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新第三套

Listen to a conversation between a student and his Biology professor

【公众号“四箭齐发托福”】 (man) Thanks for meeting with me outside office hours.

(woman) Not a problem, not many students have been coming by lately beginning of semester and all, of course, when I assign the research paper *then* it's a different story. So, what's up?

(man) Well, I volunteered at the Wildlife Refuge, you know, just north of the campus?

(woman) Oh, yes, some of my students do internships there. It must be beautiful now with the changing autumn colors and falling leaves.

(man) That's kind of why I am here. See, yesterday when I was giving my tour, a visitor asked what makes leaves change color in fall. I told him what I remembered about how the leaves stop producing chlorophyll, the green pigment that makes energy. But then he asked how they fall, what makes them detach from the branches and, well, I was hoping you could

(woman) Certainly, in our class we only covered that briefly, but, here's what I tell students in my Botany class: cold weather, like what we experience here in the northern US. This triggers the release of a hormone in deciduous trees that tells the leaves to produce **Abscission** cells. Let me write that down for you. OK, so you've got a deciduous tree, a tree that loses its leaves in the autumn. The weather turns cold so the tree releases this hormone that tells each leaf to produce Abscission cells. These are cells that form between the leaf and the branch and gradually push the leaf away. Eventually, it detaches and falls off.

(man) So trees are active in this process. That's so cool! I always thought leaves just die, shrivel up and got blown away while the trees they are just kind of sitting there, you know, just letting it happen.

(woman) That is the popular conception that trees are simple organisms, but, actually, they are quite complex.

(man) Wow! I really love this stuff. Maybe I will sign up for Botany. It's offered next semester?

(woman) It is and don't forget registration is just around the corner. You know, with your interest in all of this, have you considered making Biology your major area of concentration?

(man) This is only my first semester so I'm not sure but, well, I've always loved learning about nature and when I talked to my adviser, he told me about all the interdisciplinary programs here, you know, ways I can combine classes from different departments to focus on the natural sciences. There's, uh, natural resource management, forestry, environmental science. They all sound good so I'm gonna have to do some

investigating.

(woman) Then you'll be at our Science Breakfast next week.

(man) Sorry?

(woman) The Science Breakfast, Wednesday, 8 to 11 at the Student Center? Every fall all the science departments get together to host this event. I'll be there with professors from the other science departments to answer questions about our course offerings. And, of course, there'll be coffee and food.

(man) I wonder why my adviser didn't mention it.

(woman) When did you speak with him?

(man) Last month right before classes began.

(woman) Hmm, this has been in the works for months. But I think we decided to wait until after the semester began to start making announcements, you know, not so early that people would forget about it. On second thought, maybe in the future we should get the information out there a little earlier.

1. Why does the student go to speak with the professor?
 - A) To find out the answer to a question that was asked at the wildlife refuge
 - B) To discuss an idea that he has for a research paper on deciduous trees
 - C) To obtain information about a job at the wildlife refuge
 - D) To ask for advice about which classes to take next semester
2. What process in deciduous trees does the professor describe?
 - A) How their leaves change color
 - B) How their leaves separate from their branches
 - C) How hormones that affect leaf size are produced
 - D) How chlorophyll helps in producing energy
3. What mistaken belief does the student have about deciduous trees?
 - A) That healthy leaves remain attached to their branches
 - B) That the trees die in very cold weather
 - C) That the trees do not regulate the process by which they lose their leaves
 - D) That abscission cells give the leaves their green pigment
4. What will the student likely do before the next semester begins? [**choose two answers**]
 - A) He will make biology his major area of concentration.
 - B) He will learn more about interdisciplinary programs that involve biology.
 - C) He will register for a course in botany.
 - D) He will ask his biology professor to be his academic adviser.
5. What opinion does the professor express when she discusses the Science Breakfast?

- A) It should probably have been announced earlier in the semester.
- B) It would be more successful if more professors attended.
- C) The invited speakers are all well-respected researchers.
- D) She is disappointed that the student's adviser did not tell him about it last month.

