a one-story building with a ten-story building. Which of these ideas does this example support?

a. A small plot of land is expensive.

b. Tall buildings use land efficiently.

c. Many people live in apartments.

REVIEW A SKILL **Identifying Cause and Result** (See p. 52)

These sentences are related to Reading 2. Circle the word or words that state a cause. Underline the word or words that show a result.

1. Cities face several problems when large numbers of people live in an area.

2. There is usually very little empty space within a large city. As a result, even a small plot of land is expensive. For this reason, builders are removing small, one-story buildings that were constructed in previous times. They are replacing them with tall buildings.

Vocabulary Activities STEP I: Word Level

To support something means "to carry the weight of something." *Support* is both the verb form and the noun form of this word.

*This post **supports** the weight of the roof.*

*This post is the main **support** for the roof.*

To support a person or a belief means "to agree with the ideas of the person or belief."

*I **support** lower taxes for working people.*

*The president needs the **support** of voters to change the law.*

To support someone means "to provide money to pay for food, housing, etc."

*It is hard for a man **to support** his family if he does not have a job.*

*The family would starve without my **support**.*

(See Oxford American Dictionary for learners of English, p. 734)

CORPUS

LIVEWORKSHEETS

A. **Work with a partner. Match the person or thing on the left with what the person or thing *supports*. Take turns making sentences with the information.**

1. voters — 1 a. the mayor's plan to build a new park.

   *Voters **support** the mayor's plan to build a new park.*

2. vertical beams — ___ b. the weight of an elevator.
3. banks — ___ c. the construction of a new airport.
4. strong cables — ___ d. their children until they are grown.
5. apartment owners — ___ e. the roof of the structure.
6. travelers — ___ f. the design of a new $1 coin.
7. parents — ___ g. a restriction on how many people can live in one room.

An *area* is a particular part of a place, a building, a city, a country or the world.

*Visitors are not allowed in the storage **area** of the museum.*

*An earthquake was felt throughout the desert **area**.*

An *area* can refer to a particular part of a subject or an activity.

*He's an expert in the **area** of ancient Egypt.*

Area is also a mathematical description of the size of a space. It is calculated by multiplying the length of a space by its width.

*The room was small. It was just 100 square feet in **area**.*

(See Oxford American Dictionary for learners of English, p. 36)

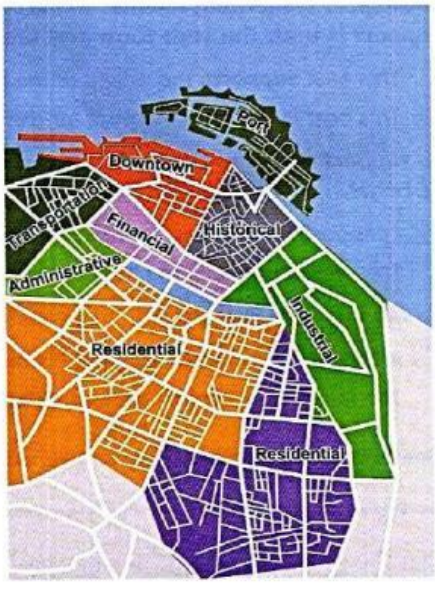
CORPUS

B. **Work with a partner. Take turns asking and answering questions about the map. Check a dictionary for new words.**

1. Where are banks and loan companies located?

   *In the financial **area**.*

2. Where do ships unload materials from other countries?
3. Where are factories located?
4. Where do most people live?
5. Where are department stores and other stores located?
6. Where are the airport and the train station located?
7. Where are the city hall and the city court house located?
8. Where are the oldest buildings located?



LIVEWORKSHEETS

The adjective *previous* describes something that happened earlier or before. The adverb form is *previously*.

*My **previous** apartment was on Orange Street.*

*I **previously** lived in a small town near the mountains.*

(See Oxford American Dictionary for learners of English, p. 552)

CORPUS

C. **Work with a partner. Imagine you are looking for a job in a big city. The manager of a large office is asking you questions. Answer using *previous* or *previously*. Take turns asking and answering the questions.**

1. Where did you live before moving to this city? (previously)

   *I **previously** lived in a small town near the mountains.*

2. Have you made an earlier visit to this city? (previous)
3. Do you know anyone who used to work for this company? (previously)
4. Where did you work before you moved here? (previously)
5. Have you had any earlier experience with computers? (previous)

To restrict something or someone means "to put a limit on what someone can do."

