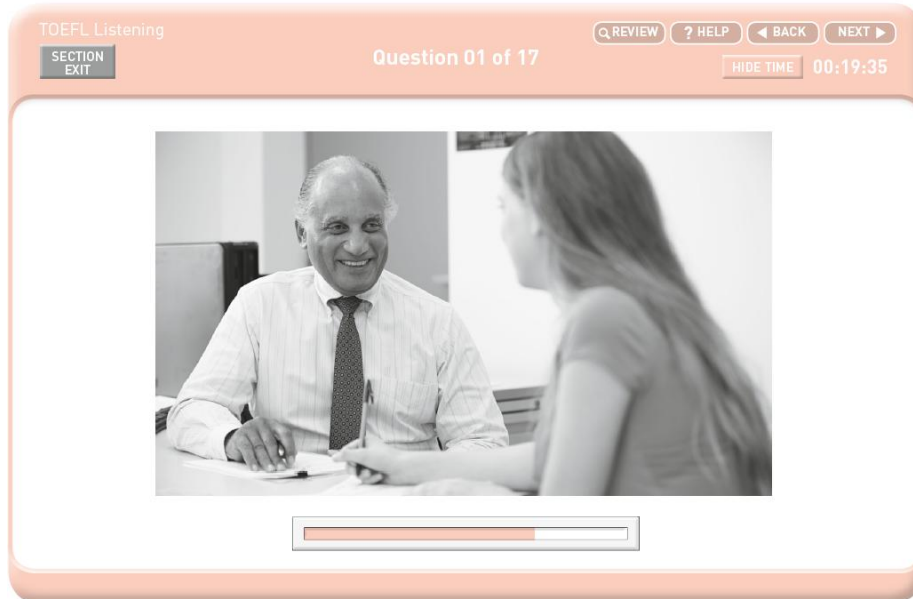


[PART ONE - CONVERSATION]

Listen to a conversation between a student and a professor from a history class.



01

What is the conversation mainly about?

- Ⓐ The difficulty of getting a part time job at the university
- Ⓑ Preparation for graduate school admissions
- ✓ Ⓒ A position as a research assistant for a Latin American history project
- Ⓓ Scholarships granted by the university to graduate students in the study of history

02

Listen again to part of the conversation. Then answer the question.

What does it mean when the student says this: 🔄

- Ⓐ The student is being modest even though there is a job she wants.
- ✓ Ⓑ The student desperately wants to take any chance to get a part time job.
- Ⓒ The student emphasizes that she doesn't have work to do at the moment.
- Ⓓ The student is not interested in any part time jobs due to research seminars.

03

According to the conversation, what are the requirements that the student needs to prepare besides completing the thesis?

Click on 2 answers.

- ☐ (A) experience as a teaching assistant in history
- ✓ ☒ (B) completing history research seminars
- ☐ (C) degrees in history from other universities
- ✓ ☒ (D) hands-on learning experience in the field of history
- ☐ (E) completing a minimum of 10 to 15 courses in the undergraduate course

04

Listen again to part of the conversation and answer the question.

What does it mean when the professor says this: 🎧

- ✓ ☒ (A) The student can get the research assistant position if she wants.
- ☐ (B) The professor is willing to offer scholarships to the student.
- ☐ (C) The professor is going to give the grant money to the student.
- ☐ (D) The student can't receive the money because she didn't show an interest.