Listen to part of a lecture in an English Literature class

【公众号“四箭齐发托福”】 (*male professor*) OK, the type of novel that was hugely popular in the nineteenth century was characterized by a linear narrative, a strong storyline, and characters whose daily lives were depicted down to the last realistic detail. This type of novel was generally told by an all-known narrator who served as a stand-in for the author and functioned more as a storyteller than as a character. Everything that happened in the story is told to us from the outside by the narrator who acts as an interpreter between the imaginary world of a novel and the reader.

But around 1910, novels began to undergo a radical and profound transformation. The highly descriptive novels of the nineteenth century were steadily being displaced by a new kind of literature that tried to convey reality less by telling than by showing. You see, around this period an important new movement known as Modernism was taking root. And the principles associated with it were influencing music, painting, and, of course, literature.

Modernism, as its name suggests, wanted to be associated with a rapidly changing society of twentieth century Europe. You see, people weren't satisfied with a traditional taste and values of the nineteenth century. Perhaps the most important literary innovation proposed by Modernism was the stream-of-consciousness novel.

The term stream-of-consciousness didn't start out as a literary term. It was actually borrowed from Psychology. Remember, at this time, Psychology was a new science and growing in popularity. So there was a spreading interest in understanding how the human mind works. The term first appeared in the writings of American philosopher and psychologist William James, who talked about human consciousness as a sequence of states of mind, a continuous stream of changing moods, feelings and thoughts that come and go.

We all know how unpredictable the mind can be. One minute we may be contemplating the beauty of a sunset, the next we remember we need to stop at the store to pick up bread. So imagine a literature that wants to narrate a story through the flow of thought of the characters. This meant novels became very fragmented. Many of these Modernist novels were formless and without chronology. They didn't have a beginning, middle, and end. So no coherent structure and in some cases not even grammar and

punctuation.

Some authors felt if they were going to overturn established literary conventions, why obey grammar? Sentences became incomplete. But, as we've been saying, the flow of thought doesn't really follow any rules and is often incoherent. And that's exactly what the new literature was trying to capture.

OK, so, unlike earlier novels, in which events were the motor of a story, these new novels barely relied on plot. Instead, there were impressions, memories, and flashbacks, and the reader had to connect dots. The narrators, narrators were still there to present the information, but they don't necessarily interpret it for the reader. That's not the narrator's role in Modernist novels. So, there's the lack of coherent structure and strong plot but also the limited role of the narrator can make these novels difficult to read.

The fact is that the reader does have to be more active. Also, the language changed. Instead of the formal polished language we used in earlier novels, authors started writing using the kind of private language which we use when we talk to ourselves. That's why stream-of-consciousness is often compared to a literary technique called interior monologue. It's a device often used in drama. For example, Shakespeare's plays, which are full of characters who speak aloud to themselves, revealing their private thoughts. But they do it in language that's coherent and orderly and even rhymes.


OK, so we're going to be reading parts of James Joyce's novel Ulysses. And one of the things I want you to focus on while you're reading this novel, in addition to other elements we discussed, is the element of time. And you'll notice that in *Ulysses* the characters experience time subjectively. I mean, time seems to be stretched out, so one moment can be explored very deeply. This allows Joyce to describe all the things the character is thinking about at one time. So this is different than when a clock is keeping time and the minute seems to go by very quickly.

1. What is the main purpose of the lecture?

- A) To discuss how a movement in the early 1900s affected all the arts
- B) To discuss a narrative style associated with the Modernist novel
- C) To point out similarities between a twentieth-century literary style and earlier styles
- D) To explain the influence of the nineteenth-century novel on the Modernist novel

2. According to the professor, what features set Modernist novels apart from earlier novels? [choose two answers]

- A) Their increased use of dialogue
- B) Their lack of chronology
- C) Their focus on details
- D) Their neglect of grammar rules