*The city **restricts** the size of signs that stores can have.*

*I **restrict** my children to three hours of television a day.*

A *restriction* is a law or a rule that limits the actions of people.

*The college placed a **restriction** on the use of cell phones in classrooms.*

The adjective *restricted* describes something that is limited for a particular purpose or for a particular group.

*The patients were placed on a **restricted** diet.*

(See Oxford American Dictionary for learners of English, p. 605)

CORPUS

LIVEWORKSHEETS

D. **A city has been growing in the last few years. The mayor and the city council members have been discussing the problems this has created. In your notebook, rewrite their ideas with a form of *restrict*.**

1. Our city has a law that limits the height of buildings to ten stories.

   Our city has a law that ***restricts*** *the height of buildings to ten stories.*

2. We should not limit the height of buildings.
3. That limit is one reason we have a housing shortage.
4. We need to add changes to that law.
5. If we build taller apartments, we will need to limit parking on the streets.
6. Right now, there are no limits on street parking.
7. Street parking should be limited to people who live nearby.
8. That limit would be impossible to enforce.

The *height* of a person is his or her measurement from the top of the head to the feet. Only the adjective *tall* can describe a person's height.

My daughter's ***height*** *is now 40 inches.*

My daughter is now 40 inches ***tall****.*

The *height* of an object is the measurement from top to bottom. The adjective form is *high*. The adjective *tall* can also describe objects.

What is the ***height*** *of that building?*

How ***high*** *is that building? How* ***tall*** *is that building?*

The ***height*** *of that building is 200 feet.*

That building is 200 feet ***high****. That building is 200 feet* ***tall****.*

Height also is a measurement of distance above the ground. *High* is the adjective form. (*Tall* is not used with this meaning.)

A strong wind carried the kite to a ***height*** *of 50 feet.*

A strong wind carried the kite 50 feet ***high****.*

Height also describes the most important or strongest part of something. (There is no adjective form for this meaning.)

He was at the ***height*** *of his career when he became ill.*

A tree fell over at the ***height*** *of the storm.*

(See Oxford American Dictionary for learners of English, p. 339)

CORPUS

LIVEWORKSHEETS

E. The chart below gives you information about several tall structures. Write questions and answers in your notebook about each one. Use *height, high,* and *tall* in your questions and answers. You may use either feet or meters in your answers.

1. How tall is the Statue of Liberty?

   *The **height** of the Statue of Liberty is 151 feet.*

	STRUCTURE	Height in feet	Height in meters	Use in question	Use in answer
1	Statue of Liberty	151	46	tall	height
2	Great Pyramid at Giza	479	146	high	high
3	Eiffel Tower	1,063	324	tall	high
4	Mount Everest	29,035	8,948	height	tall
5	Burj Khalifa skyscraper	2,717	828	high	height
6	Tallest roller coaster	456	139	height	high

F. Use the following words to complete this paragraph.

areas	designed	height	restricted	support
constructed	major	previous	structures	vertical

When cell phones were new, each cell phone company (1) _____ a system of signal stations so a person could call a friend far away. The electronic message was transferred from one signal station to another until it finally reached the friend's phone. Cell phone companies (2) _____ many tall, (3) _____ towers that would (4) _____ a signal station on the top. In some areas, there were not enough signal stations, so the electronic message was weak. The friends couldn't hear each other. In some (5) _____, the message was weak because cities (6) _____ the (7) _____ of the towers. In (8) _____ years, not many people used cell phones. But today there are millions of cell phone users. Cell phone companies are designing new systems of signal stations that will result in (9) _____ improvements in service. But instead of constructing new towers, the companies will locate new signal stations in the top stories of schools, hotels, office buildings, and other tall (10) _____. The companies will pay rent to the owners of the buildings.

LIVEWORKSHEETS