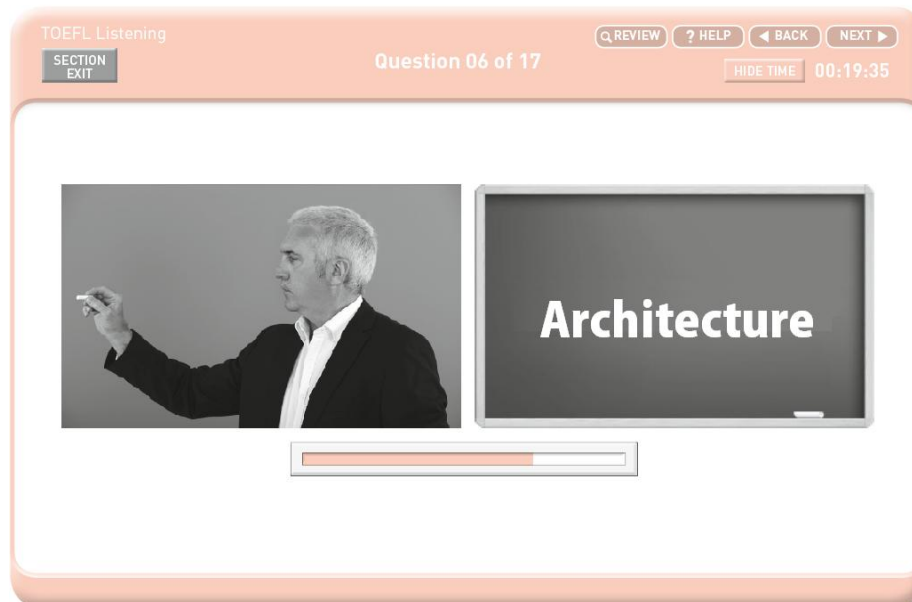
05

According to the conversation, what will the student likely do next?

- ✓ ☒ (A) She will take the research assistant position that the professor offered.
- ☐ (B) She will apply for graduate school in history right away.
- ☐ (C) She will look for part time work at a local history museum or institution.
- ☐ (D) She will apply for a grant that the university offers.

[PART TWO - LECTURE]

Listen to a lecture in an architecture class. The professor is talking about American architecture.



06

What is the main idea of this lecture?

- Ⓐ American architecture is better than European.
- Ⓑ New England architectural styles originated from European architecture.
- ✓ Ⓒ America's unique characteristics created its architecture.
- Ⓓ American architecture is the same as other countries'.

07

All of the followings are the characteristics of early New England homes EXCEPT

- Ⓐ Small windows
- Ⓑ Fireplace in the center
- Ⓒ Walls made of overlapping wood panels
- ✓ Ⓓ Easy to maintain

08

In the lecture, the professor described several architectural traditions in the early United states. Match each architectural style and where it was used.

Drag each answer to the correct box where it belongs.
The answer is used only once. TWO of them are not used.

Log Cabin Clapboard Georgian Spanish baroque Greek revivalism

East Cost	Frontier	New England
Georgian	Log Cabin	Clapboard

09

According to the lecture, what kind of architecture would be found in New Orleans?

- ✓ (A) Complex ironwork
- (B) Greek revivalism
- (C) Spanish baroque
- (D) Red tile roofs

10

Listen to part of the lecture and answer the question.

What does the professor imply when he says this: 

- (A) Brown, Yale and Harvard are the most famous universities among Ivy League schools.
- (B) Brown, Yale and Harvard are schools teaching Georgian architecture styles.
- ✓ (C) The architectural features of Brown, Yale and Harvard are Georgian styles.
- (D) Georgian architectural styles began at Brown, Yale and Harvard.