3. What opinion does the professor express when he discusses the narrator in Modernist novels?
- A) The narrator's explanations of the action may seem contradictory.
 - B) The narrator's presentation of the thoughts of many different characters can be misleading.
 - C) The narrator's inclusion of several different plots can confuse the reader.
 - D) The narrator's restricted role makes the novels challenging for the reader.
4. What point does the professor make when he mentions Shakespeare's use of interior monologues?
- [choose two answers]
- A) The monologues and stream-of-consciousness writing serve similar purposes.
 - B) The monologues typically do not reveal the private thoughts of Shakespeare's characters.
 - C) The monologues are more coherently structured than stream-of-consciousness writing is.
 - D) The monologues are used only by the narrator in Shakespeare's plays.
5. What point does the professor make about the element of time in James Joyce's *Ulysses*?
- A) Brief moments in time can be explored in depth.
 - B) Time is a subject that the characters discuss often in the novel.
 - C) The timeless quality of the characters is appealing to readers.
 - D) Time is the central theme of the novel.
6. What point does the professor make when he says this: 
- A) Nineteenth-century literature was often filled with realistic details
 - B) Modernists tried to explain the significance of seemingly unimportant actions
 - C) The sequence of human thought can seem random
 - D) Characters in literature often act without first thinking carefully

Listen to part of a lecture in an Animal Behavior class

【公众号“四箭齐发托福”】 (*female professor*) I'd like to talk today specifically about shorebirds, birds that hunt and forage close to the shore and shallow coastal waters, mud flats, and other wetlands. There're over two hundred known species of shorebirds. In North America, for example, typically during the summer months, many shorebird species breed in the arctic region, in the far north specific nesting areas, and during that time they're highly territorial. They defend their areas energetically and generally don't gather in flocks.

But during the winter months, and during their migration to and from their warm-weather habitats,

shorebirds do congregate in mixed flocks along shorelines south of their nesting areas, for example, on both coasts of the United States. Around seven percent of all shorebirds feed in water that's four inches deep or less. And what's amazing about these feeding sites is that hundreds, thousands, even millions of birds will gather in the specific areas that offer rich food sources. And I'm talking about a pretty small area, maybe only thirty or so meters of shoreline.

(male student) A million birds? That's a lot of competition for food.

(professor) It sure is. And, of course, the food sources aren't unlimited. But look at it this way: lots of people might be in a grocery store at the same time, but some of them are buying oranges and others are buying cheese.

(male student) Right, so they're buying different stuff at the store? One bird might eat crabs while another eats insects?

(professor) Right, there wouldn't be enough crabs for every bird. Each species feeds on something slightly different from the next. And, in addition, each species has its own unique method of finding food. Let's look at a good example of two species that eat in the same area, the Dunlin and the Dowitcher.

Dunlins and Dowitchers are small shorebirds that feed in very shallow water, on basically the same food, small clams and worms. Dunlins have little receptors in their bills that allow them to detect movement. And using these they're able to find their prey in the mud. Dowitchers forage in slightly deeper water, probing deeper to find food. They're able to stick their bills deeper into the mud, because they have longer bills than Dunlins. So Dowitchers are looking for the same kinds of food as the Dunlins but because of their longer bills, Dowitchers can eat in other places. And it's also true for other shorebirds. Some like walk along skimming the surface of the water. Others might be farther on the beach and so on.

(female student) So, even though the birds are hunting within a few feet of each other, they are able to get the food they're looking for without actually competing?

(professor) That's right. And this is happening along the entire shoreline, which brings us to a particularly interesting discovery that was made recently about the western sandpiper. Western sandpipers are another species of small shorebird that live in great numbers in North America.

For many years it was thought that western sandpipers ate mainly small crustaceans, mud snails and clams. But a recent study found that those small invertebrates might only be a supplementary food source for the sand pipers. Using high-speed video recordings and by studying the stomach contents of sandpipers, researchers found that sandpipers' main diet or, at least a sizable portion of it, actually consists of biofilm.

Biofilm is a thin layer on top of the mud. It consists of microorganisms including algae and bacteria. Biofilms is everywhere, in stagnant ponds, hot springs, glaciers. It's full of carbohydrate and provides a rich energy source for the sandpipers, though previously we thought on snails liked it. Scientists made this discovery by, well, at first, as they watched the video of the sandpipers as they fed; they were intrigued by how slowly the sandpipers were moving. The sandpipers weren't hunting as such. They were grazing like cows and sheep and it's estimated that this grazing of biofilm might account for as much as half the sandpiper's daily nutritional intake. This is an important discovery, because they are not only predators after small prey as we thought. They are also eating food that's even lower on the food chain.

1. What is the lecture mainly about?
 - A) How the diet of shorebirds changes from when they nest to when they migrate
 - B) How shorebirds of the same species work together to gather food
 - C) How large numbers of shorebirds are able to find enough food in a small geographical area
 - D) How environmental changes have altered the typical diets of migratory shorebirds
2. What does the professor say about shorebirds nesting habits?
 - A) Shorebirds' nesting sites vary from year to year.
 - B) Shorebirds typically nest close to an area that has a variety of food sources.
 - C) Shorebirds typically nest close together in group.
 - D) Shorebirds are more territorial during nesting season than other seasons.
3. Why does the professor mention a grocery store?
 - A) To help students understand that various species of shorebirds do not actually compete for food
 - B) To illustrate that humans and shorebirds share some of the same food sources
 - C) To emphasize the variety in the diet of a particular shorebird species
 - D) To demonstrate the abundance of food available at feeding sites along the shoreline
4. How do Dowitchers differ from Dunlins in the way they find food?
 - A) Dowitchers hunt for food farther up on the beach.
 - B) Dowitchers hunt for food that is deeper in the mud.
 - C) Dowitchers hunt for food in shallower water.
 - D) Dowitchers hunt for food in groups.
5. What are two characteristics of biofilm that help explain the feeding behavior of some shore animals?
[choose two answers]
 - A) It is found on the surface of shoreline mud.
 - B) It is produced by mud snails and clams.

- C) It consists mainly of tiny crustaceans.
- D) It has a high carbohydrate content.

6. How did researchers react to new evidence about the diet of western sandpipers?

- A) The researchers were pleased to confirm an earlier hypothesis.
- B) The researchers were concerned that sandpipers were eating such large number of clams.
- C) The researchers were surprised to learn that sandpipers' main source of food was not what they had originally thought it was.
- D) The researchers were skeptical of the findings and requests additional research.

Listen to a conversation between a student and a housing department administrator

【公众号“四箭齐发托福”】 (man) Hi, I'm Matthew Bowen, I sent you an e-mail?

(woman) Hi, Matthew, yes, could you refresh my memory?

(man) OK, um, I just transferred here from another university.

(woman) OK?

(man) And, long story short, I ended up missing the housing application deadline, by, like, one day I think it was.

(woman) Um hum

(man) Anyway, so then you guys just randomly assigned me to one of the three-bedroom units in York Hall and two roommates.

(woman) OK, right, and you moved in at the end of September, I believe?

(man) Right, and, as you know, a few of the three-bedroom units in York consist of two large rooms and one small room.

(woman) And you got stuck with the small room.

(man) Right, there's barely room for a desk in there.

(woman) Right, they are not exactly what you call spacious.

(man) No, and it's OK for a while but not for the whole year, I mean, I'm paying just as much as my roommates.

(woman) Have you discussed this with your roommates?

(man) Yeah, and they were polite but they felt that since that they got there first and I didn't want to push it too much. I'd like to maintain a harmonious living situation.

(woman) Of course, well, according to university regulations the fact that you moved in after they did has no bearing on anything

(man) So there *is* an explicit rule.

(woman) It's in the booklet we distribute to all incoming students. You should have gotten one.

(man) I did, but I haven't read it yet.

(woman) And your roommates probably haven't either.

(man) Probably not.

(woman) Anyway, there's a section in there called "division of space".

(man) OK?

(woman) And that spells it all out. All students have an equal right to space in the unit regardless of who got there first. If one of the rooms is less desirable than the other two, and no one's willing to accept it for the year, the roommates have to rotate rooms. Exactly how they do that is up to them.

(man) OK, that answers my question. Thanks, you've been very helpful.

(woman) Just share that with your roommates and if that doesn't work, I'd suggest that the three of you see your resident adviser and let him mediate it for you.