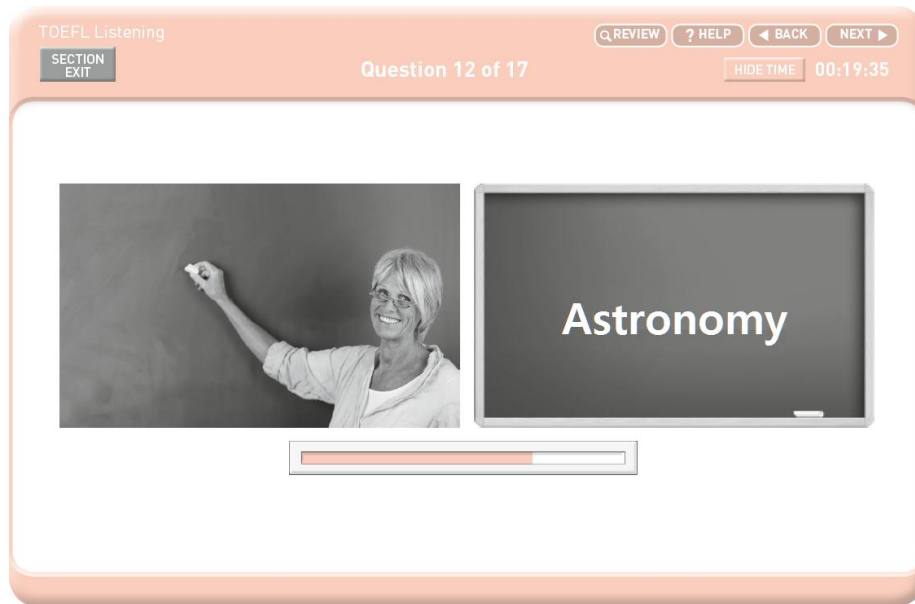
11

What can be inferred about the early American architecture styles?

- (A) The early American architecture is derived from British colonial architecture.
- (B) Log cabins are the only architectural style that didn't imitate European architectural styles.
- (C) American architectural ironwork can only be found in New Orleans.
- ✓ (D) A variety of architectural styles could emerge due to the regional differences in America.

[PART THREE - LECTURE]

Listen to a lecture in an astronomy class. The professor is talking about stars.

**12**

What is the main idea of this lecture?

- ☐ Ⓐ How stars are formed.
- ✓ ☒ Ⓑ How giant stars die.
- ☐ Ⓒ What supernovae are.
- ☐ Ⓓ Where red supergiants are formed.

13

The professor talked about the life of a star. Place the following steps into the correct chronological order.

Drag each answer to the correct box where it belongs.

Use each step only once.

Supernova

Protostar

Neutron star

Red supergiant

1.	Protostar
2.	Red supergiant

3.	Supernova
4.	Neutron star

14

According to the professor, what is the element at the center of the red supergiant?

- Ⓐ Helium
- Ⓑ Hydrogen
- Ⓒ Oxygen and silicon
- ✓ Ⓓ Iron

15

According to the lecture, how big is a neutron star?

- ✓ Ⓐ Six miles in diameter
- Ⓑ One billion tons
- Ⓒ The size of our sun
- Ⓓ The size of a singularity

16

All of the followings are the characteristics of a black hole EXCEPT

- Ⓐ Infinite density
- Ⓑ Infinite temperature
- Ⓒ Infinite pressure
- ✓ Ⓓ Infinite weight



17

Listen to part of the lecture and answer the question.

What does it mean when the professor says this: 🎧

- Ⓐ If our star were the size of a teaspoon, it would weigh a billion tons.
- Ⓑ If an astronaut brings a teaspoon to a supernova, it would weigh a billion tons.
- ✓ Ⓒ If the core of a supernova turns into a neutron star, it would become extremely heavy.
- Ⓓ If a neutron star is 6 miles away from the Earth, it would weigh a billion tons due to gravity.

PART ONE - CONVERSATION

- Student Professor Greeley, you wanted to see me?
- Professor Oh, yes. Come in. I was wondering if you were still planning on going to graduate school next year.
- Student That's my goal, yes. But I guess it sort of depends on how my senior thesis project goes next semester.
- Professor That's a major factor involved in graduate admissions, that's true. But there're a lot of other things you can do to help your application. You know, like completing research seminars or field experiences including working in historical museum, archive or other institution where you can learn the study and interpretation of history.
- Student You are right, professor. I'm at the moment taking a two-quarter research seminar for Latin American history. But unfortunately, I haven't found any relevant field experience.
- Professor Well, are you still looking for a little work?
- Student Yes, I am. If it's a work related to Latin American history, I should take it whatever it is.
-  I'm in no position to be picky. Well, actually I have to take any kind of work because paying for books and everything is kind of expensive.
- Professor Well then, this could be good news to you. As it turns out, I'm going to need some help putting a book together on a history of modern Latin America over the next year. And I just received a grant from the university to hire a research assistant. It's not a lot of money, but  it's yours if you want it.
- Student Really? I don't know what to say. I am so grateful for the offer, professor. But am I eligible for the position? Sounds like the job needs a highly qualified person.
- Professor Don't worry about it. I'm just looking for someone who can comb through the archives, looking for the materials I need, and who can keep all of my records straight so that nothing gets lost.
- Student That sounds like something I could do. How much help do you need?
- Professor I was thinking somewhere between 10 and 15 hours a week, depending on my schedule and yours.
- Student That sounds wonderful. I will take the position. Thank you so much for allowing me to take part in the research.