(man) I doubt we'll have to resort to that. I don't think my roommates are the type to intentionally flaunt the rules.

(woman) One other option: I've heard that in some cases, the roommates in the big bedrooms keep them all year, but in exchange, they reimburse the person in the little room part of the dorm fee, unofficially, of course.

(man) Hmm, I couldn't stand being in that little room all year. But maybe one of them could if the compensation was right. I'll float the idea and see what they say.

(woman) Good luck.

1. Why does the student go to see the administrator?
 - A) To indicate his choice of roommates for the coming semester
 - B) To request permission to move to a different residence hall
 - C) To respond to a complaint filed by his roommates
 - D) To get information about university housing regulations
2. Why does the student mention that he missed the housing deadline?
 - A) To apologize for not submitting his application earlier
 - B) To explain how he came to live in his current dorm room
 - C) To find out if he is eligible to live in special reserved housing
 - D) To imply that the university's housing application process is unfair
3. What does the housing booklet say about roommates who live in a three-bedroom unit?
 - A) They may have to switch rooms with their roommates during the school year.
 - B) They cannot switch rooms after they have signed the housing contract.
 - C) Students who are farther along in their studies have first choice of rooms.
 - D) Students who are unable to resolve disputes should meet with the resident adviser.
4. What does the student imply about his roommates?

- A) They do not take their studies as seriously as he does.
 - B) They are also unhappy with their living situation.
 - C) They are unaware of the rules regarding residence halls.
 - D) They are unwilling to discuss the student's complaint.
5. What does the student plan to do?
- A) Offer to pay a roommate to live in the small room.
 - B) Continue living in the small room for the rest of the year.
 - C) Arrange a meeting between him, his roommates, and their resident adviser.
 - D) Move into another residence hall as soon as another unit becomes available.

Listen to part of a lecture in an Astronomy class

【公众号“四箭齐发托福”】 (*male professor*) Exoplanets are planets outside Earth's solar system, planets in orbit around stars other than our Sun. The first confirmed discovery was in the late 1980s. And since then astronomers have detected over 500 exoplanets. Now, detecting exoplanets directly, that is, trying to actually see them by way of telescope, has been extremely difficult. You see, exoplanets appear very small very faint and extremely close to the star they orbit, their parent star. And this means that exoplanets will often be hidden by the glare of the parent star. So, trying to see an exoplanet is like, well, trying to see from faraway the light of a flashlight shining out next to a big bright spotlight, but more on direct methods in a minute.

Let's start with how we know exoplanets even existed, even before we could directly see them in telescopes. Well, what happened was astronomers used indirect methods to infer their presence. You see, they had observed that some stars appeared to wobble slightly and they wondered what was causing these small irregular movements. And, well, after years of careful study, astronomers were able to determine that a given star's wobble was the result of an exoplanet's gravitational force on that star, uh, tugging, which causes the star to move.

Now, if we look at binary star system, a system of two stars orbiting around a common point, both stars will appear to wobble. This means that when astronomers detect only one object that wobbles with no other wobbling objects near it, they can be reasonably sure that what they're observing is the effect of exoplanet orbiting a star. Another way to determine an exoplanet's existence, astronomers also try to detect the dimming of a star at regular intervals. This dimming will happen as a planet crosses in front of the parent star, temporarily blocking its rays.

OK, so, indirect methods, they are fine for confirming that an exoplanet is *there* and providing us with

other limited information about the planet itself. But the best way to determine its chemical composition, which will tell us things like what its environment is like, if it could support life, the only way for us to get extensive information of this sort would be to analyze the light coming directly from the exoplanet.

Now, until recently, we could only directly observe exoplanets under exceptional circumstances. Um, with the aid of the Hubble space telescope and some very large ground-based telescopes, we have been able to see especially large exoplanets that are widely separated from their parent stars. Well, fortunately, with the recent development of some imaging techniques, we've been able to directly detect and photograph of smaller exoplanets using smaller telescopes.

We've done this by combining two different newer technologies. Let's look at the first one, **adaptive optics**. Now, you all know that when we look at stars from Earth, they appear to twinkle, because when starlight passes through Earth's atmosphere, the light gets distorted. We can adjust this distorting effect by equipping our telescopes with adaptive optics. Adaptive optics produce very sharp photographs of a star by rapidly adjusting the telescope lens to correct this distorting effect. Telescopes equipped with adaptive optics can capture such sharp images of stars that the photographs looked as if they're taken from space.


However, adaptive optics won't solve a problem I mentioned earlier, that is, the bright light of the star will still obscure the orbiting exoplanet. So, the trick is to suppress the starlight without blocking out the light from exoplanet. In order to do this, we can attach a device called a **coronagraph** to our telescope. There are now two types of coronagraphs, a traditional coronagraph blocks off most of the light from the star by using a small black disk. However, this is a complication. Even when we use this disk, some of the starlight leaks around the disk and creates a series of alternating bright and dark rings around the star called a diffraction pattern. And this ring pattern will mask the image of the orbiting planet and we still won't be able to capture an image of it, especially if the exoplanet orbits relatively close to the parent star.

To solve this problem, a new type of coronagraph called a **vortex coronagraph** was developed. A vortex coronagraph is a glass lens with a spiral pattern etched into it. The spiral pattern successfully blocks the star and nearly eliminates the surrounding diffraction pattern, allowing us to actually see exoplanets orbiting near their parent star.

1. What is the lecture mainly about?

- A) Why the chemical composition of some exoplanets prevents them from being detected
- B) A recent discovery of an exoplanet that has prompted the invention of the vortex coronagraph
- C) Enhanced techniques for observing planets outside our solar system
- D) Some common misunderstandings about powerful telescopes

2. Why does the professor mention seeing a flashlight shining next to a spotlight?

- A) To clarify how most telescopes function
 - B) To point out that some exoplanets can appear brighter than their parent stars
 - C) To help explain what diffraction patterns look like
 - D) To illustrate the difficulty of detecting exoplanets that orbit close to stars
3. What are two indirect methods that astronomers have used to detect exoplanets? [**choose two answers**]
- A) They look for rings surrounding distant light sources.
 - B) They look for the periodic reduction of light from a star.
 - C) They look for the presence of other known exoplanets in the same star system.
 - D) They look for slight movements of a star.
4. What main benefit of adaptive optics does the professor mention?
- A) They block out all light sources from stars close to the parent star.
 - B) They are able to combine images from two separate telescopes.
 - C) They adjust for the distortion of a star's image caused by Earth's atmosphere.
 - D) They measure the amount of wobble of a parent star.
5. Why does the professor discuss a series of alternating bright and dark rings around a star?
- A) To point out a limitation of the traditional coronagraph
 - B) To explain how the color of the coronagraph's disk is important to the coronagraph effectiveness
 - C) To explain a problem with the technology of the vortex coronagraph that has not been solved
 - D) To emphasize the importance of using a lens that is just the right size for the telescope
6. What does the professor imply when he says this: 
- A) It is very difficult to detect an exoplanet, regardless of the method used.
 - B) Astronomers are not satisfied with the amount of information indirect methods of detection provide.
 - C) Some direct methods of detection are less useful than indirect methods for detecting exoplanets.
 - D) The exact location of an exoplanet can be confirmed by detecting a wobble in the parent star.

Listen to part of a lecture in a Psychology class

【公众号“四箭齐发托福”】(*female professor*) OK, I'm going to ask you a question you wouldn't expect me to ask in class. How high do you think this ceiling is? Anyone?

(*male student*) Uh, about two meters?

(*professor*) Are you sure?

(male student) Uh, not really.

(professor) OK, I actually asked you two questions. The first was to make a judgment about the outside world, “How high is the ceiling of this classroom?” The second question was also a judgment, wasn’t it?

(male student) About my own, uh, ability to judge height

(professor) Right! In psychological terms, you first made a **cognitive judgment** then you made a **metacognitive judgment**. Simply put, metacognition means thinking about thinking. In our example, it means the ability to judge your own perception.