PART TWO - LECTURE

Professor Architecture in America started out as simple imitations of what settlers had known in their home countries. However, America had a different climate and other special characteristics that meant that those buildings were not always appropriate to this new land. Soon America developed unique architectural styles and techniques that were better suited to life there. For example, the first colonists in New England found that the winter winds there were much colder than in Europe. Therefore, new construction techniques were developed to keep those winds out of the home. Because wood was so plentiful in New England, clapboard became the most common style of building – horizontal wood panels that overlapped the panels beneath them. Windows were small, and the center of the house had a large fireplace for cooking and for warmth.

In the frontier regions, the well-known log cabin was most common. Relatively easy to build and maintain, the log cabin was the best option for the rough and isolated life at the edges of America. As the colonies grew and prospered, larger and more comfortable houses became more common. The English Georgian style, with its chiefly brick construction, became popular. Georgian homes were especially dominant on the east coast, from Philadelphia to Virginia. Well, you can find leading examples of Georgian architecture styles in Ivy Leagues. 🎧 Brown, Yale and Harvard are typical cases.

In the southwest, on the other hand, Spanish baroque architecture had a great impact. Large compounds with white adobe and red tile roofs were common from Texas to San Diego and up the Pacific coast, and that style still greatly influences the architecture of the region today.

Many other unique architectural styles exist in various regions of America, from the Greek revivalism of the southern plantations to the ornate ironwork of New Orleans. It is all part of the unique heritage America has grown over the past 400 years.


PART THREE - LECTURE

Professor As we examined last class, stars are bodies of hot, glowing gas that are born in clouds of hydrogen in space. They vary enormously in size, mass, and temperature – they can have diameters $1/50^{\text{th}}$ the size of our sun, or 1,000 times greater; their mass can be $1/20^{\text{th}}$ of our sun, or over 50 times greater; and surface temperatures can range from 5,500 degrees Fahrenheit to over 90,000 degrees. Stars begin to form when a region of higher density gas in space begins to contract under its own gravity. As it contracts, it begins to heat up, forming a protostar. When the temperature reaches 27 million degrees Fahrenheit, nuclear reactions start, and the hydrogen fuses into helium. This process releases energy, which prevents the star from contracting further and causes it to shine.

Today, I want to talk about what happens towards the end of the life of such a star, specifically a red supergiant. The bigger the star, the less time it takes to burn through the main sequence and become a red supergiant. After most of the hydrogen has turned to helium in the core, the helium begins to contract, and a new round of nuclear reactions occurs. Over the next few million years, several heavier elements will be formed. The outer edges of the supergiant remains as hydrogen, but there is then a large region of helium. After that comes a layer of carbon, followed by oxygen and then silicon. At the center of the red supergiant is a core of iron.

That iron core eventually collapses in less than a second, causing a massive explosion called a supernova. A shock wave blows away the outer layers of the star, and for a time, a couple of years, the supernova shines brighter than an entire galaxy.

Sometimes the core survives the explosion. If that core is about the size of our star, it contracts to become a tiny, dense neutron star which would be only about 6 miles across.

 It is so dense that a teaspoon of it would weigh a billion tons.

However, if the core is more than three times the size of our sun, it contracts to form a black hole – a singularity of infinite density, pressure, and temperature. Black holes are characterized by extremely strong gravity, so powerful not even light can escape.

Now for the rest of this lecture, I'm going to explore the red supergiant in more detail.