Now, this ceiling is actually three meters high, so you weren’t very accurate in your perception, but you knew that you’re probably wrong. So your metacognitive judgment was accurate. Metacognitive ability is the ability to discriminate correct decisions from incorrect ones, to make judgments about your decisions. It’s been getting a lot of attention recently, because, well, let me ask, why do you think it’s important?

(female student) Well, if you weren’t sure about a decision, you maybe go back and think about it a bit more, like maybe you’d be less likely to make a wrong decision.

(professor) Right! Now, according to behavioral studies, there’s actually significant variation in metacognitive ability among people. But is this reflected in the brain? And if so, how? We know that there’re differences in the structure of the brain between, say, musicians and non-musicians. Could the same be true for metacognition? We know from earlier studies that there’s a specific area of the brain that’s associated with skills that we think are linked to metacognition. It’s located near the front of your head, in the **anterior prefrontal cortex**.

Using technology that allows them to scan and get images of the brain, researchers can look for differences in the amount of brain tissue in the anterior prefrontal cortex and that brings us to a recent experiment. It was designed to look at the relationship between metacognitive ability and the amount of brain tissue in the anterior prefrontal cortex. Subjects had to perform a series of visual perception tasks followed by metacognitive tasks. After all this, their brains were scanned.

In one of the visual perception tasks, the subjects were presented with a screen showing a group of six circular patches. All of these patches had the same pattern on them. After a short interval, the subjects were again presented with the six circular patches on a screen. Now, the thing is, in one of these two screens, one of the patches was different. It was a little brighter than the others. And the subjects were asked to judge which of the two screens showed the brighter patch, screen one or screen two? After that, they were

presented with a metacognitive task. They had to decide on the scale from one to six, how confident they were about their judgements.

(female student) But what if someone had really great visual perception? I mean, wouldn't that affect their confidence in their abilities?

(professor) Excellent question. The only way this experiment works is if you can separate metacognitive ability from perceptual ability. So the perceptual task was designed to automatically adjust to the subject's individual perceptual ability. The researchers used a method called the staircase procedure. The staircase procedure made the perceptual task equally challenging for all subjects, regardless of the ability by lowering or raising the intensity of the stimulus, in this case, the brightness of the patch. That way, everyone scored about seventy percent on the perceptual task. So, now, the variation in performance between the subjects was only based on their metacognitive ability. The ones who scored higher in metacognition were the ones who, help me out here.

(male student) Who, uh, had the most accurate sense of how they performed?

(professor) Right, so then the researchers scanned the brains of all the subjects and compared the images. And it turned out that the images that showed more brain matter, more brain tissue in a particular area of the prefrontal cortex, were from subjects who tended to have a higher metacognitive ability, who were better at evaluating their own performance on the visual tasks. This finding raises more questions, like whether metacognitive ability can be trained.

1. What does the professor mainly discuss?

- A) The discovery of the region of the brain associated with certain types of visual perception
- B) Research into how metacognitive ability relates to brain structure
- C) A study of the relationship between perceptual ability and metacognitive ability
- D) A misconception about metacognition and brain tissue

2. Why does the professor ask the students to guess the height of the ceiling?

- A) To find out which student's estimate is most reliable
- B) To make a point about visual perception
- C) To illustrate the difference between two types of thinking
- D) To explain the relationship between experience and decision making

3. Why does the professor mention musicians?

- A) To give an example of a proven link between brain structure and ability
- B) To give an example of people who have high metacognitive ability

- C) To compare visual perception and aural perception
- D) To compare several studies on metacognition

4. What questions were the subjects asked to answer in the research study that the professor describes?

[choose two answers]

- A) How confident they were about their judgments
- B) Whether they were distracted by the frequently changing screens
- C) Which of the two screens contained a brighter patch
- D) How many patches were shown on the two screens

5. According to the professor, what concern did the staircase procedure in the experiment address?

- A) The difficulty of the metacognitive task for some subjects
- B) The improvement in subjects' abilities over the course of the experiment
- C) The small amount of data collected from the experiment
- D) The difference in perceptual abilities of the subjects

6. Why does the professor say this:



- A) To be reminded of her train of thought
- B) To check the students' understanding
- C) To correct a statement that she made earlier
- D) To get the students' attention